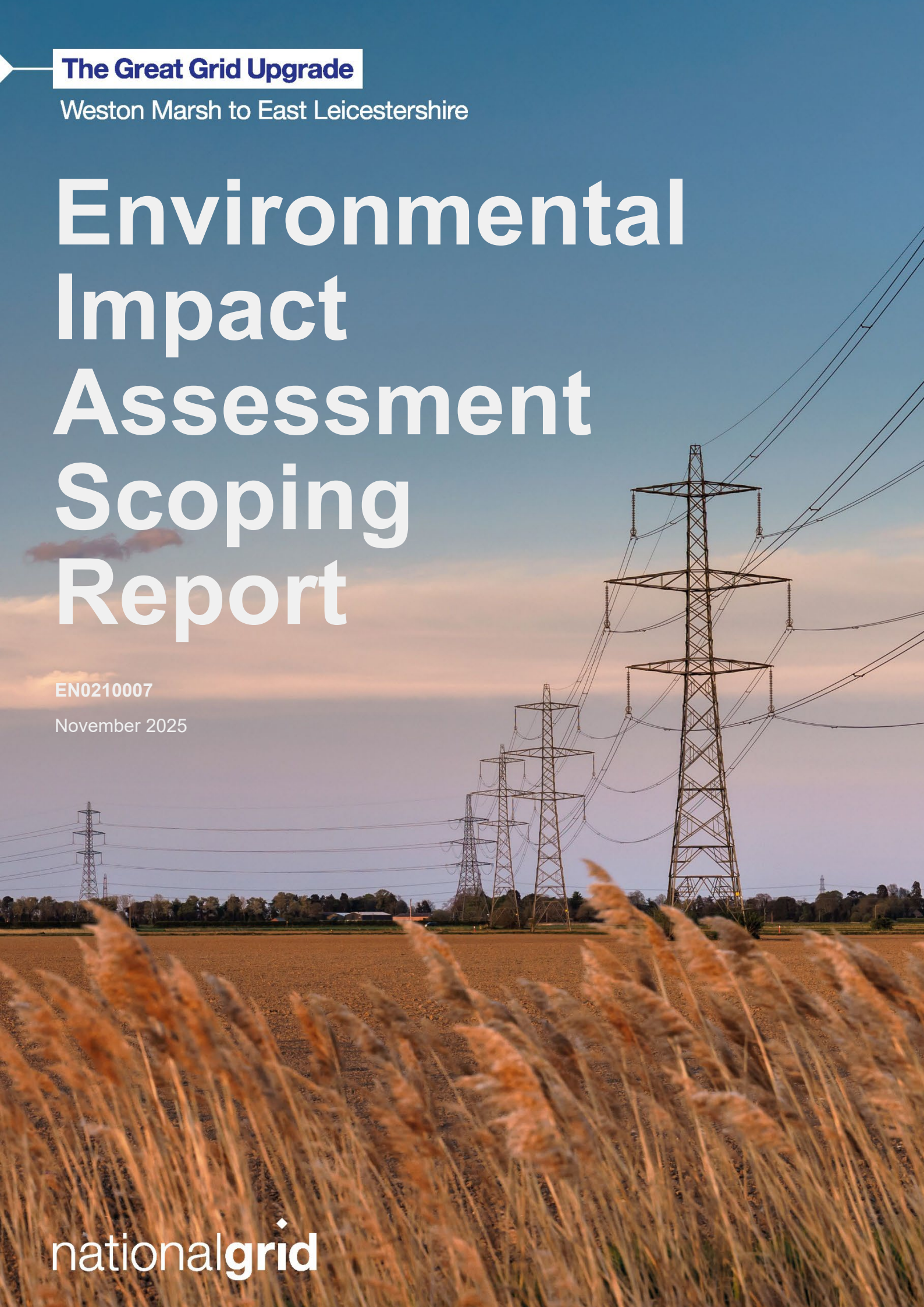
The Great Grid Upgrade

Weston Marsh to East Leicestershire

Environmental Impact Assessment Scoping Report

EN0210007

November 2025



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1. Introduction

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1. Introduction

1.1 Overview

1.1.1 This Environmental Impact Assessment (EIA) Scoping Report has been prepared by National Grid Electricity Transmission plc (National Grid), to support a request for a Scoping Opinion from the Secretary of State (SoS) for the Department for Energy Security and Net Zero, for the purposes of Regulation 10(1) of The Infrastructure Planning (Environmental Impact Assessment Regulations 2017 (the "EIA Regulations") (Ref 1.1) for the Weston Marsh to East Leicestershire Project (the "Project").

1.1.2 The Project is a Nationally Significant Infrastructure Project (NSIP), as defined under Part 3(16) of the Planning Act 2008 ("PA 2008") (as amended) (Ref 1.2) because it comprises a new electricity line above ground with a length of more than 2 kilometres (km), and with an operating voltage of above 132 kilovolt (kV).

1.1.3 The proposal by National Grid (the "Applicant") is to reinforce the transmission network with a new 400 kV overhead transmission line over a distance of approximately 60 km. The new line starts from new 400 kV substation infrastructure (up to new two substations) at Weston Marsh to the north east of Spalding and continues west to a new 400kV substation proposed to the west of the village of Ab Kettleby and north west of Melton Mowbray, Leicestershire (referred to as 'WMEL-B'), via a new 400kV substation proposed to the west of Coby Glen (referred to as 'WMEL-A'). The Project also includes approximately 66 km of reconductoring of the existing overhead transmission line from WMEL-B substation to the existing Grendon substation, east of Northampton.

1.1.4 National Grid owns, builds, operates and maintains the electricity transmission network in England and Wales, transporting electricity from generators (such as wind farms, solar farms and power stations) to local distribution network operators. Under the Electricity Act 1989 (Ref 1.3), National Grid holds a transmission licence, under which it is required to develop and maintain an efficient, coordinated and economical electricity system.

1.1.5 National Grid is also required, under Section 38 of the Electricity Act 1989, to comply with the provisions of Schedule 9 of the Act. Schedule 9 requires licence holders, in the formulation of proposals to transmit electricity, to:

Schedule 9(1)(a) '…have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest;' and

Schedule 9(1)(b) '…do what [it] reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects'.

1.2 The need for the Project

1.2.1 The Government's recent British Energy Security Strategy (Ref 1.4) outlines the ambition to increase energy from offshore wind to 50 gigawatt (GW) by 2030 – more than enough to power every home in the UK. This has led to a shift towards offshore renewable generation of power away from coal powered generation in the north and the Midlands. The UK is also transporting more power between countries across the North Sea, using interconnectors. These factors have driven a change in the energy landscape across the UK and in the East Midlands (including Lincolnshire and Leicestershire) where reinforcement of the network of overhead lines, towers, cables and other infrastructure that transports electricity around the country is required to deliver this change.

1.2.2 The existing electricity transmission network in the East Midlands region was developed in the 1960s and has historically been able to meet demand. However, due to the changes noted above in terms of delivering net zero emissions, the existing network does not have the capability to reliably and securely transport all the energy that will be connected by 2030, whilst operating to the standards it is required to. The Project is part of The Great Grid Upgrade[1] and along with a number of other projects will support the UK's net zero target by reinforcing the electricity transmission network along the East Coast and facilitating the connection of planned offshore wind generation, interconnectors with other countries and other sources of electricity, allowing clean green energy to be carried on the network.

1.2.3 National Grid has considered alternative strategic options to reinforce the network and alternative route corridors, as part of the options appraisal process (see **Chapter 3 Main Alternatives Considered**). The reinforcement is necessary to support the connection of new generation projects in Scotland and the north-east of England in the next decade and beyond. National Grid identified that the existing transmission system would not be sufficient to meet connection demand going forward, as there is an increasing need to reinforce the transmission network from east-to-west to ensure that this new capacity can be safely transported to where it's needed. Without additional network capability, offshore wind and interconnectors will be constrained at times of high wind generations and high imports. The operation of the network would become sub-optimal in the long term, less efficient, and more carbon intensive sources of generation would potentially be used at those times, hindering progress towards net zero.

1.2.4 The network reinforcement would provide greater security to the network in the region and reduce the risk of outages (a period of interruption to electricity supply) from limited network availability. If the network is not reinforced, outages could result in a greater risk of widespread supply interruptions. The transmission network needs to be able to maintain a minimum level of security of supply, as defined within the National Electricity Transmission System Security and Quality of Supply Standards (Ref 1.5).

1.3 The requirement for Environmental Impact Assessment

1.3.1 Environmental Impact Assessment (EIA) is a process required by UK law which brings together information about the likely significant effects of a proposed

[1] Further information on The Great Grid Upgrade can be found online at: www.nationalgrid.com/the-great-grid-upgrade.

development. The original legal basis for EIA lies in European Community Directive 85/337/EEC2 (the “EIA Directive”). The EIA Directive remains transposed into UK law through several pieces of legislation.

1.3.2 In relation to NSIPs, EIA is required for certain developments under the EIA Regulations (Ref 1.1). Under the EIA Regulations, EIA is mandatory for development projects defined under Schedule 1. Those development projects defined in Schedule 2 only require EIA if they are likely to have significant effects on the environment by virtue of their nature, size or location. As the Project comprises an overhead electrical power line with a voltage of 220 kV or more and its length is greater than 15 km, the Project falls under Schedule 1. As such, National Grid hereby provides notice under Regulation 8(1)(b) of the EIA Regulations that the Project’s application for development consent will be accompanied by an Environmental Statement (ES).

1.4 Geographical Context

1.4.1 The Project is located in the East Midlands region, as illustrated on **Figure 1.1 Site Location Plan.** It lies within the following local authority administrative areas: the eastern part of the Project lies within South Holland (Lincolnshire County), the central parts of the Project lie within South Kesteven (Lincolnshire County) and Melton (Lincolnshire County), and as the reconductoring heads south from WMEL-B, the Project continues south through Harborough (Leicestershire County), North Northamptonshire and West Northamptonshire (unitary authorities).

1.4.2 The Project is located in an area that is predominantly rural, with large parts of the land under arable use. The towns of Spalding, Bourne, Melton Mowbray, Market Harborough, Kettering, and Wellingborough are located within 5 km of the Project. There are also multiple villages and individual properties near to the Project.

1.4.3 There are numerous 400 kV overhead lines of varying voltage in the vicinity of parts of the Project, as shown on **Figure 1.1 Site Location Plan**. Most notable is the existing 400 kV 4ZM overhead line which routes parallel to the eastern edge of the Scoping Boundary and through the Siting Zone for Weston Marsh substation infrastructure, the existing 400 kV 4VK to which the proposed WMEL-A Substation would connect, and the existing 400 kV ZA to which the proposed WMEL-B Substation would connect. There is also one existing 400 kV substation located within 1.5 km of the Scoping Boundary, the existing Spalding North Substation.

1.4.4 The Scoping Boundary is based on the emerging preferred corridor identified within the Corridor Preliminary Routing and Sitting Study (CPRSS) (Ref 1.6), a 2 km area around the existing ZA overhead line which will be subject to reconductoring, and the Siting Zone for Weston Marsh substation infrastructure. The option appraisal process for the new overhead line ensured impacts on key areas of high amenity and environmental value were avoided or minimised, such as residential properties, designated wildlife sites, woodland (including ancient woodland), and known heritage assets.

1.5 Purpose of the Scoping Report

1.5.1 Scoping forms a key stage of the EIA process in providing a framework for identifying potential likely significant effects arising from the Project and distinguishing the environmental topics to be addressed within the ES.

1.5.2 This Scoping Report sets out the proposed content, methodologies to be adopted and the potential likely significant effects that are proposed to be considered in the ES.

1.5.3 The opinion of the SoS is being sought specifically on:

- the environmental topics that should be included in the ES;
- the relevant components of the Project and the resultant likely significant effects;
- those effects not likely to be significant that do not need to be considered further;
- the approach to setting the Study Areas for each topic;
- the data that has been gathered (and will be gathered);
- the assessment methods that will be used to determine likely significant effects; and
- the approach to determining the environmental measures that could be incorporated into the Project to avoid, prevent, reduce or, if necessary, offset significant effects.

1.5.4 This Scoping Report has been prepared in accordance with the EIA Regulations (Ref 1.1) as well as having due regard to Planning Inspectorate (PINS) Advice Note Seven (Ref 1.7).

1.5.5 Regulation 10(3) of the EIA Regulations defines the information that must be provided when requesting a scoping opinion, namely:

"(a) a plan sufficient to identify the land;

(b) a description of the proposed development including its location and technical capacity;

(c) an explanation of the likely significant effects of the development on the environment; and

(d) such other information or representations as the person making the request may wish to provide or make".

1.5.6 **Table 1.1** identifies where the information set out in Regulation 10(3) and PINS Advice Note Seven can be found within this Scoping Report.

Table 1.1 Compliance with Regulation 10(3) and PINS Advice Note Seven

Suggested information to be included within the Scoping Report	Location within this Scoping Report
The Project	
A plan sufficient to identify the land.	The Scoping Boundary is shown on **Figure 1.2 Scoping Boundary**
A description of the Project including its location and its technical capacity.	**Chapter 4 Description of the Project**

Suggested information to be included within the Scoping Report	Location within this Scoping Report
An explanation of the likely significant effects of the development on the environment.	This is presented within section 7 of the technical chapters (**Chapter 6** to **Chapter 18,** for **Chapter 19 Major Accidents and Disasters,** this is provided in **Appendix 19A**) and in **Chapter 20 Summary**.
EIA Approach and Topic Areas	
An outline of the reasonable alternatives considered and the reasons for selecting the preferred option.	**Chapter 3 Main Alternatives Considered**
An explanation of the approach to addressing uncertainty which remains in relation to the elements of the Project.	**Chapter 5 EIA Approach and Methodology**
A summary table describing each of the aspects and matters that are requested to be scoped out allowing for quick identification of issues.	Each of the technical chapters (**Chapter 6** to **Chapter 18**) include a table describing those sources, impacts and receptors proposed to be scoped in and out of the ES. For **Chapter 19 Major Accidents and Disasters**, this is provided in **Appendix 19A**. A summary table is provided in **Chapter 20 Summary.**
A detailed description of the aspects and matters proposed to be scoped out of further assessment with justification provided.	This is presented within section 7 of each of the technical chapters (**Chapter 6** to **Chapter 19**).
Results of desktop and baseline studies where available and where relevant to the decision to scope in or out aspects or matters.	Information on the baseline characteristics is included in section 5 of each of the technical chapters (**Chapter 6** to **Chapter 19**).
Aspects and matters to be scoped in, the report should include details or the methods to be used to assess the impacts and to the determine the significance of effect e.g. the criteria for determining sensitivity and magnitude.	Sources, impacts and receptors proposed to be 'scoped in' for the purpose of the ES are identified within section 7 of each of the technical chapters (**Chapter 6** to **Chapter 19**). The proposed EIA approach and methods are described in **Chapter 5 EIA Approach and Methodology** and in section 8 of each of the technical chapters (**Chapter 6** to **Chapter 19**) which describe how they will apply that methodology to their assessments or where it differs due to specific topic guidance, set out their proposed methodologies.
Any avoidance or mitigation measures proposed, how they may be secured and the anticipated residual effects.	These are set out within section 6 of each of the technical chapters (**Chapter 6** to **Chapter 19**). An Initial Outline Code of Construction Practice

Suggested information to be included within the Scoping Report	Location within this Scoping Report
	(CoCP) is provided in **Appendix 4A Initial Outline Code of Construction Practice**.
Information Sources	
Reference to any practice and best guidance to be relied upon	This is presented within section 2 of each of the technical chapters (**Chapter 6** to **Chapter 19**).
Evidence or agreements reached with consultation bodies	Section 3 of each technical chapter (**Chapter 6** to **Chapter 19**) will include a table showing the summary of engagement undertaken with stakeholders to date.

1.6 Structure of this Scoping Report

1.6.1 The structure of this Scoping Report is outlined in **Table 1.2**. For ease of presentation, **Volume 1** presents the main text of this Scoping Report; **Volume 2 Appendices and Volume 3 Figures**.

Table 1.2 Structure of this Scoping Report

Chapter/Appendix	Content
Volume 1 – Main Text	
Chapter 1 Introduction	An introduction to the Project and the purpose and structure of the Scoping Report.
Chapter 2 Regulatory and Planning Policy Context	A review of the legislative and policy relevant to the Project.
Chapter 3 Main Alternatives Considered	This chapter outlines the evolution of the Project, reasonable alternatives considered and the reasons for selecting the preferred Project.
Chapter 4 Description of the Project	This chapter describes the Project including permanent features and associated temporary works. It describes the general characteristics of the Project, outlines areas of flexibility in relation to design parameters, and how the Project would be constructed, operated and maintained.
Chapter 5 EIA Approach and Methodology	A description of the overall EIA methodology (including cumulative effects) that is proposed for the Project including temporal durations and approach to mitigation.

Chapter/Appendix	Content
Chapter 6 Landscape **Chapter 7 Visual** **Chapter 8 Ecology and Biodiversity** **Chapter 9 Cultural Heritage** **Chapter 10 Water Environment** **Chapter 11 Geology and Hydrogeology** **Chapter 12 Agriculture and Soils** **Chapter 13 Traffic and Transport** **Chapter 14 Air Quality** **Chapter 15 Noise and Vibration** **Chapter 16 Socio-economics, Recreation and Tourism** **Chapter 17 Health and Wellbeing** **Chapter 18 Climate Change** **Chapter 19 Major Accidents and Disasters** **Chapter 20 Summary**	There is a chapter for each of the environmental topics which describe aspects to be scoped in and out of the EIA. These technical chapters are structured as follows: • the regulatory and planning policy context specific to the topic area; • the proposed topic Study Area; • a description of the relevant baseline including data sources used; • a summary of engagement undertaken to date presented in a table; • any embedded or good practice measures take into consideration when proposing the scope; • potential for significant effects; • proposed assessment methodology; and • concluding statements explaining the matters proposed to be scoped into and out of the ES.
Volume 2 Appendices	Provides the Appendices which support Volume 1.
Volume 3 Figures	Provides the Figures which support Volume 1.

1.7 Competence

1.7.1 Regulation 14(4) of the EIA Regulations (Ref 1.1) requires that an ES is prepared by "competent experts" and that the ES is accompanied by a competent expert statement outlining the relevant expertise or qualifications of such experts.

1.7.2 This Scoping Report has been prepared and coordinated by a team from organisations which are members of the Institute of Sustainability and Environmental Professionals (ISEP) (formerly the Institute of Environmental Management and Assessment) EIA Quality Mark Scheme (Ref 1.8). This is an independently reviewed voluntary standard, requiring organisations to commit to excellence in their EIA activities. All specialists have demonstratable expertise in their fields. These credentials are demonstrated by 'Competent expert statement,' as detailed in **Appendix 1A Competent Expert Statement.**

1.8 Net Gain Commitments

1.8.1 Under the Environment Act 2021 (Ref 1.11) it will be mandatory for all (terrestrial) NSIPs submitted from May 2026 to deliver biodiversity net gain (BNG). The requirement is to achieve at least 10% measurable net gain, which is to be secured for at least 30 years. Defra is developing details on how BNG will apply to NSIPs, public consultation on its content was undertaken in July 2025.

1.8.2 National Grid's Environmental Action Plan 2021-2026 (Ref 1.12) makes a commitment to achieving at least 10% gain in environmental value (including biodiversity) on all construction projects by 2026.

1.8.3 This commitment requires delivery of quantifiable enhancement for biodiversity from the pre-development baseline, measured using the Defra statutory biodiversity metric (Ref 1.13) applicable at the time of assessment, with actions formalised and secured by long term management arrangements with external organisations and partners.

1.9 Stakeholder Engagement

1.9.1 This section sets out National Grid's approach to stakeholder engagement and consultation. It provides an overview of the general approach, the engagement and consultation that has taken place to date, and that is proposed in the future.

1.9.2 Engagement and consultation with technical stakeholders and the local community is a key element of the EIA process and will inform the design and assessment of the Project.

General approach

1.9.3 The Applicant will continue to ensure stakeholders are engaged and consulted in a useful and inclusive manner. The general approach to engagement and consultation includes:

- Engagement and consultation activities scheduled at key points of the design and assessment process.
- Proactive and effective engagement with statutory and non-statutory stakeholders, including local residents who are most likely to be impacted by the Project.
- A focus on the matters of greatest importance and relevance to stakeholders to ensure efficient use of their time.
- Use of varied and accessible engagement techniques – including a mix of online and in person channels. One-way and two-way communications will be utilised.
- Opportunities for stakeholders to share their experience and knowledge to help identify potential effects, mitigations and enhancements at an early stage of the design process.
- Addressing stakeholder queries and concerns in an efficient and effective manner.
- Feedback which will be recorded, analysed and used to inform the EIA, optioneering and design of the Project.

Summary of engagement and consultation undertaken

1.9.4 A summary of relevant engagement undertaken to date is provided in **Table 1.3**

Table 1.3 Summary of engagement undertaken

Date	Engagement and consultation activity	Stakeholders engaged/consulted
November 2024 – February 2025	Initial project briefings during options appraisal phase	Initial project briefings with various local authorities (engaged on the basis of the broad study area for the purposes of the CPRSS before the study area was narrowed down): • Charnwood Borough Council; • Harborough District Council. • Leicestershire County Council; • Lincolnshire County Council; • Melton Borough Council; • North Northamptonshire Council; • Nottingham County Council: • Rushcliffe Borough Council; • Rutland County Council; • South Holland District Council; • South Kesteven District Council; and • West Northamptonshire Council.
11 June 2025 – 06 August 2025	Non-Statutory Consultation	Public consultation with communities and stakeholders. Feedback received from Statutory Environmental Bodies, non-statutory environmental groups, community members, parish councils and Members of Parliament.
July 2025 and ongoing	Statutory Environmental Bodies / Technical Stakeholders	Engagement with the following Statutory Environmental Bodies / Technical Stakeholders to discuss the Project: • Environment Agency; • Historic England; • National Highways; and • Anglian Water.

1.9.5 The Applicant has not yet engaged directly with Landowners given the extent of the preferred route option corridor and walkover surveys have been undertaken from publicly accessible land and rights of way only to support the design, environmental and socio-economic appraisal of options and in this Scoping Report. These discussions will commence following further design option development and in planning a full programme of surveys.

1.9.6 The Applicant will continue to engage with other developers in the area to consider opportunities for coordination, including Grimsby to Walpole, also being developed by National Grid.

Future engagement and consultation

1.9.7 In line with the requirements of the PA 2008 (Ref 1.2), the Applicant will undertake further consultation and engagement with communities and stakeholders as the Project continues to develop.

1.9.8 The programme of ongoing stakeholder engagement and consultation will be structured around key milestones in the design development and assessment process. This will provide the opportunity to update and consult stakeholders on the evolving design and decision-making process.

1.9.9 Engagement and consultation will continue throughout the stages of the Project, with the following stakeholders:

- Statutory bodies;
- Non-statutory bodies;
- Local authorities (including host authorities);
- Directly affected individuals, landowners and asset owners; and
- Local communities.

1.9.10 Statutory Consultation will be held in 2026, and the Preliminary Environmental Information Report (PEIR) will be issued as part of this. The PEIR will enable consultees to understand the likely significant environmental effects of the Project and help to inform their responses to the Statutory Consultation.

1.9.11 The Applicant will set up Technical Working Groups which will be themed to allow collaborative engagement across core environmental issues. The aim is to encourage attendees representing different environmental organisations to assist in reaching resolution with all parties, to inform the EIA.

1.9.12 Through the process of engagement and consultation the aim is to reach agreement, as far as possible, with stakeholders prior to the submission of the application for development consent. Statements of Common Ground will be developed between the Applicant and relevant stakeholders to document any remaining areas of disagreement and provided with the application for development consent. The Applicant will also initiate pre-application Principal Areas of Disagreement Summary Statements (PADSS) with relevant consultees.

1.9.13 A summary of the engagement and consultation activities undertaken, and how feedback has been taken into account will be documented in the Consultation Report which will accompany the application for development consent.

1.10 References

Ref 1.1 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 [online]. Available at: https://www.legislation.gov.uk/uksi/2017/572/contents/made [Accessed 1 July 2025].

Ref 1.2 Planning Act 2008 [online]. Available at: https://www.legislation.gov.uk/ukpga/2008/29/part/3 [Accessed 1 July 2025].

Ref 1.3 Electricity Act 1989 [online]. Available at: https://www.legislation.gov.uk/ukpga/1989/29/contents [Accessed 1 July 2025].

Ref 1.4 British energy security strategy, Department for Business, Energy & Industrial Strategy and Prime Minister's Office (April 2022) [online]. Available at: https: //www.gov.uk/government/publications/british-energy-security-strategy/british-energysecurity-strategy [Accessed 1 July 2025].

Ref 1.5 National Electricity Transmission System (2021) Security and Quality of Supply Standard [online]. Available at: https://www.neso.energy/document/189561/download [Accessed 14 July 2025].

Ref 1.6 National Grid (2025) Weston Marsh to East Leicestershire Corridor Preliminary Routeing and Siting Study. [online] Available at: https://www.nationalgrid.com/document/561431/download [Accessed 14 July 2025].

Ref 1.7 Planning Inspectorate (2020). *Advice Note Seven. EIA: 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 1 July 2025].

Ref 1.8 Institute of Sustainability and Environmental Professionals. EIA Quality Mark Scheme [online]. Available at: https://www.isepglobal.org/corporate-programmes/eia-quality-mark [Accessed 3 October 2025].

Ref 1.9 The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 [online]. Available at: https://www.legislation.gov.uk/uksi/2017/407/contents [Accessed 18 August 2025].

Ref 1.10 Overarching National Policy Statement for energy (EN-1) 2023 [online]. Available at: https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1 [Accessed 18 August 2025].

Ref 1.11 Environment Act 2021 [online]. Available at: https://www.legislation.gov.uk/ukpga/2021/30/contents [Accessed 1 July 2025].

Ref 1.12 National Grid (April 2021). Our 2021-2026 Environmental Action Plan [online]. Available at: https://www.nationalgrid.com/electricity-transmission/document/155131/download). [Accessed 1 July 2025].

Ref 1.13 Department for Food, Environment and Rural Affairs (2021). Biodiversity metric: calculate the biodiversity net gain of a project or development [online]. Available at: https://www.gov.uk/guidance/biodiversity-metric-calculate-the-biodiversity-net-gain-of-a-project-or-development [Accessed 1 July 2025].

2. Regulatory and Planning Policy Context

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2. Regulatory and Planning Policy Context

2.1 Introduction

2.1.1 This chapter provides an overview of the relevant legislative and planning policy context that applies to the Project. This includes national, regional, and local planning policy and marine policy, which has been considered across all environmental topic chapters in the preparation of this Environmental Impact Assessment (EIA) Scoping Report. The Planning Statement which will accompany the application for development consent will identify and consider relevant legislation and policies and provide analysis on planning policy compliance.

2.1.2 Legislation and policies relevant for different environmental topics are set out below with specific details included in **Appendix 2A Environmental Legislation**, **Appendix 2B National and Regional Planning Policy** and **Appendix 2C Local Policy**.

2.1.3 The Applicant will consider and have regard to all relevant national, regional and local planning policy and relevant legislation in the evolution of the design of the Project, and in the assessment of the impacts of the Project in accordance with Section 104 of the Planning Act 2008 (PA 2008) (Ref 2.1).

2.1.4 During the pre-application stage and in the preparation of the Preliminary Environmental Information Report (PEIR), the Environmental Statement (ES) and other appropriate application documents the Applicant will also have due regard to the National Infrastructure Planning Guidance in accordance with Section 50 of the PA 2008. There are two parts of the National Infrastructure Planning Guidance that are most relevant to the pre-application stage:

- Introduction to National Infrastructure Planning Guidance (April 2024) (Ref 2.2), which sets out the role and scope of the National Infrastructure Planning Guidance; and
- Planning Act 2008: Pre-application stage for Nationally Significant Infrastructure Projects (April 2024) (Ref 2.3) which provides guidance on the pre-application stage for NSIPs.

2.2 Key Legislation

The Planning Act 2008

2.2.1 The PA 2008 provides the statutory framework for determining development consent order (DCO) applications for Nationally Significant Infrastructure Projects (NSIPs). It also defines the application process under which a DCO is sought. The PA 2008 provides that projects meeting certain defined criteria are classified as NSIPs. It requires that developers wishing to construct, operate and maintain NSIPs must obtain a DCO from the relevant Secretary of State (SoS) to authorise the Project.

2.2.2 As the Project consists of the installation of an electric line above ground of more than 132 kV and more than 2 kilometres (km) in length, it is classified as an NSIP under Section 14(1)(b) of the PA 2008, and therefore it is necessary to seek permission via a DCO from the SoS.

The Infrastructure Planning (EIA) Regulations 2017

2.2.3 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the "EIA Regulations") (Ref 2.4) govern the EIA process relevant to NSIPs. Schedule 1 of the EIA Regulations lists those projects for which an EIA is required and Schedule 2 lists projects which may be considered EIA development, based on the selection criteria provided in Schedule 3 on characteristics of the development, its location and the types and characteristics of the potential impacts.

2.2.4 Under these Regulations (paragraph 20 of Schedule 1), a project is Schedule 1 if it fulfils the following criteria "*Construction of overhead electrical power lines with a voltage of 220 kV or more, and a length of more than 15 km*". The Project comprises the construction and operation of a new 400 kV overhead electricity transmission line over approximately 60 km, therefore the Project falls under Schedule 1 and requires a statutory EIA.

2.2.5 This EIA Scoping Report provides formal notification to the SoS, under Regulation 8(1)(b) of the EIA Regulations, that the Applicant proposes to provide an ES in respect of the Project and requests a Scoping Opinion from the SoS under Regulation 10 of the EIA Regulations. Therefore, this Project is EIA development through Regulation 6(2) of the EIA Regulations.

2.2.6 Regulation 5(2) states that the EIA must:

"*identify, describe, and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the proposed development on the following factors-*

(a) population and human health:

(b) biodiversity, with particular reference to species and habitats protected under Directive 92/43/EEC and 2009/147/EC:

(c) land, soil, water, air, and climate:

(d) material assets, cultural heritage, and landscape; and,

(e) the interaction between the factors referred to in sub-paragraphs (a) to (d)".

2.2.7 These factors are considered within the topic-specific chapters (**Chapter 6** to **Chapter 19**).

2.2.8 In addition, Regulation 5(4) states that the EIA should include, where relevant:

"*the expected significant effects arising from the vulnerability of the proposed development to major accidents or disasters that are relevant to that development*".

2.2.9 This is considered within **Chapter 19 Major Accidents and Disasters**.

2.2.10 Schedule 4(5) of the EIA Regulations sets out the information for inclusion in the ES, and states that a description should be included, of the significant effects arising from:

"*the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources*".

2.2.11 The approach to addressing this requirement is set out within **Chapter 5 EIA Approach and Methodology**.

Electricity Act 1989

2.2.12 Section 9(2) of the Electricity Act 1989 (Ref 2.5) places general duties on National Grid as a license holder:

"*to develop and maintain an efficient, co-ordinated and economical system of electricity transmission*…"

2.2.13 In addition, Section 38 and Schedule 9 of the Electricity Act 1989 requires an electricity licence holder such as National Grid, when formulating proposals for new lines and other works, to:

"*have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and shall do what it reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects*."

2.2.14 National Grid's Stakeholder, Community and Amenity Policy (Ref 2.6), published December 2016, sets out how the company will meet the Schedule 9 duty placed upon it by the legislation.

Countryside and Rights of Way Act 2000

2.2.15 The Countryside and Rights of Way Act 2000 (CRoW) Act (Ref 2.7) sets out the legal basis to ensure public access to the countryside and strengthens environmental protections. It has five key parts: Part I grants the public a legal "right to roam" on designated open land (including registered common land); Part II sets out the legal basis for the definition of Public Rights Of Way (PRoW); Part III boosts nature conservation and enhances the powers of conservation bodies; Part IV provides a statutory framework for the protection and management of Areas of Outstanding Natural Beauty (AONBs); and Part V includes various supplementary provisions to support the Act's implementation.

2.2.16 A National Landscape is, from November 2023, the new name for AONBs, designated under the provisions of Part IV of the Countryside and Rights of Way Act 2000. National Grid, as a statutory undertaker, has a duty under Section 85 of the Act (as amended in s245 of the Levelling up and Regeneration Act 2023) (Ref 2.8) which states:

"*In exercising or performing any functions in relation to, or so as to affect, land in an AONB in England, a relevant authority must seek to further the purpose of conserving and enhancing the natural beauty of the AONB*".

2.2.17 There are no National Landscapes within the Scoping Boundary or any likely to be affected by the Project, however the CRoW Act may be relevant in respect of PRoW or habitats within the Scoping Boundary. Further information on designated

landscapes is included in **Chapter 6 Landscape,** information on habitats is included in **Chapter 8 Ecology and Biodiversity** and information on PRoW is included in **Chapter 16 Socio-economics, Recreation and Tourism**.

Related Assessments

2.2.18 In addition to the EIA, the Project will be assessed in accordance with the other regulatory regimes, where they apply. Information on these is included in the environmental topic chapters of this Scoping Report where applicable. These include the Conservation of Habitats and Species Regulations 2017 (Ref 2.9), as amended by the Conservation of Habitats and Species (Amended) (EU Exit) Regulations 2019 (Ref 2.10), the Flood Risk Regulations (2009) (Ref 2.11) and the Water Framework Directive (WFD) (Ref 2.12).

Habitats Regulations

2.2.19 The Habitats Regulations 2017 (Ref 2.9) transposed the requirements of European Council Directive 92/43/EEC ('the Habitats Directive') (Ref 2.13) into English law. The Habitats Regulations apply to plans and projects that may have significant effects on the Natura 2000 ecological network (sites designated under the Habitats Directive and the Wild Birds Directive (Council Directive 2009/147/EC (Ref 2.14), which codified 79/409/EEC (Ref 2.15)). Sites designated in England under the Habitats Regulations include Special Protection Areas (SPAs) and Special Areas of Conservation (SACs).

2.2.20 Following changes made to the Habitats Regulations (as amended) by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (Ref 2.10), SACs and SPAs in the UK no longer form part of the EU's Natura 2000 ecological network and now form part of the 'UK National Site Network' (UK 'NSN'). The term 'European sites' is used to refer collectively to such sites throughout this Scoping Report. It is also government policy that Ramsar sites, potential SPAs, possible SACs, and sites used to compensate for adverse effects on European sites are considered in the Habitats Regulations Assessment (HRA) process. This is described in paragraph 194 of the National Planning Policy Framework (NPPF) (Ref 2.16).

2.2.21 The Habitats Regulations require an Appropriate Assessment if a project is likely to have a significant effect on a European site. If that Appropriate Assessment concludes that a project will have an adverse effect on a European site then a derogation case must be considered. A Habitats Regulations Assessment Screening exercise will be undertaken as the Project has the potential to impact European sites including the Upper Nene Velley Gravel Pits SPA and Ramsar site, located adjacent to the existing Grendon substation where the existing overhead line will be subject to reconductoring above the sites. The works required in the European sites are not yet confirmed, however if the screening exercise concludes that likely significant effects cannot be excluded, a Report to Inform Appropriate Assessment will be produced in consultation with relevant consultees and provided with the application for development consent.

Flood Risk Regulations

2.2.22 The Flood Risk Regulations (2009) (Ref 2.11) transposes the European Commission Floods Directive (2007/60/EC) (Ref 2.17) into law in England and Wales and implements its provisions. The key objective is to coordinate the assessment and

management of flood risks within Europe. The Flood and Water Management Act (2010) (Ref 2.18) places a series of responsibilities on local authorities with the primary aim of improving local flood risk management.

2.2.23 The Regulations and Act require an appropriate Flood Risk Assessment (FRA) to be submitted as part of the application for development consent. The FRA will assess the flood risk both to and from the Project and demonstrate how that flood risk will be managed over the Project's lifetime, including with due regard to climate change.

Water Framework Directive

2.2.24 The Water Framework Directive (WFD) (2000) (Ref 2.19) was transposed into domestic law by the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (the 'WER Regulations') (Ref 2.12). It provides a structure for the protection and enhancement of surface fresh water, estuaries, coastal waters and ground water.

2.2.25 The primary aim of the WER Regulations is to improve/maintain the Ecological Status/Potential of all water bodies and to prevent deterioration in status of the water bodies and their associated WFD quality elements.

2.2.26 Regulatory bodies responsible for implementing the WER Regulations are the Environment Agency (main rivers) and Local Authorities/Lead Local Flood Authorities (ordinary watercourses).

2.2.27 The ES will be supported by a standalone WFD/WER Regulations compliance assessment in relation to hydrological receptors. The assessment findings will be integrated into the relevant ES Chapters (**Chapter 10 Water Environment** and **Chapter 11 Geology and Hydrology**).

2.3 National Planning Policy

2.3.1 This section sets out the current national planning policy documents which the SoS must have regard to when determining the DCO application for the Project, and which are considered relevant in the context of the EIA and in the preparation of this EIA Scoping Report.

2.3.2 The Project is an NSIP which requires development consent under the PA 2008 (Ref 2.1). Section 104 of the PA 2008 outlines the importance of National Policy Statements (NPS) to the decision-making process against which applications for development consent are considered. Section 104(2) states, inter alia:

"*In deciding the application, the SoS must have regard to –*

a) any additional policy statement which has effect in relation to development of the description to which the application relates (a 'relevant national policy statement')…

d) any other matters which the SoS thinks are both important and relevant to the SoS decision"

2.3.3 As identified in paragraph 1.3.4 of the Overarching NPS for Energy EN-1 (Ref 2.20), for infrastructure projects providing above ground electric lines at or above 132 kV (meeting the thresholds set out in the PA 2008), the following NPSs will be the primary basis for SoS decision making:

- Overarching National Policy Statement for Energy (EN-1) (NPS EN-1) (adopted 17 January 2024) (Ref 2.20); and
- National Policy Statement for Electricity Networks Infrastructure (EN-5) (NPS EN-5) (adopted 17 January 2024) (Ref 2.21).

2.3.4 As background to the adopted NPSs referred to above, it is noted that an Electricity Networks Commissioner was appointed in 2022 to work with and advise the Government on how to halve the build time for new transmission infrastructure from around 12-14 to 7 years. The Commissioner's report (Ref 2.22) and a companion report (Ref 2.23) including a set of 43 recommendations, referred to as the 'Winser Report', was published in August 2023. This Report acknowledged that speeding up the delivery of strategic transmission is both vital and challenging, and the recommendations on how to accelerate the deployment of strategic electricity transmission infrastructure in Great Britain covered every part of the process and set out an integrated programme of reform.

2.3.5 The Government's response to the Winser Report was set out in the Transmission Acceleration Action Plan (November 2023) (Ref 2.24). This Plan recognises that Great Britain's transmission network must undergo unprecedented expansion, as the economy electrifies to deliver energy security and Net Zero. It confirms that with the increasing shift towards electrification of transport, heating and industrial processes, a significant amount of additional grid capacity is required, and to deliver this expansion in time, there is a need to significantly reduce the current end-to-end build time for transmission infrastructure. The Action Plan accepted the 43 recommendations set out in the Winser Report, to accelerate the expansion of the transmission network.

2.3.6 In July 2024 the Energy Secretary chaired their first Clean Energy Superpower Mission Board, where the drive to make Britain a clean energy superpower with a push for British-based clean, homegrown energy was continued. Following this, the Clean Power 2030 Action Plan (December 2024) (Ref 2.25) was developed to set out a path to decarbonise the electricity grid and strengthen Britain's energy security. The Action Plan sets out the objective to accelerate transmission and distribution network build in order to deliver a decarbonised power system by 2030.

2.3.7 The adopted versions of NPSs EN-1 and EN-5 report the requirement to ensure the appropriate balance between the need to build vital infrastructure and the impacts this can have on the environment and communities and to ensure that the planning policy framework is suitably robust to support the infrastructure required for the transition to net zero carbon emissions. Low-carbon infrastructure, including large electricity grid infrastructure projects, are given 'Critical National Priority' status to reflect the need for critical national infrastructure. Further details are provided below in sections on NPS EN-1 and EN-5.

2.3.8 Consultation on proposed amendments to the energy NPS (including EN-1 and EN-5) was undertaken between 24 April – 29 May 2025 (Ref 2.26). The amended energy NPSs would only have effect in relation to those applications for development consent accepted for examination after the publication of the final amended energy NPSs. However, any emerging draft energy NPSs (or those amended but not having effect) are potentially capable of being important and relevant considerations in the decision-making process. The extent to which they are relevant is a matter for the relevant SoS to consider within the framework of the PA 2008 and with regard to the specific circumstances of each application for development consent. Changes made to the revised NPS recently consulted on are set out in paragraphs 2.3.33 to 2.3.36.

Overarching National Policy Statement for Energy (EN-1)

2.3.9 NPS EN-1 (Ref 2.20) sets out the Government's overarching policy regarding the development of NSIPs in the energy sector. It outlines high-level objectives, policy, and the regulatory framework. NPS EN-1 emphasises the need for new energy projects to contribute to a secure, diverse, and affordable energy supply. NPS EN-1 is underpinned by the principle that there will be a need for significant amounts of new large-scale energy infrastructure to meet the Government's energy objectives. Paragraph 2.1.3 states:

"*To produce the energy required for the UK and ensure it can be transported to where it is needed, a significant amount of infrastructure is needed at both local and national scale. High quality infrastructure is crucial for economic growth, boosting productivity and competitiveness*."

2.3.10 It states at paragraph 2.1.6 that large-scale energy infrastructure:

"*will be required to ensure the UK can provide a secure, reliable, and affordable supply of energy, while also meeting our decarbonisation targets*".

2.3.11 Section 3 of NPS EN-1 explains why the Government sees a need for significant amounts of new large-scale energy infrastructure to meet its energy objectives and why the Government considers that the need for such infrastructure is urgent. However, it is recognised at paragraph 3.1.2 that:

"*…it will not be possible to develop the necessary amounts of such infrastructure without some significant residual adverse impacts. These effects will be minimised by the application of policy set out in Parts 4 and 5 of this NPS. See also Part 2 of each technology specific NPS*."

2.3.12 NPS EN-1 refers to the urgent need for infrastructure covered by the NPS, and the weight that should be accorded to the need, and states at paragraphs 3.2.6 and 3.27 that:

"*3.2.6 The Secretary of State should assess all applications for development consent for the types of infrastructure covered by this NPS on the basis that the government has demonstrated that there is a need for those types of infrastructure which is urgent, as described for each of them in this Part.*

3.2.7 In addition, the Secretary of State has determined that substantial weight should be given to this need when considering applications for development consent under the Planning Act 2008."

2.3.13 Paragraph 3.3.4 to 3.37 of EN-1 recognise that there are several different types of electricity infrastructure that are needed to deliver the Government's energy objectives, which includes electricity networks which are needed to connect the output of other types of electricity infrastructure with consumers and each other.

2.3.14 Paragraph 3.3.68 of EN-1 states that substantial onshore reinforcement works are needed to meet decarbonisation targets, and that forecasts show that the transmission network will require substantial reinforcement in the Midlands to accommodate increased power flows and substantial reinforcement in East Anglia to handle increased power flows from offshore wind generation.

2.3.15 Paragraph 3.3.69 recognises that it is important to note that the crucial national benefits of increased system robustness through new electricity network infrastructure projects are shared by all users of the system.

2.3.16 Critical National Priority (CNP) infrastructure is defined as nationally significant new offshore wind development and supporting onshore and offshore network infrastructure and related network reinforcements. Paragraph 3.3.70 states that:

"*As all new grid projects have a role in efficiently constructing, operating and connecting low carbon infrastructure to the National Electricity Grid, the scope of networks CNP infrastructure is not limited to those associated specifically with a particular project*."

2.3.17 Paragraph 3.3.71 of EN-1 recognises that for regions with multiple windfarms or offshore transmission projects it is expected that a coordinated approach will be delivered which is likely to reduce the network infrastructure costs as well as the cumulative environmental impacts and impacts on coastal communities by installing a smaller number of larger connections, each taking power from multiple windfarms instead of individual point-to-point connections for each windfarm.

2.3.18 It also acknowledges in paragraph 3.3.78 that the case for a new connection or network reinforcement is demonstrated if the proposed development represents an efficient and economical means of:

- *"…connecting a new generating station to the network;*
- *reinforcing the network to accommodate such connections; or*
- *reinforcing the network to ensure that it is sufficiently resilient and capacious (per any performance standards set by Ofgem) to reliably supply present and/or anticipated future levels of demand.*

In considering the 'economic and efficient' approach the network project also needs to follow good design, avoidance, and mitigation principles (and/ or biodiversity compensation where needed for transmission in the marine environment), as referenced in EN-5".

2.3.19 Paragraph 3.3.79 recognises the crucial role of networks in connecting other kinds of electricity infrastructure (such as generation stations) and states that:

"… *it is especially important that the Secretary of State considers network projects as elements of a coherent and strategically necessary system, whether or not they are linked together in specific NSIPs. For instance, when evaluating applications for new electricity networks infrastructure the Secretary of State should have regard to the fact that given,*

i) the government's strategic commitment to ambitious levels of interconnection capacity and offshore wind generation, and

ii) the tightly interdependent infrastructure chain linking interconnection and offshore generation with onshore demand centres, delays in the approval of associated new network developments could cause significant economic waste and set back the strategically vital goals of decarbonisation and energy security."

2.3.20 Paragraph 3.3.80 supports a coordinated approach for electricity network infrastructure should be considered at both the strategic and more detailed project design levels for onshore transmission, offshore transmission, and offshore generation and interconnector developments. This coordinated approach is likely to provide the highest degree of consumer, environmental, and community benefits and reduce the potential for unwarranted and avoidable disruption, inefficiency, and visual impacts.

2.3.21 Paragraph 3.3.83 refers to the urgent need for new electricity infrastructure and states that:

"*Given the urgent need for new electricity infrastructure and the time it takes for electricity NSIPs to move from design conception to operation, there is an urgent need for new (and particularly low carbon) electricity NSIPs to be brought forward as soon as possible, given the crucial role of electricity as the UK decarbonises its economy*."

2.3.22 Section 4 of EN-1 sets out the general policies for the submission and assessment of applications relating to energy infrastructure and the weighting of impacts and benefits of projects to be applied by the SoS in decision making. Paragraph 4.1.3 states:

"*Given the level and urgency of need for infrastructure of the types covered by the energy NPSs set out in Part 3 of this NPS, the Secretary of State will start with a presumption in favour of granting consent to applications for energy NSIPs. That presumption applies unless any more specific and relevant policies set out in the relevant NPSs clearly indicate that consent should be refused*."

2.3.23 Section 4.6 provides details of how environmental and biodiversity net gain should be considered and confirms that this approach to development aims to leave the natural environment in a measurably better state than beforehand. Projects should therefore not only avoid, mitigate and compensate harms, following the mitigation hierarchy, but also consider whether there are opportunities for enhancements. The ES should include a statement demonstrating how wider environmental net gains have been considered, and where appropriate, incorporated into proposals as part of good design of the Project.

2.3.24 Section 4.7 provides details on the criteria for good design for energy infrastructure. Paragraph 4.7.1 states:

"*The visual appearance of a building, structure, or piece of infrastructure, and how it relates to the landscape it sits within, is sometimes considered to be the most important factor in good design. But high quality and inclusive design goes far beyond aesthetic considerations. The functionality of an object – be it a building or other type of infrastructure – including fitness for purpose and sustainability, is equally important*."

2.3.25 Section 4.10 of EN-1 details how the effects of climate change should be taken into account during the design stage to ensure new energy infrastructure is sufficiently resilient against the possible impacts of climate change. Specifically, as new energy infrastructure is typically likely to remain operational over many decades, the direct and indirect impacts of climate change when considering the Project location, design, build, operation and where appropriate decommissioning will need consideration.

2.3.26 Part 5 of NPS EN-1 sets out generic impacts in respect of matters such as air quality and emissions, greenhouse gas emissions, biodiversity and geological conservation, civil and military aviation and defence interests, coastal change, dust and odour, flood risk, historic environment, landscape and visual, land use, noise and vibration, socio- economics, traffic and transport, resource and waste management, and water quality and resources. These generic impacts have been considered in the preparation of this Scoping Report in **Chapters 6** to **19**.

National Policy Statement for Electricity Networks Infrastructure (EN-5)

2.3.27 NPS EN-5 (Ref 2.21) relates to electricity networks, and Part 2 provides general assessment principles and technology-specific policies relating to matters including climate change adaptation, consideration of good design, biodiversity and geological conservation, landscape and visual and noise and vibration. Section 2.12 of EN-5 establishes a co-ordinated approach to offshore-onshore transmission.

2.3.28 Paragraph 2.1.5 of NPS EN-5 reinforces Section 4.2 of EN-1 which supports the urgent need for new low carbon infrastructure and confirms that:

"*all power lines in scope of EN-5 including network reinforcement and upgrade works, and associated infrastructure… are considered to be CNP infrastructure*."

2.3.29 Paragraph 2.2.10 of EN-5 reiterates the duties under Section 9 of the Electricity Act 1989, both in relation to developing and maintaining an economical and efficient network and, in formulating proposals for new electricity network infrastructure, to:

"*have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiological features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and…do what [they] reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects*."

2.3.30 Section 2.3 of NPS EN-5 details how electricity network infrastructure should consider climate change adaptation and resilience within the design of new schemes.

2.3.31 EN-5 includes policies on the design of electricity network infrastructure, and paragraph 2.9.20 states:

"*Although it is the government's position that overhead lines should be the strong starting presumption for electricity networks developments in general, this presumption is reversed when proposed developments will cross part of a nationally designated landscape (i.e. National Park, The Broads, or Area of Outstanding Natural Beauty)*."

2.3.32 These policies have been considered in the preparation of this Scoping Report as set out in **Appendix 2B National and Regional Policy**.

Proposed amendments to the energy NPS (including EN-1 and EN-5)

2.3.33 New draft versions of the energy NPSs, including EN-1 and EN-5 were published for consultation on 24 April 2025. The consultation subsequently ran until 29 May 2025 and feedback is now being analysed.

2.3.34 The Department for Energy Security and Net Zero (DESNZ) published a Non-Technical Summary in April 2025, identifying key changes to the proposed NPSs.

2.3.35 An overview of the material changes to EN-1 and EN-5 relevant to this Project and identified by DESNZ include:

- Updates to the narrative of EN-1 to bring the Clean Power 2030 Action plan to the forefront of policy. Infrastructure projects relevant for Clean Power 2030 can be deemed as CNP, with a presumption in favour of consent.
- Building upon the 'Pathway to 2030' Holistic Network Design for offshore wind and 'Beyond 2030' reports, the Centralised Strategic Network Plan (CSNP), published as a draft methodology for consultation in June 2025, aims to reduce the overall impact of infrastructure by taking a coordinated view of the onshore and offshore network.

2.3.36 At the time of writing this Scoping Report, the draft NPSs are still subject to the feedback submitted at consultation and may change, and therefore have not been reviewed in detail for this Scoping Report. Any updates to the NPSs (EN-1 to EN-5) which came into force on 17 January 2024, will be considered in greater detail as the Project develops.

National Planning Policy Framework

2.3.37 The NPPF was most recently updated in December 2024 (Ref 2.16). Paragraph 5 of the NPPF sets out that it does not contain specific policies for NSIPs and states that:

"*These are determined in accordance with the decision-making framework in the Planning Act 2008 (as amended) and relevant national policy statements for major infrastructure, as well as any other matters that are relevant (which may include the National Planning Policy Framework)*".

2.3.38 Notwithstanding the above, paragraph 161 of the NPPF confirms the Framework's support for the transition to a low carbon future in a changing climate. It states that the planning system:

"…*should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience...and support renewable and low carbon energy and associated infrastructure*."

2.3.39 While EN-1 (Ref 2.20) and EN-5 (Ref 2.21) remain the prime decision-making documents, each technical chapter of the ES will consider whether there is important and relevant policy in the NPPF that may require consideration by the decision-making authority.

2.3.40 The NPPF is supported by the National Planning Practice Guidance (NPPG) (Ref 2.27).

2.4 Marine Legislation and Planning Policy

2.4.1 The Project has limited interaction with the marine environment, in so far as the proposed route of the overhead electricity line will cross a tidal section of the River Welland, which falls under the jurisdiction of the Marine Management Organisation (MMO).

Marine and Coastal Access Act 2009

2.4.2 The Marine and Coastal Access Act 2009 (MCAA 2009) (Ref 2.28) sets out a spatial planning system for the management of the marine environment, which includes a requirement to obtain a marine licence for works affecting the sea from the appropriate marine licensing authority, the MMO. The MMO is responsible for

determining applications in accordance with the Marine Policy Statement (MPS) (Ref 2.29) and any applicable marine plans, unless relevant considerations indicate otherwise.

2.4.3 Licensable marine activities are defined under Section 66 of the MCAA 2009, and include activities related to construction works over the sea. The definition of the 'sea' includes any area which is submerged at mean high water springs and the waters of every estuary, river or channel where the tide flows at mean high water spring tide up to the Normal Tidal Limit (NTL). The NTL is the extent to which a body of water is affected by the ebb and flow of the tides. This may encompass rivers and their estuaries, including those areas that are controlled by locks. The definition of 'over' the sea includes a location directly above or overhanging the sea such as a bridge, open piled structure or cantilever.

2.4.4 Applicants can apply for a 'Deemed Marine Licence' as part of the DCO process under Part 4 of the MCCA 2009 and by virtue of Section 149A of the PA 2008 which was inserted by the MCCA 2009. The Applicant will include a Deemed Marine Licence within its draft DCO if appropriate and required to facilitate the crossing of tidal waterways of the River Welland by the overhead electricity lines proposed in the Project.

Marine Policy Statement (MPS)

2.4.5 The MPS (March 2011) (Ref 2.29) provides the framework for preparing Marine Plans and taking decisions affecting the marine environment.

2.4.6 Relevant policies contained in the MPS will be considered as part of the assessment of the Project and compliance with the MPS.

Overarching National Policy Statement for Energy (EN-1)

2.4.7 Section 4.5 of NPS EN-1 provides details of how effects on the marine environment should be considered, noting that individual Marine Plans must be consulted to understand the marine relevant specific considerations, and suggests that the marine license regulator (the MMO in England) is approached during the pre-application stage to understand any need for additional marine licenses alongside the DCO application.

Regional Marine Plans

2.4.8 Regional Marine Plans are also relevant to the Project. The East Inshore and East Offshore Marine Plan (Ref 2.30) will be considered in the preparation of the application for development consent.

2.4.9 For further information, see **Appendix 2B National and Regional Policy**.

2.5 Local Planning Policy

2.5.1 Local planning policies provided by relevant County and District or Unitary Authorities have also been considered in the preparation of this Scoping Report due to the Project intersecting with their administrative areas. The full list of plans is provided in **Appendix 2C Local Policy**. The main local planning policy documents that could be relevant to the Project comprise the following.

- Lincolnshire County Council
  - Lincolnshire Minerals and Waste Local Plan: Core Strategy and Development Management Policies, adopted in 2016 (Ref 2.31);
  - Minerals and Waste Site Locations, adopted 2017 (Ref 2.32).
  - A new Lincolnshire Minerals and Waste Development Local Plan is being prepared and consultation on the plan took place between July and September 2024 (Ref 2.33).
- South Holland District Council
  - The South East Lincolnshire Local Plan 2011-2036, adopted 2019 (Ref 2.34), was produced with Boston Borough and South Holland District Council to shape future development.
  - The South East Lincolnshire Strategic Flood Risk Assessment (SFRA) (March 2017) (Ref 2.35) is used to undertake the Sequential Test for flood risk in South Holland.
- South Kesteven District Council
  - The South Kesteven District Council Local Plan 2011-2036, adopted 2020 (Ref 2.36).
  - A new South Kesteven District Council Local Plan is being prepared and the next consultation on the Regulation 18 Draft Local Plan Focussing on Additional Sites will take place in June/July 2025 (Ref 2.37).
- Leicestershire County Council
  - The Leicestershire County Council Strategic Plan 2024-2026, adopted 2024 (Ref 2.38)
  - The Leicestershire Minerals and Waste Local Plan, adopted 2019 (Ref 2.39).
- Melton District Council
  - Melton Local Plan 2011-2036, adopted 2018 (Ref 2.38).
  - A new Melton Local Plan is being prepared and consultation on the Melton Pre-Submission Local Plan Update was undertaken between January – February 2025 (Ref 2.41).
- Harborough District Council
  - Harborough Local Plan 2011-2031, adopted 2019 (Ref 2.42).
  - A new Harborough Local Plan for 2020-2041 is being prepared and consultation was held between March – May 2025 (Ref 2.43).
  - Harborough District is also covered within the Leicestershire Minerals and Waste Local Plan up to 2031, adopted 2019 (Ref 2.44).
- North Northamptonshire Council
  - North Northamptonshire Local Plan includes the Joint Core Strategy (Part 1) (2016) (Ref 2.45) and the Local Plans (Part 2) (Ref 2.46);
  - Northamptonshire Minerals and Waste Local Plan Update (2017) (Ref 2.47).

- A new North Northamptonshire Local Plan and revised Local Development Review is being prepared and consultation on the Scope and Issues was undertaken between March and May 2022 (Ref 2.48). Publication of the draft (Reg 18) plan for public consultation is anticipated for early 2026.

- West Northamptonshire Council
  - West Northamptonshire Local Plan was adopted in 2014, which includes the Joint Core Strategy (Part 1) and Local Plans (Part 2) (Ref 2.49).
  - A new West Northamptonshire Local Plan is being prepared, and consultation on a Regulation 18 Draft Plan was undertaken between April and June 2024 (Ref 2.50). The next public consultation on the local plan will take place in October 2025.

2.6 National Grid Policy and Guidance

2.6.1 National Grid has its own policies and processes that are followed when developing projects. The policies that are applicable to the Project comprise:

- Holford Rules (Ref 2.51): A series of guidelines/rules for the routeing and design of new overhead lines or overhead line extensions. The guidelines were initially developed in 1959 and have been reviewed on a number of occasions by National Grid and by the other UK transmission licence holders. The guidelines provide a set of design criteria that have stood the test of time and became accepted industry best practice in overhead line routeing. The guidelines now form an important part of national planning policy relating to the development of electricity networks, as set out in NPS EN-5.
- Horlock Rules (Ref 2.52): A series of guidelines/rules for the siting and design of new substations, or substation extensions, including consideration of line entries and sealing end compounds[1]. The guidelines were initially developed in 2003 and have been reviewed on a number of occasions by National Grid, with a revised version issued in 2009. The Horlock Rules provide a set of principles which avoid, or reduce the environmental impacts associated with the development of new substation infrastructure.
- National Grid's Stakeholder, Community, and Amenity Policy (Ref 2.6): This document describes the ten commitments that National Grid has made to the way that electricity and gas works are carried out in the UK. This includes setting out how National Grid will meet its amenity responsibilities and how stakeholders and communities are involved on projects; and
- National Grid's Approach to Consenting (Ref 2.53): This document outlines the project development process for major infrastructure projects, from initial inception to consent and construction.

[1] Cable sealing end compounds are where high-voltage underground cables join onto an overhead line. The transition from one to the other requires termination points, known as sealing end compounds.

References

Ref 2.1 Planning Act 2008 [online]. Available at: https://www.legislation.gov.uk/ukpga/2008/29/contents [Accessed 19 June 2025].

Ref 2.2 Department for Levelling Up, Housing and Communities (2024) Introduction to National Infrastructure Planning Guidance [online]. Available at https://www.gov.uk/guidance/introduction-to-national-infrastructure-planning-guidance [Accessed 17 July 2024].

Ref 2.3 Department for Levelling Up, Housing and Communities (2024) Planning Act 2008: Pre-application stage for Nationally Significant Infrastructure Projects [online]. Available at: https://www.gov.uk/guidance/planning-act-2008-pre-application-stage-for-nationally-significant-infrastructure-projects [Accessed 19 June 2025].

Ref 2.4 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 [online]. Available at: https://www.legislation.gov.uk/uksi/2017/572/contents/made [Accessed 08 July 2024].

Ref 2.5 Electricity Act 1989 [online]. Available at: https://www.legislation.gov.uk/ukpga/1989/29/contents [Accessed 08 July 2024].

Ref 2.6 National Grid (2016). National Grid's commitments when undertaking works in the UK: Our stakeholder, Community, and Amenity Policy [online]. Available at: https://www.nationalgrid.com/gas-transmission/document/81026/download [Accessed 28 March 2024].

Ref 2.7 Countryside and Rights of Way Act 2000 [online]. Available at: https://www.legislation.gov.uk/ukpga/2000/37/contents [Accessed 08 July 2024].

Ref 2.8 Levelling-up and Regeneration Act 2023 [online]. Available at: https://www.legislation.gov.uk/ukpga/2023/55/contents [Accessed 08 July 2024].

Ref 2.9 The Conservation of Habitats and Species Regulations 2017 [online]. Available at: https://www.legislation.gov.uk/uksi/2017/1012/contents/made [Accessed 08 July 2024].

Ref 2.10 The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 [online]. Available at: https://www.legislation.gov.uk/ukdsi/2019/9780111176573 [Accessed 08 July 2024].

Ref 2.11 The Flood Risk Regulations 2009 [online]. Available at: https://www.legislation.gov.uk/uksi/2009/3042/contents/made [Accessed 08 July 2024].

Ref 2.12 The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 [online]. Available at: https://www.legislation.gov.uk/uksi/2017/407/contents/made [Accessed 08 July 2024].

Ref 2.13 Council Directive 92/43/EEC [online]. Available at: https://www.legislation.gov.uk/eudr/1992/43/contents [Accessed 08 July 2024].

Ref 2.14 Directive 2009/147/EC of the European Parliament and of the Council [online]. Available at: https://www.legislation.gov.uk/eudr/2009/147/contents [Accessed 08 July 2024].

Ref 2.15 Council Directive of 2 April 1979 on the conservation of wild birds (79/409/EEC) (repealed) [online]. Available at: https://www.legislation.gov.uk/eudr/1979/409/contents [Accessed 08 July 2024].

Ref 2.16 Department for Levelling Up, Housing and Communities (2024). National Planning Policy Framework [online] Available at: https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf [Accessed 16 April 2024].

Ref 2.17 Directive 2007/60/EC of the European Parliament and of the Council [online].Available at: https://www.legislation.gov.uk/eudr/2007/60/contents [Accessed 08 July 2024].

Ref 2.18 Flood and Water Management Act 2010 [online]. Available at: https://www.legislation.gov.uk/ukpga/2010/29/contents [Accessed 08 July 2024].

Ref 2.19 Water Framework Directive 2000 [online]. Available at: https://eur-lex.europa.eu/eli/dir/2000/60/oj/ [Accessed 18 July 2025]

Ref 2.20 Department for Energy Security & Net Zero (2024). Overarching National Policy Statement for Energy (EN-1) [online]. Available at: https://assets.publishing.service.gov.uk/media/65bbfbdc709fe1000f637052/overarching-nps-for-energy-en1.pdf [Accessed 08 July 2024].

Ref 2.21 Department for Energy Security & Net Zero (2024). National Policy Statement for Electricity Networks Infrastructure (EN-5) [online]. Available at: https://assets.publishing.service.gov.uk/media/65a78a5496a5ec000d731abb/nps-electricity-networks-infrastructure-en5.pdf [Accessed 08 July 2024].

Ref 2.22 Winser. N (2023). Electricity Networks Commissioner Letter to Secretary of State for Energy Security and Net Zero [online] Available at: https://assets.publishing.service.gov.uk/media/64c8e96e19f5622360f3c0f0/electricity-networks-commissioner-letter-to-desnz-secretary.pdf [Accessed 15/ April 2024]

Ref 2.23 Energy Systems Catapult Limited. (June 2023). Electricity Networks Commissioner – Companion Report Findings and Recommendations [online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1175647/electricity-networks-commissioner-companion-report.pdf [Accessed 05 April 2024]

Ref 2.24 Department for Energy Security & Net Zero. (2023) Transmission Acceleration Action Plan [online]. Available at: Transmission Acceleration Action Plan: Government response to the Electricity Networks Commissioner's report on accelerating electricity transmission network build (publishing.service.gov.uk) [Online] [Accessed 10 April 2024]

Ref 2.25 Department for Energy Security and Net Zero. (2024). Clean Power 2030 Action Plan: A new era of clean electricity [online]. Available at: https://assets.publishing.service.gov.uk/media/677bc80399c93b7286a396d6/clean-power-2030-action-plan-main-report.pdf [Accessed 23 June 2025]

Ref 2.26 Department for Energy Security and Net Zero. (2025). Planning for new energy infrastructure: 2025 revisions to National Policy Statements [online] Available at: https://www.gov.uk/government/consultations/planning-for-new-energy-infrastructure-2025-revisions-to-national-policy-statements [Accessed 23 June 2025]

Ref 2.27 Ministry of Housing, Communities and Local Government (2024). National Planning Practice Guidance. Available at: https://www.gov.uk/government/collections/planning-practice-guidance [Accessed 18 September 2025]

Ref 2.28 Marine and Coastal Access Act 2009 [online]. Available at: https://www.legislation.gov.uk/ukpga/2009/23/contents [Accessed 08 July 2024].

Ref 2.29 HM Government (2011) UK Marine Policy Statement [online]. Available at: https://assets.publishing.service.gov.uk/media/5a795700ed915d042206795b/pb3654-marine-policy-statement-110316.pdf [Accessed 08 July 2024].

Ref 2.30 HM Government (2014) East Inshore and East Offshore Marine Plans [online]. Available at: https://assets.publishing.service.gov.uk/media/5a7ec0eced915d74e33f2342/east-plan.pdf [Accessed 15 April 2024].

Ref 2.31 Lincolnshire County Council (2016) Lincolnshire Minerals and Waste Local Plan: Core Strategy and Development Management. [online] Available at: https://www.lincolnshire.gov.uk/downloads/file/2361/core-strategy-and-development-management-policies [Accessed 18 July 2024].

Ref 2.32 Lincolnshire County Council (2017) Lincolnshire Minerals and Waste Local Plan Site Locations [online]. Available at: https://www.lincolnshire.gov.uk/downloads/file/2274/adopted-site-locations-pdfa [Accessed 18 July 2024].

Ref 2.33 Lincolnshire County Council (2024). Minerals and Waste Local Plan: Preferred approach consultation [online]. Available at: https://www.letstalk.lincolnshire.gov.uk/minerals-and-waste-local-plan [Accessed 23 June 2025].

Ref 2.34 South East Lincolnshire (2019). South East Lincolnshire Local Plan 2011-2036 [online]. Available at: https://southeastlincslocalplan.org/media/21941/South-East-Lincolnshire-Local-Plan-2011-2036/pdf/Local-Plan-text-March-2019.pdf?m=1720710748483 [Accessed 23 June 2025].

Ref 2.35 South East Lincolnshire (2017). South East Lincolnshire Strategic Flood Risk Assessment [online]. Available at: https://www.sholland.gov.uk/media/7937/South-East-Lincolnshire-Strategic-Flood-Risk-Assessment-Report-March-2017-including-guidance-on-applying-the-Sequential-Test-for-planning-applications/pdf/SE_Lincolnshire_SFRA_2017_v6.pdf?m=1607959961710 [Accessed 23 June 2025].

Ref 2.36 South Kesteven District Council (2020). The South Kesteven District Council Local Plan 2011-2036 [online]. Available at: https://www.southkesteven.gov.uk/sites/default/files/2023-08/Local_Plan_2011-2036_%28Final_inc_covers%29%20%281%29.pdf [Accessed 23 June 2025]

Ref 2.37 South Kesteven District Council (2025). Local Plan Review [online]. Available at: https://www.southkesteven.gov.uk/planning-building-control/planning-policy-local-plans/local-plan-review [Accessed 23 June 2025].

Ref 2.38 Leicestershire County Council (2022). Leicestershire County Council Strategic plan Refresh 2024-2026. [online] Available at: https://www.leicestershire.gov.uk/sites/default/files/2025-01/LCC-Strategic-Plan.pdf [Accessed 18 September 2025]

Ref 2.39 Leicestershire County Council (2019) Leicestershire Minerals and Waste Local Plan (Adopted September 2019). [online] Available at: https://www.leicestershire.gov.uk/sites/default/files/field/pdf/2019/10/3/Leicestershire-Minerals-and-Waste-Local-Plan-Up-to-2031-Adopted-2019.pdf [Accessed 18 September 2025].

Ref 2.40 Melton District Council (2018). Melton Local Plan 2011-2036 [online]. Available at: https://www.meltonplan.co.uk/adoptedplan [Accessed 23 June 2025]

Ref 2.41 Melton District Council (2025). Melton Local Plan Partial Update [online]. Available at: https://www.meltonplan.co.uk/localplanupdate/pre-submission [Accessed 23 June 2025]

Ref 2.42 Harborough District Council (2019). Harborough Local Plan 2011-2031 [online]. Available at: https://www.harborough.gov.uk/downloads/file/5714/harborough_local_plan_2011-2031_-_adopted_april_2019 [Accessed 23 June 2025]

Ref 2.43 Harborough District Council (2019). Harborough New Local Plan [online]. Available at: https://www.harborough.gov.uk/info/20004/planning_strategy/528/new_local_plan [Accessed 23 June 2025]

Ref 2.44 Leicestershire County Council (2019). Leicestershire Minerals and Waste Local Plan [online]. Available at: https://www.leicestershire.gov.uk/sites/default/files/field/pdf/2019/10/3/Leicestershire-Minerals-and-Waste-Local-Plan-Up-to-2031-Adopted-2019.pdf [Accessed 23 June 2025]

Ref 2.45 North Northamptonshire Council (2016). Joint Core Strategy 2011 – 2031 [online]. Available at: https://www.northnorthants.gov.uk/planning-strategies-and-plans/north-northamptonshire-local-plan [Accessed 23 June 2025]

Ref 2.46 North Northamptonshire Council (2016). Joint Core Strategy - Part 2 Local Plans [online]. Available at: https://www.northnorthants.gov.uk/planning-strategies-and-plans

Ref 2.47 Northamptonshire Council (2017). Adopted Minerals and Waste Local Plan [online]. Available at: Adopted Minerals and Waste Local Plan | North Northamptonshire Council [Accessed 23 June 2025]

Ref 2.48 North Northamptonshire Council (2025). Local Development Scheme 2025 to 2027 [online]. Available at: Local Development Scheme 2025 to 2027 | North Northamptonshire Council [Accessed 23 June 2025]

Ref 2.49 West Northamptonshire Council (2014). West Northamptonshire Joint Core Strategy Local Plan (Part 1) [online]. Available at: West Northamptonshire Joint Core Strategy Local Plan (Part 1) | West Northamptonshire Council [Accessed 23 June 2025]

Ref 2.50 West Northamptonshire Council (2025). New Local Plan for West Northamptonshire [online]/ Available at: New Local Plan for West Northamptonshire | West Northamptonshire Council [Accessed 23 June 2025].

Ref 2.51 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 15 April 2024].

Ref 2.52 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 23 March 2024].

Ref 2.53 National Grid (2022) Approach to Consenting (April 2022) [online]. Available at: https://www.nationalgrid.com/electricity-transmission/document/142336/download [Accessed 07 May 2024].

3. Main Alternatives Considered

nationalgrid

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3. Main Alternatives Considered

3.1 Introduction

3.1.1 As required by Regulation 14(d) in conjunction with Schedule 4, paragraph 2 of The Infrastructure Planning (Environmental Impact Assessment (EIA)) Regulations 2017 (Ref 3.1), the Environmental Statement (ES) will include a description of reasonable alternatives studied by the promotor and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects. While there is no statutory requirement to include an assessment of alternatives in support of a request for a Scoping Opinion, the Planning Inspectorate's Advice Note Seven: Environmental Impact Assessment: process, preliminary environmental information and environmental statements (Ref 3.2) recommends that a Scoping Report includes "*an outline of the reasonable alternatives considered and the reasons for selecting the preferred option*".

3.1.2 The Project was originally recommended by the National Energy Systems Operator (NESO) as part of the Network Options Assessment (NOA) 2021/2022 Refresh (Ref 3.3) and subsequently recommended to proceed as critical enabling and wider works in the NESO Beyond 2030 report (Ref 3.4.) Following the identification of a strategic proposal, National Grid has been through an iterative options identification and selection process to determine the preferred option for the Project, which comprises the emerging preferred corridor on which the Scoping Boundary has been based (**Figure 1.2 Scoping Boundary**). A preliminary exercise has also identified where it might be more appropriate to site the Project within the emerging preferred corridor, the outcome of which is referred to as the "graduated swathe" (**Figure 3.7 Overhead Line Graduated Swathe**, **Figure 3.8 WMEL-A Substation Graduated Swathe** and **Figure 3.9 WMEL-B Substation Graduated Swathe**) comprising coloured shading of varying intensity to indicate areas more likely (darker colour) and less likely (lighter colour) to be the location of the proposed infrastructure.

3.1.3 The design process will continue up to the application for development consent in parallel with, and informed by, the EIA process and statutory consultation.

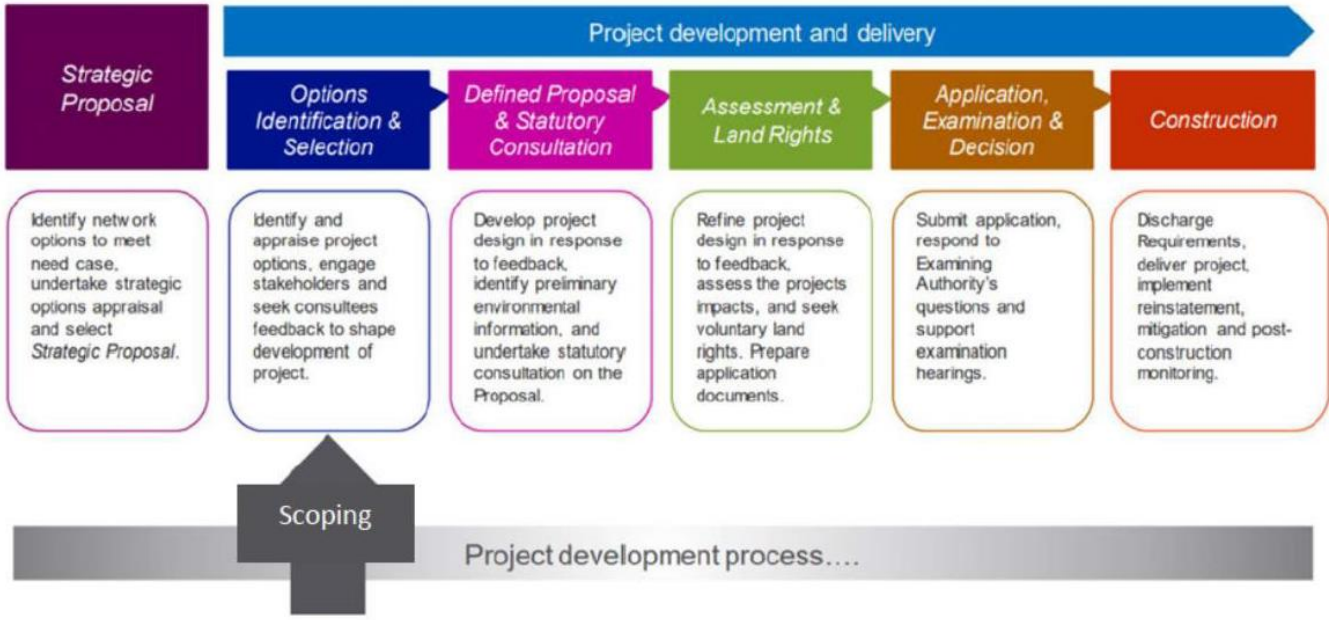
3.2 National Grid Approach to Options Identification and Selection

3.2.1 National Grid's Approach to Consenting (Ref 3.5) outlines the development process for major infrastructure projects, from initial inception to consent and construction. The approach is divided into the following six stages, as detailed on **Image 3.1** (Ref 3.5).

- Stage 1: Strategic Proposal;
- Stage 2: Options Identification and Selection;
- Stage 3: Defined Proposal and Statutory Consultation;
- Stage 4: Assessment and Land Rights;

- Stage 5: Application, Examination and Decision; and
- Stage 6: Construction.

Image 3.1 National Grid's Consenting Process (Our Approach to Consenting, National Grid, 2022)



3.2.2 National Grid undertakes option identification and selection for its individual projects. There are often a number of different ways that a project can be developed, involving different locations, technologies or designs. Each project requires judgements and decisions about the most appropriate way to achieve the required outcome. The options appraisal process provides information to help inform those judgements during the options identification and selection process.

3.2.3 Options appraisal is a robust and transparent process that is used to compare options and to assess the positive and negative effects they may have, across a wide range of criteria including environmental, socio-economic, technical, and cost factors. The aim is to determine a preferred option or options that can be consulted upon, taking into account National Grid's statutory duties, established policy and principles, and any other relevant information. Further details on the options identification and selection process can be found in Our Approach to Consenting (Ref 3.5).

3.2.4 At each stage in the options identification and selection process, transparent methods are used to inform the iterative decision-making and design development processes, including inputs from engineers and environmental consultants. Interim decision making takes into account feedback from prescribed bodies, as defined in the Planning Act 2008 (Ref 3.6), other stakeholders and the local community through an extensive programme of engagement and consultation. Such feedback continues to be taken into account throughout the process. In addition, the Project has been subject to periodic internal challenge and review to ensure the robustness of the decisions are made in the light of a changing environmental baseline related to technical, physical and economic matters.

3.2.5 Project decisions have considered National Grid's statutory obligations set out in Sections 9 and 38 of the Electricity Act 1989, its licence requirements, policy and guidance including the relevant National Planning Statements (NPSs) EN-1 and EN-5

and the Holford and Horlock Rules (Ref 3.7 and Ref 3.8), which provide industry-guidance on the routeing and siting of electricity transmission infrastructure, and all other relevant considerations.

3.2.6 The following sections provide a background to the Project and a summary of the alternatives that have been considered at each stage to date.

3.3 Background to the Project

3.3.1 The way we generate and consume electricity is changing, with more renewable energy being generated in Britain. Demand is also set to significantly increase as the way we power our homes, businesses, industry and transport changes. The fossil fuels which once powered our economy are being replaced with sources of low carbon energy i.e. offshore renewable generation helping to decarbonise our economy and providing homes and businesses with clean, secure and affordable energy. The UK is also sharing more power with countries using interconnectors, including across the North Sea. These factors are driving the need for change in the energy landscape across the UK and in particular, the east and East Midlands, where reinforcement of the network is required to meet this change.

3.3.2 The forecast growth in offshore wind capacity in Scotland and the north east of England, as well as interconnectors to European power grids, will put pressure on the existing network.

3.3.3 Therefore the reinforcement of the network in the Lincolnshire, Leicestershire, and Northamptonshire areas is essential to ensure optimal operation of the transmission network system and a reliable economic long-term supply.

3.4 Strategic Options Considered for the Project

3.4.1 National Grid Electricity Transmission (NGET) ('National Grid') (the owners of the transmission infrastructure and 'the Applicant') undertook a Strategic Options Review at the Strategic Proposal Stage (Stage 1) which identified the most advantageous strategic solution to bring forward. The Strategic Options Review is reported in the Strategic Options Report (SOR) (Ref 3.11) which describes the future network requirements and the options appraised to meet them. The consideration of strategic options was part of an iterative process in response to the interaction of a range of emerging energy projects.

3.4.2 As detailed in the SOR, there are three distinct issues that need to be resolved by system reinforcements:

- Provision of 5,793 MW of boundary capability to the B9 boundary[1].
- Provision of 6,930 MW capacity to the EC3 boundary.
- Connect the east to west corridors to alleviate power flow constraints in the east coast.

3.4.3 The SOR identified a long-list of technically feasible options which individually meet the need case set out in paragraph 3.4.2. The potential benefits of each technically

[1] B9 and EC3 boundaries refer to different areas of the transmission network owned and operated by National Grid.

feasible options were then considered, allowing focus on those that best meet the obligations to the environment and consumers.

3.4.4 The focussed list of strategic options was then taken forward for appraisal and evaluated across a range of environmental, socio-economic, and technical factors. Capital costs were identified for each option based on National Grid's recent market knowledge. Strategic options considered included onshore options as well as offshore options.

3.4.5 However, the offshore options were substantially more expensive than any of the onshore options and onshore options were therefore preferred. Additionally, offshore options increase constructability risk and require challenging maintenance compared to onshore as explained in more detail in paragraph 3.4.9 below.

3.4.6 The six options appraised within the SOR included:

- Walpole B to new Wymondley.
- Walpole B to new Wymondley (via Burwell).
- Weston Marsh/Walpole B to new Ryhall and Eaton Socon to Grendon to Sundon.
- Weston Marsh to new Market Harborough (via new Ryhall).
- Walpole B to Tilbury (subsea).
- Walpole B to Norwich.

3.4.7 The SOR appraisal identified Option 4, a new primarily overhead line connection between Weston Marsh to a new substation north of the existing Market Harborough substation (now referred to as WMEL-B) (via a new substation to the north of the existing Ryhall substation (now referred to as "WMEL-A")), as the emerging preferred option.

3.4.8 This option provides increased system flexibility due to the proposal to implement two circuits out of the new Weston Marsh and new Ryhall and mitigates the overloading of the Ryhall-Eaton Socon circuit under fault conditions.

3.4.9 The SOR considered the alternative technologies to deliver this connection including overhead line and underground cable. The summary of this appraisal's conclusions included:

- Overhead line provides greater opportunity to avoid sensitive receptors through careful routeing and siting e.g. designated sites, habitats, archaeology and built heritage assets, the water environment, and geology and soils.
- The option did not impact National Parks, National Landscapes, World Heritage Sites, therefore overhead line should be the starting assumption in accordance with NPS EN-5.
- Overhead line would normally be expected to offer the most economic, efficient, and co-ordinated development and would meet NGET's obligations under Section 9 of the Electricity Act.
- Overhead line is low risk in terms of construction complexity and standard construction and access techniques can be adopted for this option, as well as operation and maintenance. The same applies for the crossings that would be required for the roads and rail lines.

- Overhead line has the lowest capital and lifetime cost for new circuits.

3.5 Options Identification and Selection

3.5.1 Following identification of the Strategic Proposal, National Grid undertook a comprehensive appraisal of routing and siting options identified to deliver the strategic objectives as described and reported in the Corridor Preliminary Routeing and Siting Study (CPRSS) (Ref 3.12). This presents the findings of the Option Identification and Selection Stage which identified and assessed preliminary route corridors for the new overhead line, substation Siting Zones and Siting Areas, and concluded with the identification of an emerging preferred corridor and Siting Areas forming an end to end solution. This section summarises the approach to this stage and the key considerations in the identification and assessment of alternatives. For further detail, please refer to the CPRSS (Ref 3.12).

3.5.2 The NPS for Electricity Networks Infrastructure – EN-5 makes clear that that the Holford Rules should be followed by developers when designing their proposals for overhead lines. Paragraphs 2.9.20 to 2.9.21 state that, *"Although it is the government's position that overhead lines should be the strong starting presumption for electricity networks developments in general, this presumption is reversed when proposed developments will cross part of a nationally designated landscape (i.e., National Park, The Broads, or National Landscape). In these areas, and where harm to the landscape, visual amenity and natural beauty of these areas cannot feasibly be avoided by rerouteing overhead lines, the strong starting presumption will be that the applicant should underground the relevant section of the line."*

3.5.3 However, EN-5 paragraph 2.9.22 goes on to state that *"undergrounding will not be required where it is infeasible in engineering terms, or where the harm that it causes…is not outweighed by its corresponding landscape, visual amenity and natural beauty benefits. Regardless of the option, the scheme through its design, delivery, and operation, should seek to further the statutory purposes of the designated landscape. These enhancements may go beyond the mitigation measures needed to minimise the adverse effects of the scheme."*

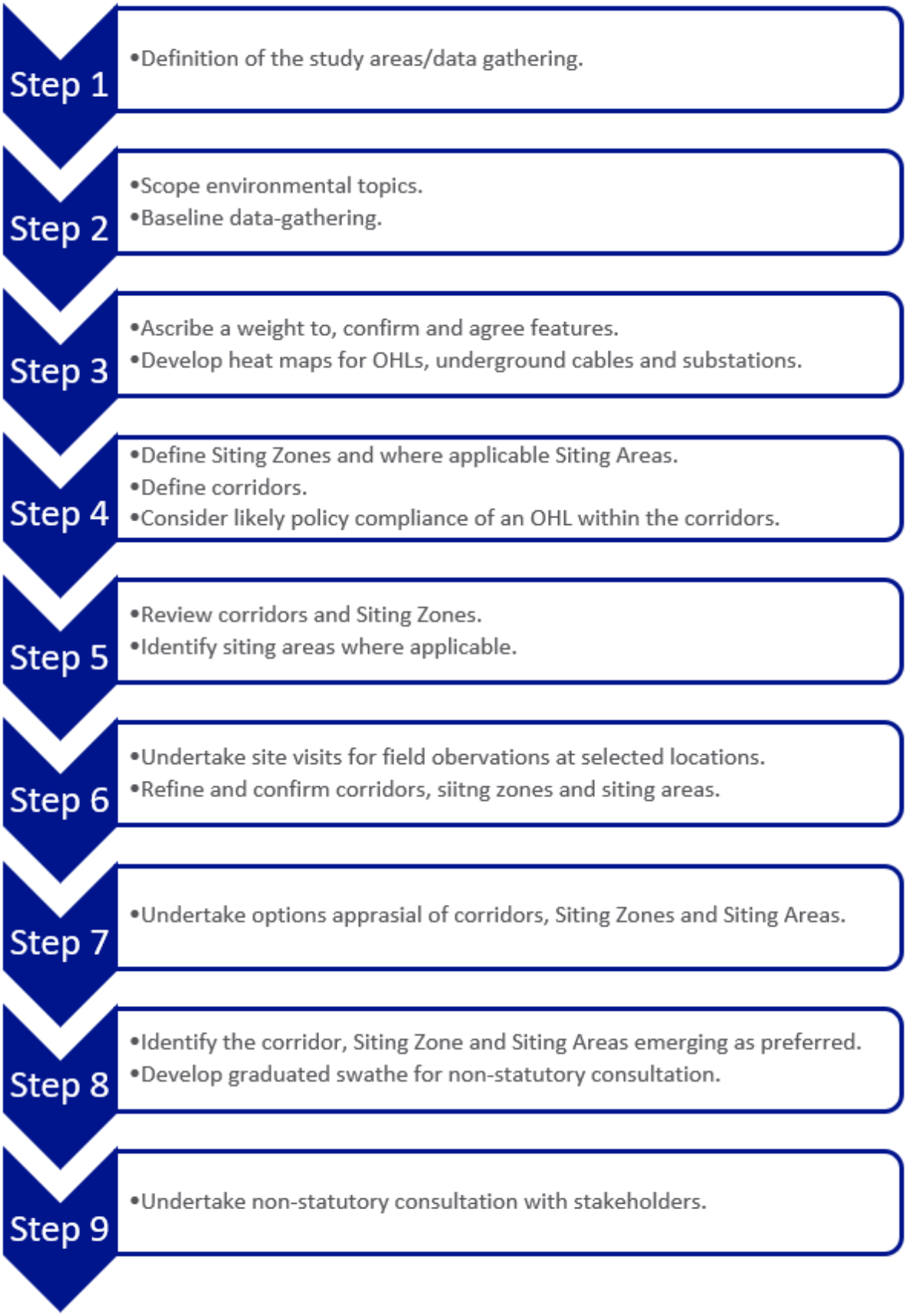
3.5.4 In accordance with NPS EN-5 as quoted above, undergrounding was not considered further at this stage of the Project as there are no nationally designated landscapes within the defined overhead line Study Area.

Overview of Approach to Routeing and Siting

3.5.5 The routeing and siting approach is a phased process which enables National Grid to make informed and proportionate decisions on the selection of corridors and allows possible route alignments to be further refined. This process allows for options to be appraised on a comparable basis, so that a preferred option can be identified and progressed.

3.5.6 The methodology employed included nine steps, as defined for this Project, for the Options Identification and Selection Stage as summarised in **Image 3.2**.

Image 3.2 CPRSS Methodology (Weston Marsh to East Leicestershire Corridor Preliminary Routeing and Siting Study, National Grid, 2025)



Study Area

3.5.7 The approach to developing the Study Area for the CPRSS was based on balancing National Grid's duty to develop an efficient, co-ordinated and economical system of transmission (Section 9 of the Electricity Act 1989), National Grid's environmental duties under Section 38 and Schedule 9 of the Electricity Act 1989, Holford Rule 1 (which is to *"avoid altogether, if possible, the major areas of highest amenity value, by so planning the general route of the first line in the first place, even if the total mileage is somewhat increased in consequence")* (Ref 3.7) and Horlock Rule 2 (which is to *"as far as reasonably practicable seek to avoid altogether internationally and nationally designated areas of the highest amenity, cultural or scientific value by the overall planning of the system connections"*) (Ref 3.8).

3.5.8 Given the geographical extent of the Project, four distinct but interrelated Study Areas were defined for the CPRSS. A Study Area for each component of the Project (new 400 kV overhead line connection, new WMEL-A Substation, new WMEL-B Substation, and reconductoring of existing overhead line) was identified through a five-phase process which is detailed in the CPRSS (Ref 3.12) and illustrated on **Figure 3.1 Routeing and Siting Study Area**. At that stage only alignment options for the new overheld line to connect into the Weston Marsh substations Siting Zone were considered; the Weston Marsh substation infrastructure, and consideration of alternatives at Weston Marsh, were only considered as part of the Grimsby to Walpole project.

Preliminary Corridors and Siting

Corridors, Segments, and Links

3.5.9 Five Preliminary Corridor options were identified in the CPRSS (Ref 3.12) within the overhead line Study Area, as illustrated on **Figure 3.2 Preliminary Corridors (Overhead lines).** The complex network of corridors were divided into 'segments,' with a series of connection 'links' to allow for a clear and comparative analysis.

3.5.10 Only two of the Preliminary Corridors provided a complete end-to-end solution, however the complexity of the network of corridors and links allowed many potential routes across them. Therefore, the corridors were divided into segments and links at locations where potential routes could follow multiple directions, which allowed parts of different corridors (the segments) to emerge as more or less preferred based on the environmental, socio-economic and technical criteria considered in the appraisal methodology.

3.5.11 The individual segments of the corridor were referenced with a segment number and a letter, e.g. Preliminary Corridor 1 segment a is known as Segment 1a.

3.5.12 The links were named according to the corridors they join with the prefix "L", e.g. L2-1 provides a Link from Preliminary Corridor 2 to Preliminary Corridor 1.

Identification of Siting Zones and Siting Areas

3.5.13 A Siting Zone is an area which has the capacity to accommodate multiple Siting Areas. A Siting Area is an area which has the capacity to accommodate the siting of a single substation.

3.5.14 The identification of the Siting Zones and Siting Areas takes into consideration the key drivers for each substation, the technical parameters and the relevant environmental and technical constraints identified.

3.5.15 In siting substations) areas that benefit from the below factors were identified:

- Appropriate topography.
- The availability of existing screening elements and the potential to introduce additional screening elements.
- Proximity to major roads, to minimise the extent of required new access roads.
- Outside of Flood Zones of a medium risk (Flood Zone 2) and high risk (Flood Zone 3), in line with the policy tests (sequential and exception tests) as set out in Section 5 of NPS EN-1.

3.5.16 Identification of the Siting Zones and Siting Areas was informed by the Horlock Rules (Ref 3.8) and Holford Rules (Ref 3.7) to take account of the combined effects of both the substations and the overhead line connections. The following guiding principles informed identification:

- Financially less-expensive options, both in terms of capital and lifetime cost, will generally be of benefit/advantage, as these support National Grid's statutory duty under Section 9 of the Electricity Act 1989 to develop and maintain an '*efficient, coordinated and economical' transmission network'.*
- Options which avoid or minimise and mitigate impacts on environmental or socio-economic features will generally be of benefit/advantage compared with those which would have likely significant residual effects, as less environmentally damaging or socially disruptive sites support National Grid's statutory duty under Schedule 9 of the Electricity Act 1989 to *'have regard to the desirability of preserving amenity', and will more readily achieve consent'.*

3.5.17 Once the corridors, Siting Zones and Siting Areas had been identified an options appraisal process was undertaken which considered environmental constraints, socio-economic factors, technical considerations, and cost.

3.5.18 The key drivers for the location of the WMEL-A and WMEL-B substations include:

- Minimised length and technical complexity of connections between the new substation and the existing overhead line it needs to connect to, minimising the quantity of diversion towers and potential impacts.
- Requirement for the new WMEL-A substation to connect to the new 60 km overhead line and the ZA[2] existing route. The substation footprint should be optimised to accommodate how the transmission line will terminate at the substation.

WMEL-A Substation

3.5.19 The Project proposes the construction of a new substation (known as 'WMEL-A') required to connect the new overhead line proposed as part of the Project, to the existing 400 kV 4VK overhead line (Cottam - Eaton Socon – Wymondley). An initial

[2] This is the National Grid code applied to identify each transmission line, ZA being the existing Cottam – Grendon – Staythorpe) overhead line.

Study Area of 2 km around the existing ZA overhead line was considered to identify potential constraints and areas that could accommodate a substation. The functional footprint of the substation, assuming that it is an Air Insulated Switchgear (AIS) substation, was assumed to be 720 m x 400 m to allow for appraisal of potential sites (see **Image 4.4** in Chapter 4 for an illustrative example of an AIS substation).

3.5.20 Potential Siting Zones were identified where Preliminary Corridors intersected the WMEL-A Study Area, resulting in four WMEL-A Siting Zones which were further considered in the Options Appraisal. From north to south these were:

- Siting Zone WMEL-AZ1;
- Siting Zone WMEL-AZ2;
- Siting Zone WMEL-AZ3; and
- Siting Zone WMEL-AZ4.

3.5.21 The WMEL-A Siting Zones and Siting Areas are illustrated within **Figure 3.3 WMEL-A Substation Siting Zones,** a full description of the Siting Zones can be found in Chapter 6 of the CPRSS (Ref 3.12).

WMEL-B Substation

3.5.22 The Project proposes the construction of a new substation (known as 'WMEL-B') required to connect the new overhead line proposed as part of the Project, to the existing ZA overhead line (Cottam - Grendon - Staythorpe). Potential Siting Zones were therefore identified where the Preliminary Corridors intersected the WMEL-B Study Area. The functional footprint was assumed to be the same as described above for WMEL-A.

3.5.23 Potential Siting Zones were identified where the Preliminary Corridors intersected the WMEL-B Study Area, resulting in three WMEL-B Siting Zones which were considered in the Options Appraisal. From north to south these were:

- Siting Zone WMEL-BZ1;
- Siting Zone WMEL-BZ2; and
- Siting Zone WMEL-BZ3.

3.5.24 The WMEL-B Siting Zones and Siting Areas are illustrated in **Figure 3.4 WMEL-B Substation Siting Zones**, a full description of the Siting Zones can be found in Chapter 6 of the CPRSS (Ref 3.12).

Conclusions from Appraisal of Preliminary Corridors and Substation Siting

3.5.25 From Preliminary Corridor 1, Segments 1a, 1b, 1c, 1d, 1e, 1f, 1g, L1-1a and L1-1b were progressed for further assessment as they presented constraints and opportunities and allow an end-to-end solution and routeing through to WMEL-AZ1, WMEL-BZ1 and WMEL-AZ2. Link L1(1-1) was not progressed as the utilisation of the Link would require a number of direction changes leading to an indirect route, which is not preferred under the Holford rules.

3.5.26 All of Preliminary Corridor 2 (Segments 2a, 2b, 2c, 2d, 2e, 2f, 2g, 2h and L2-1) was progressed for further assessment as they presented constraints and opportunities and allow an end-to-end solution and routeing through to WMEL-BZ1, WMEL-BZ2 and WMEL-AZ2.

3.5.27 From Preliminary Corridor 3, Segment 3d was retained to provide a potential link between Segments 2g and 4d, allowing for a potential Route Option to WMEL-BZ2. Segments 3a, 3b, 3c and L3-2 were discontinued from further consideration primarily owing to pinch points limiting direct routeing of the overhead line. Discontinuing these segments also discontinues WMEL-AZ3 from further consideration.

3.5.28 From Preliminary Corridor 4, Segments 4d and 4e were both progressed for further assessment as both presented opportunities for routeing through to WMEL-BZ2. Segment 4a was not progressed due to the presence of an internationally designated site (Baston Fens SAC) and an airfield limiting routeing options, and poor ground conditions. Link L4-3 was not progressed due to priority broadleaved woodland and residential settlement complicating routeing, and as Segments 3b, 3c and Link L3-2 were not progressed, no end-to-end solution is available utilising the Link. Segment 4b was not progressed due to the presence of the consented EN010127 - Mallard Pass Solar Farm constraining Route Options and access. Segment 4c was not progressed as it would require crossing Exton Park Registered Park and Garden (RPG) and the proximity to Rutland Water Special Protection Area (SPA) and Ramsar site, internationally designated for its bird population. Although Segments 4a, 4b and 4c were not progressed, WMEL-BZ2 has been progressed for further assessment as there is still an opportunity to form an end-to-end solution via Segments 2g, 3d, 4d and 4e. As Segment 4c was not progressed, WMEL-AZ4 was not progressed for further assessment.

3.5.29 From Preliminary Corridor 5, Segment 5a was discontinued due to the required crossing of the 400 kV overhead lines and numerous other overhead lines, and the interaction with the proposed new Grimsby to Walpole 400 kV overhead line. Segment 5b was also discontinued due to the proximity of Rutland Water SPA/Ramsar/SSSI, residential properties, heritage assets, and greater potential for landscape and visual impacts as a result of topography and recreational routes, compared to other options. Siting Zone WMEL-BZ3 is constrained by high and steep topography, impacting transport and access, landscape and visual receptors. In addition, discounting Segments 5a and 5b means there is no end-to-end solution to connect to WMEL-BZ3 therefore this Siting Zone was discounted from further appraisal.

Route Options

3.5.30 Following the appraisal of the Preliminary Corridors and Siting Zones, the corridor Segments and Links emerging as preferred could then be combined to form end-to-end Route Options taking account of the siting of substations, as illustrated in **Figure 3.5 Route Options** and described in Chapter 7 of the CPRSS (Ref 3.12).

3.5.31 The Route Options were numbered one to five, from north to south of the Study Area these were:

- Route Option 1;
- Route Option 2;
- Route Option 3;
- Route Option 4; and
- Route Option 5.

3.5.32 The Route Options were then further reviewed by National Grid, engineers, and environmental and socio-economic specialists, to confirm their technical feasibility and ensure that key issues, and the interaction of constraints, had been fully considered.

Option Selection

3.5.33 As described in Chapter 9 of the CPRSS (Ref 3.12), the route was spilt into three sections to allow closer scrutiny and appraisal across the options when approached in a sequential manner routeing east to west, and the overall Route Options and substation locations in the end-to-end solution. The sections are shown in **Figure 3.6 Comparative Appraisal Sections** and were titled:

- Section 1 – Consider the Route Options between Weston Marsh and Rippendale/Haconby
- Section 2 – Consider the Route Options between Rippendale/Haconby and Buckminster/Sewstern, and Substation Siting Zones WMEL-AZ1 and WMEL-AZ2
- Section 3 – Consider the Route Options between Buckminster/Sewstern to the existing 400kV ZA overhead line, and Substation Siting Zones WMEL-BZ1 and WMEL-BZ2.

Section 1 Weston Marsh to Rippendale/Haconby

3.5.34 Section 1 in the CPRSS considered the following route options between the proposed Weston Marsh substation infrastructure and the area around the settlements of Rippendale and Haconby:

- Route Option 1 and 2 (Segments 1a,1b, and 1c); and
- Route Option 3, 4 and 5 (Segments 2a, 2b, 2c).

3.5.35 Route Options 1 and 2 would result in converging routes with the existing 400 kV 4ZM (Bicker Fen-Walpole) overhead line. The need for multiple angle towers here would result in cumulative landscape and visual impacts as well as complex infrastructure interactions and diversions due to the existing converging overhead lines.

3.5.36 Route Options 3, 4 and 5 were preferred primarily as they avoid the existing 400 kV 4ZM overhead line and other NSIPs located north and south of Weston Marsh. These Route Options provide a more direct route and are less constrained by residential and agricultural properties resulting in fewer/lower potential visual impacts.

Section 2 Rippendale/Haconby to Buckminster/Sewstern

3.5.37 Section 2 in the CPRSS considered the following route options and Siting Zones from the area around the settlements of Rippendale and Haconby to the area around the settlements of Buckminster and Sewstern:

- Route Option 1 (Segments 1d,1e, and 1f);
- Route Option 2 (L1-1a and l1-1b and Segment 1f);
- Route Option 3, 4 and 5 (Segments 2d, and 2e); and
- Siting Zone WMEL-AZ1 and WMEL-AZ2.

3.5.38 Segments 1d, 1e and 1f were not preferred due to the presence of an additional NSIP, the complexity of crossing the A1 and ECML near Great Ponton, and the presence of aviation constraints. Links L1-1a and L1-1b were not progressed due to the technical complexities of the A1/B6403 crossing, the presence of artificial ground near the crossing, and the greater number of ancient woodland and priority broadleaved blocks.

3.5.39 Segments 2d and 2e were preferred primarily as they avoid other NSIPs, complex highway crossings, and alignment can avoid aviation constraints. These segments provide a more direct route and are less constrained.

3.5.40 Siting Zone WMEL-AZ1 was not preferred due to the environmental and technical challenges associated with the tight grouping of the ECML, existing 400 kV overhead line and the River Witham constraining the Siting Zone. WMEL-AZ1 is further constrained by residential settlements limiting access to main roads. Siting Zone WMEL-AZ2 was preferred and progressed as it is considered to have fewer environmental and technical constraints.

Section 3 Buckminster/Sewstern to ZA Overhead Line

3.5.41 Section 3 in the CPRSS considered the following segments and substation Siting Zones from the area around the settlements of Buckminster and Sewstern to the existing 400kV ZA (Cottam – Grendon – Staythorpe) overhead line:

- Route Option 2 (L2-1);
- Route Option 1, 2 and 3 (Segment 1g);
- Route Option 4 (Segments 2f, 2g and 2h);
- Route Option 5 (Segments 2f, 2g, 3d, 4d and 4e); and
- Siting Zone WMEL-BZ1 and WMEL-BZ2.

3.5.42 Segment 2f was not preferred due to the presence of the Birmingham to Peterborough rail line which would require an additional complex rail line crossing. Segments 4d and 4e were not preferred due to the presence of extensive moderate to steep slopes which would be likely to create pinch points and constructability constraints.

3.5.43 Link L2-1 and Segment 1g were preferred as the routeing would be the most direct, reducing the need for multiple angle towers and minimising landscape and visual impact. This segment also does not require an additional rail line crossing, which would further reduce technical complexity.

3.5.44 WMEL-BZ2 is not the preferred zone for the new substation due to the elevation, changes in gradient and presence of heritage features constraining the Siting Zone. Siting Zone WMEL-BZ1 was preferred and progressed as it is considered to have fewer environmental and technical constraints regarding elevation, slope gradient, and heritage features.

WMEL-A Siting Comparative Appraisal

3.5.45 Within Siting Zone WMEL-AZ2, Siting Area WMEL-AZ2.C was determined preferable with regard to landscape character and visual amenity, heritage, technical, and traffic and transport constraints. The other options were likely to result in greater adverse

impacts associated with nearby residential properties, heritage features, rail infrastructure and Public Rights of Way (PRoWs).

WMEL-B Siting Comparative Appraisal

3.5.46 Within Siting Zone WMEL-BZ1, Siting Area WMEL-BZ1.B was determined preferable with regard to landscape character and visual amenity, heritage, technical and traffic and transport constraints. The other options were likely to result in greater adverse impacts associated with nearby residential properties, heritage features, and PRoWs.

New Weston Marsh substation infrastructure

3.5.47 The new Weston Marsh substation infrastructure was considered in the optioneering process and technical appraisal of the Grimsby to Walpole project CPRSS (Ref 3.13) and may potentially be included in this Project. For the purpose of siting, the functional footprint of a Weston Marsh substation, assuming AIS, was up to 700 m by 200 m.

3.5.48 The identification of potential siting zones was driven by the presence of scattered residential properties, blocks of woodland, a dense drainage network, and proximity to the Spalding Tee-Point. Taking these factors into consideration four Siting Zones were identified. From west to east these were:

- Siting Zone WMZ1;
- Siting Zone WMZ2;
- Siting Zone WMZ3; and
- Siting Zone WMZ4.

3.5.49 A detailed description of the four Siting Zones, including how Siting Zones WMZ2 and WMZ3 were identified as the emerging preferences can be found in Chapter 11 of the Grimsby to Walpole CPRSS (Ref 3.13). These were further refined as part of the Stage 2 statutory consultation for the Grimsby to Walpole project and referenced as the Refined Weston Marsh Substation Siting Zone. As part of the Grimsby to Walpole project, National Grid will undertake further targeted Stage 2 consultation on Weston Marsh substation infrastructure (including publication of preliminary environmental information) at a future date when further design work has been completed.

3.5.50 The main alternatives considered in relation to the Weston Marsh substation(s) will be detailed in the ES for this Project.

Conclusions from Option Selection

3.5.51 In summary, Route Option 3 was identified as the emerging preferred corridor and consists of Segments 2a, 2b, 2c, 2d, 2e, L2-1, and Segment 1g. Siting area WMEL-BZ1.B, and Siting Area WMEL-AZ2.C were identified as the emerging preferred Siting Areas. An overview of the preferred end-to-end solution including the emerging preferred substation Siting Areas for WMEL-A and WMEL-B can be found in **Figure 3.10 End to End Solution**. This does not include the Refined Siting Zone for the Weston Marsh substation infrastructure, which can be seen added to the eastern end of the corridor, to the north east of Spalding, in **Figure 1.2 Scoping Boundary**.

3.6 Development of Graduated Swathe

3.6.1 Following the selection of the emerging preferred corridor, preferred Siting Zones and preferred Siting Areas, a preliminary design exercise was undertaken to identify where it may be more appropriate to locate the required infrastructure within the corridor (based on the information understood about the emerging preferred corridor option at the time of writing the CPRSS (Ref 3.12)). This exercise considered the Holford and Horlock Rules alongside features such as larger settlement areas, environmental and socio-economic constraints, and other technical and cost considerations. The outcome of this exercise is shown by a 'graduated swathe' – coloured shading of varying intensity to indicate areas more likely (darker colour) and less likely (lighter colour) to be the location of the proposed infrastructure.

3.6.2 The overhead line graduated swathe is illustrated in **Figure 3.7 Overhead Line Graduated Swathe.** For WMEL-A substation, this is illustrated in **Figure 3.8 WMEL-A Substation Graduated Swathe** and for WMEL-B substation in **Figure 3.9 WMEL-B Substation Graduated Swathe.**

3.6.3 The outcomes of the analysis, as depicted in the graduated swathe, may be subject to change as the design and consenting process continues, more information becomes available, surveys are undertaken, and the views of stakeholders and communities are considered.

3.6.4 Where there is more than one potential alignment option with the same probability of having infrastructure in part of the corridor, non-statutory consultation responses and further assessment can influence the final selection of the preferred alignment. The ES will describe the progression of the graduated swathe and how the Scoping Boundary has been refined to become the Order Limits for the application for development consent.

3.7 Development of the Scoping Boundary

3.7.1 A final preferred option for the alignment of the Project has not yet been confirmed. To retain flexibility, a Scoping Boundary has been defined based on the new overhead line emerging preferred corridor, the new Weston Marsh substation infrastructure Siting Zone, the new WMEL-A and WMEL-B substation preferred Siting Areas, and an assumed area around the existing ZA overhead line to allow for reconductoring works, see **Chapter 4 Description of the Project**. The Scoping Boundary aligns with the geographical extent of the emerging preferred corridor for new overhead line identified by the CPRSS (Ref 3.12) (described above in **Section 3.5** and shown in **Figure 3.10 End to End Solution**), combined with a 2 km area around the existing ZA overhead line for the proposed reconductoring, and the Weston Marsh substation infrastructure Siting Zone (for which options have to date been considered by the Grimsby to Walpole project).

3.7.2 The Scoping Boundary has been used to consider the potential environmental effects in determining the scope for the ES. The cut-outs from the Scoping Boundary include residential properties and ancient woodland which have been removed for the purposes of Scoping, therefore, no infrastructure will be located within/oversail these cut-outs.

References

Ref 3.1 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 [online]. Available at: https://www.legislation.gov.uk/uksi/2017/572/contents [Accessed 1 July 2025].

Ref 3.2 Planning Inspectorate. (2008). 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 1 July 2025].

Ref 3.3 National Grid Electricity Systems Operator (2022). Network Options Assessment 2021/22 Refresh [online]. Available at: https://www.nationalgrideso.com/document/262981/download [Accessed 1 July 2025].

Ref 3.4 ESO (2024). Beyond 2030 [online]. Available at: https://www.neso.energy/document/304756/download [Accessed 25 July 2025].

Ref 3.5 National Grid (2022). Our Approach to Consenting [online]. Available at: https://www.nationalgrid.com/electricity-transmission/document/142336/download [Accessed 1 July 2025].

Ref 3.6 The Planning Act 2008 [online]. Available at: https://www.legislation.gov.uk/ukpga/2008/29/contents [Accessed 1 July 2025].

Ref 3.7 National Grid (no date). Holford Rules [online]. Available at: https://www.nationalgrid.com/sites/default/files/documents/13795The%20Holford%20Rules.pdf. [Accessed 1 July 2025].

Ref 3.8 National Grid (no date). Horlock Rules [online]. Available at: https://www.nationalgrid.com/sites/default/files/documents/13796-The%20Horlock%20Rules.pdf. [Accessed 1 July 2025].

Ref 3.9 National Grid Electricity Systems Operator (2023). Future Energy Scenarios [online] Available at: https://www.nationalgrideso.com/document/283101/download [Accessed 1 July 2025].

Ref 3.10 National Grid Electricity Systems Operator (2022). Electricity Ten Year Statement [online] Available at: https://www.nationalgrideso.com/document/275611/download. [Accessed 1 July 2025].

Ref 3.11 National Grid (2025). Strategic Options Report [online]. Available at: https://www.nationalgrid.com/document/561311/download [Accessed 25 July 2025].

Ref 3.12 National Grid (2025) Weston Marsh to East Leicestershire Corridor Preliminary Routeing and Siting Study. [online] Available at: https://www.nationalgrid.com/document/561431/download [Accessed 14 July 2025].

Ref 3.13 National Grid (2024) Grimsby to Walpole Corridor Preliminary Routeing and Siting Study. [online] Available at: https://www.nationalgrid.com/document/352621/download [Accessed 18 September 2025].

4. Description of the Project

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4. Description of the Project

4.1 Introduction

4.1.1 This chapter provides a description of the Project and an outline of key activities that would be undertaken during construction, operation, and decommissioning.

4.1.2 The area of land presented in **Figure 1.2 Scoping Boundary** is the Scoping Boundary which is the subject of this Environment Impact Assessment (EIA) Scoping Report. The Scoping Boundary is based on the new overhead line emerging preferred corridor, the new Weston Marsh substation infrastructure Siting Zone, the new WMEL-A and WMEL-B substation preferred Siting Areas, and an assumed area around the existing ZA overhead line to allow for reconductoring works. The proposed infrastructure has all been the subject of consultation prior to the date of this Scoping Report. The Scoping Boundary comprises of land identified, at this stage of the Project development and design process, as potentially being required to construct, operate and decommission the Project, within which the final alignment will be developed. The area cut outs have been removed from the Scoping Boundary for the purposes of Scoping and typically include constraints to be avoided such a residential properties and ancient woodland. No project infrastructure is intended to be located within those cut-outs, which were also presented at non-statutory consultation.

4.1.3 The alignment of the Project, location of construction compounds and haul road(s) are not available at this stage as they are still under development. Feedback from the non-statutory consultation is currently being processed and may result in changes to the design of the Project. Therefore, the Scoping Boundary has been used to inform the scope of the Environmental Statement (ES) proposed in this Scoping Report. The Scoping Boundary covers the maximum extent of where infrastructure could be located and is presented on **Figure 1.2 Scoping Boundary**. The Study Area as defined by each technical discipline reflects the area where significant effects are likely to occur from the construction and operation of the infrastructure located within the Scoping Boundary.

4.1.4 For the purposes of scoping, the Scoping Boundary allows sufficient area for flexibility in design. The Scoping Boundary will be refined through the development of the Project and will take account of:

- ongoing technical and design development;
- environmental surveys and assessment; and
- feedback received through stakeholder engagement.

4.1.5 A more detailed description of the Project will be presented in the Preliminary Environmental Information Report (PEIR) and subsequently the ES which will accompany the application for development consent .

4.1.6 This chapter sets out the evolving description of the Project and has been split into the following sections, which provide:

- an overview of the Project;

- a description of the Project from east to west (new overhead line) and north to south (reconductoring);
- an overview of project design principles and design mitigation measures;
- an overview of the planning policy relevant to the Project design;
- an overview of the proposed infrastructure of the Project;
- the construction methods that are outlined for installing the infrastructure associated with the Project;
- operation and maintenance requirements; and
- how the Project is proposed to be decommissioned, if required.

4.2 Project Overview

4.2.1 The Project, a Critical National Priority (CNP), directly supports the delivery of the UK Government's energy objectives and plays an important role in building a more secure and resilient energy future by reinforcing the electricity transmission system and enabling renewable energy onto the National Electricity Grid transmission network.

4.2.2 It forms part of a major programme of reinforcement of the electricity transmission system to accommodate major increases in north-south power flows, helping take power generated from renewable sources (especially from offshore wind) to areas of consumer demand across the UK. This would be achieved by reinforcing the national transmission network with a new 400 kilovolt (kV) electricity overhead transmission line over a distance of approximately 60 kilometres (km) starting from the new 400 kV Weston Marsh substation infrastructure and ending at a new 400 kV substation in East Leicestershire.

4.2.3 The Project, which this EIA Scoping Report covers, is at an early stage of development, but is expected to include the following elements:

- Approximately 60 km of new 400 kV overhead transmission line.
- A new 400 kV substation to be built in the vicinity of the existing 4VK (Cottam – Wymondley) 400 kV overhead line near Corby Glen, South Kesteven (to be referred to as WMEL-A).
- A new 400 kV substation to be built in the vicinity of the existing ZA (Cottam – Sundon) 400 kV overhead line near Ab Kettleby, Melton (to be referred to as WMEL-B).
- Reconductoring of approximately 66 km of the existing ZA 400 kV overhead line from WMEL-B to the existing Grendon substation. Routeing and siting appraisal (as reported in the CPRSS) has led to an increase in reconductoring from 55km to the current 66km, due to a change in the initial estimated location of WMEL-B substation (on the existing ZA circuit also referred to as WMEL BZ2 in the CPRSS) near Ab Kettleby, approximately 10km further north along the existing ZA circuit (WMEL-B siting in CPRSS).
- Replacement of short sections of existing 400 kV overhead line and local changes to the lower voltage distribution networks to facilitate the construction of the new overhead line and substations.

4.2.4 The Project may potentially include new substation infrastructure and associated connections, including up to two new 400 kV substations to be built to connect to the

existing 400 kV 4ZM transmission line that runs south east of Sleaford towards King's Lynn, and the existing 400 kV 2WS transmission line that runs east of Spalding towards a Tee-Point with the 400 kV 4ZM transmission line between Sleaford and King's Lynn (to be referred to as Weston Marsh substation infrastructure) [1].

[1] The Weston Marsh substation infrastructure is currently being developed by the Grimsby to Walpole Project, also being promoted by National Grid. The works have been included in this Scoping Report to ensure that all receptors and potentially significant effects resulting from the Project are identified as the consenting strategy for the infrastructure is developed and confirmed.

4.3 Description of each section within the Scoping Boundary

4.3.1 The location of the components of the Project including temporary working areas within the Scoping Boundary are not known at this stage.

4.3.2 The Scoping Boundary has therefore been selected to represent the potential area within which the components of the Project would be located.

4.3.3 For the purpose of scoping, the Project has been divided into five Sections based on the boundaries of the local authorities in which works would be required, including the new 400 kV overhead line, the new substations, and the reconductoring. The five Sections are described in **Table 4.1** and shown in **Figure 1.2**.

Table 4.1 Description of principle features within the Scoping Boundary east to west by Section

Section Name	Local Authority	County Authority	Project Proposals and Approximate Section Length	Description of Principal Features within the Section
Section 1	South Holland	Lincolnshire	The Scoping Boundary within this Section comprises of the new Weston Marsh substation infrastructure and approximately 11 km of new overhead line from the new Weston Marsh substation infrastructure to South Forty Foot Drain.	As shown in **Figure 1.2** Sheet 1 this Section runs in a predominately westerly direction from the new Weston Marsh substation infrastructure to South Forty Foot Drain. The Section falls within The Fens National Character Area (NCA) and is characterised by a flat low-lying topography and productive arable land use. It is a large scale and predominantly open landscape, divided by linear ditches and drains and occasional linear tree belts along field boundaries. This is a relatively well settled landscape consisting largely of dispersed clusters and individual properties. The closest town is Spalding, with the villages of Surfleet, Crossgate, Pinchbeck and Northgate adjacent to the Scoping Boundary. There are a number of waterbodies in this Section including the River Welland, Vernatt's Drain, River Glen, South Forty Foot Drain and numerous unnamed ordinary watercourses. The western 2km of the Section is located on two areas of Source Protection Zone (SPZ) 1 – Inner Protection Zone, surrounded by SPZ 2 – Outer Protection Zone and SPZ 3 – Total Catchment which share the same boundaries. The majority of the Section falls within Flood Zones 2 and 3. Principle transport links present include the A16, B1172 and the Peterborough to Lincoln rail line. Within the Section there are several footpaths, bridleways and local access roads that provide links between rural dwellings and villages. Environmental features include The Wash Ramsar and Special Protection Area (SPA) and The Wash and North Norfolk Coast Special Area of Conservation (SAC) located 7.6km north east of the Section and are hydrologically connected via the River Welland and Vernatt's drain. Baston Fen SAC: Inland waterbody is located

Section Name	Local Authority	County Authority	Project Proposals and Approximate Section Length	Description of Principal Features within the Section
				7.6km south and hydrologically connected via the South Forty Foot drain and River Glen. Wykeham Chapel scheduled monument, Moated site of monastic grange with adjacent earthworks at Rigbolt House scheduled monument, and Moated site of Newhall Grange scheduled monument are within or adjacent to the Section. Listed buildings are also within the Section.
Section 2	South Kesteven	Lincolnshire	The Scoping Boundary within this Section comprises of new overhead line from South Forty Foot Drain to WMEL-A 400 kV substation, then new overhead line onward to The Drift road south of Sewstern. The approximate length of this section is 28 km.	As shown in **Figure 1.2** Sheet 2 this Section runs in a predominately westerly direction from the South Forty Foot Drain to the proposed WMEL-A substation, then onward to The Drift road and is approximately 28 km long. The east of the Section falls within The Fens NCA before transitioning into the Kesteven Uplands NCA which are broadly characterised by an undulating large-scale agricultural landscape. The topography is variable consisting of a series of low, broadly north south ridges and valleys, rising towards the west. The closest town is Bourne, with the villages of Dunsby, Haconby, Morton Stainfield, Hanthorpe, Morton, Bulby, Irnham, Swinstead, Corby Glen, Swayfield, North Witham and South Witham within or adjacent to the Section. There are a number of waterbodies in this Section including South Forty Foot Drain, Rippingale Running Dike, Car Dyke, Old Beck, East Glen River, West Glen River, River Witham and numerous unnamed ordinary watercourses. Most of the Section is located on SPZs, with SPZ 3 covering all of the Study Area other than a small area extending 5km west of Lobthorpe. SPZ 2 covers all the area east of Swayfield. Much of the eastern most 4km of the Section is covered by SPZ 1, this is in the area west of Haconby. Flood Zones 2 and 3 cover most of the eastern area, with further Flood Zones 2 and 3 present around the waterbodies noted above. Principle highways in the Section include the A15, A151 and A1. Other roads include the B1176. The East Coast Main Line (ECML)

Section Name	Local Authority	County Authority	Project Proposals and Approximate Section Length	Description of Principal Features within the Section
				rail line is also present. Within the Section there are several footpaths, bridleways and local access roads that provide links between rural dwellings and villages. Environmental features include the Baston Fen SAC: Inland waterbody located 7.6km south and hydrologically connected via the South Forty Foot drain. Dunsby Wood Site of Special Scientific Interest (SSSI), Swinstead Valley SSSI, The Hermitage SSSI, Tortoiseshell wood SSSI, and Porters Lodge Meadow SSSI are located adjacent to the Section. Ancient woodlands Breaches Wood, Norwood/West Wood, South Wood, Bitchneaves Wood, Dodey Wood, Elliots Wood, Herrico Wood, Beaumonth Wood, Mickley Wood, Battlebourn Head Wood are within the Section. Spring Wood, Callans Lane Woods, Thorney Wood, Dunsby Wood, Old Park Wood, Great Osgrove Wood, Little Osgrove Wood and Twyford Forest ancient woodlands are adjacent to the Section. Settlement between Rippingale Running Dike and Long Drove scheduled monument, The Hermitage moated site, 400 m north east of Corby Pasture Farm scheduled monument, Corby moated mound scheduled monument, the Remains of Knights Templar preceptory, watermill and fishponds scheduled monument, Grimsthorpe Castle Registered Park and Garden (RPG), and multiple listed buildings are encompassed by or adjacent to the Section.
Section 3	Melton	Leicestershire	The Scoping Boundary within this Section comprises approximately 19 km of new overhead line from	As shown in **Figure 1.2** Sheet 3 this Section runs in a predominately westerly direction from The Drift road to WMEL-B substation, then a southerly direction to an area near the B6047 south of Twyford and is approximately 32 km long. The east of the Section falls within the Kesteven Uplands NCA before transitioning to the Leicestershire and Nottinghamshire Wolds NCA in the west. The Leicestershire and Nottinghamshire

Section Name	Local Authority	County Authority	Project Proposals and Approximate Section Length	Description of Principal Features within the Section
			The Drift road to WMEL-B 400 kV substation. Reconductoring of approximately 13 km of the existing 400 kV ZA overhead line will take place from WMEL-B to an area near the B6047 south of Twyford.	Wolds are characterised by undulating agricultural land with a variable sense of scale, openness and enclosure, influenced by topography, tree cover and field pattern. The southern extent of the Section falls within the High Leicestershire NCA and is characterised by rolling topography forming broad ridges and shallow valleys. This is a predominantly agricultural landscape with pasture on higher, sloping land and arable fields on lower, flatter areas. Tree cover is variable and largely confined to field boundaries and small woodlands. There is a variable sense of scale, largely related to the underlying field pattern. The closest town is Melton Mowbray, with the villages of Sewstern, Garthorpe, Holwell, Ab Kettleby, Wartnaby, Ashfordby, Frisby on the Wreake and Twyford within or adjacent to the Section. There are a number of waterbodies in this Section including the River Eye, Thorpe Brook, Scalford Brook, River Wreake, Gaddesby Brook and numerous unnamed ordinary watercourses. It also contains Flood Zones 2 and 3 around these waterbodies. Principle highways in the Section include the A607, A606, A6006 and A1. Other roads include the B676, B674, and B6047. The Melton Mowbray to Nottingham rail line, and Melton Mowbray to Leicester rail line are also present. Within the Section there are several footpaths, bridleways and local access roads that provide links between rural dwellings and villages. Environmental features include Cribbs Meadow SSSI, Holwell Mouth SSSI, Frisby Marsh SSSI which are within by or adjacent to the Section. Freeby Wood ancient woodland is also in this Section. Moated grange at Spinney Farm, Melton Mowbray scheduled monument, Moated site at Ab Kettleby scheduled monument, Kirby Bellars Priory scheduled monument, Garden, moat and five fishponds at Kirby Bellars scheduled monument, and multiple listed buildings are within or adjacent to the Section.

Section Name	Local Authority	County Authority	Project Proposals and Approximate Section Length	Description of Principal Features within the Section
Section 4	Harborough	Leicestershire	The Scoping Boundary within this Section comprises approximately 19 km of reconductoring of the existing 400 kV ZA overhead line from an area near the B6047 south of Twyford to the confluence of Langton Brook and the River Welland, south west of Welham.	As shown in **Figure 1.2** Sheet 4 this Section runs in a predominately southerly direction from an area near the B6047 south of Twyford to the confluence of Langton Brook and the River Welland, south west of Welham and is approximately 19 km long. The Section predominately falls within the High Leicestershire NCA. The closest town is Market Harborough with the villages of Marefield, Lowesby, Cold Newton, Tilton on the Hill, Halstead, Skeffington, Tugby, Rolleston, Noseley, Goadby, Glooston, Stonton Wyville, Cranoe, Slawston, Thorpe Langton, Wllham, Great Bowden, and Little Bowden within or adjacent to the Section. There are a number of waterbodies in this Section including the River Jordan and numerous unnamed ordinary watercourses. It also contains Flood Zones 2 and 3 around these waterbodies. Principle highways in the Section include the A47, A6, A4304 and A508. Other roads include the B6047. The Midland Main Railway Line is a railway route connecting London, Birmingham, Leicester, Nottingham and Shefield and passes through the southern end of this Section near Market Harborough. Within the Section there are several footpaths, bridleways and local access roads that provide links between rural dwellings and villages. Environmental features include Leighfield Forest SSSI and Great Bowden Borrowpit SSSI. Other features include Tilton Wood, Skeffington Wood, Crow Wood, Priest Hill, Brown's Wood, Hoothill Wood, Tugby Wood, Loddington Reddish, Rolleston Wood, Noseley Wood, Rough Spiney, Glooston Wood, and Staton Wood ancient woodland. North Marefield deserted medieval village and moated site scheduled monument, Lowesby deserted medieval village with three fishponds scheduled monument, Cold Newton shrunken medieval village and moated site scheduled monument, Roman villa 200m south of Station Cottages scheduled monument, Mound

Section Name	Local Authority	County Authority	Project Proposals and Approximate Section Length	Description of Principal Features within the Section
				220yds (200m) NNW of church scheduled monument, Churchyard cross, St Peter's churchyard scheduled monument, Moated site at Tilton scheduled monument, Churchyard cross in St John the Baptist's churchyard scheduled monument, Medieval village earthworks, fishponds and mill leat at Stonton scheduled monument, St Mary in Arden Church scheduled monument, Grade II Lowesby Hall RPG are within or adjacent to the Section. Lowesby conservation area, Tilton on the Hill conservation area, Skeffington conservation area, Tugby conservation area, Rolleston conservation area, Slawston conservation area, and multiple listed buildings are within the Section.
Section 5	North Northamptonshire and West Northamptonshire	North Northamptonshire and West Northamptonshire	The Scoping Boundary within this Section comprises Reconductoring of approximately 34 km of the existing 400 kV ZA overhead line from the confluence of Langton Brook and the River Welland, south west of Welham to the existing Grendon 400 kV substation.	As shown in **Figure 1.2** Sheet 5 this Section runs in a predominately southerly direction from the confluence of Langton Brook and the River Welland, south west of Welham to the existing Grendon 400 kV substation, and is approximately 34 km long. The Section falls within the Northamptonshire Vales NCA an open landscape of gently undulating clay ridges and valleys with occasional steep scarp slopes. There is an overall visual uniformity to the landscape and settlement pattern, with diverse levels of tranquillity, from busy urban areas to some deeply rural parts. Mixed agricultural regime of arable and pasture, with arable land tending to be on the broader, flat river terraces and smaller pastures on the slopes of many minor valleys and on more undulating ground. Relatively little woodland cover but with a timbered character derived largely from spinneys and copses on the ridges and more undulating land, and from waterside and hedgerow trees and hedgerows. A strong field pattern, with distinctive river valleys of the Welland and the Nene. The closest towns are Market Harborough and Wellingborough with the villages Weston by Welland, Sutton Basset, Dingley Braybrooke, Harrington, Orton, Loddington, Mawsley, Great

Section Name	Local Authority	County Authority	Project Proposals and Approximate Section Length	Description of Principal Features within the Section
				Cransley, Broughton, Pytchley, Orlingbury, Little Harrowden, Hardwick, Mears Ashby, Wilby, Great Doddington, Earls Barton, Castle Ashby and Grendon within or adjacent to the Section. There are a number of waterbodies in this Section including the River Welland, River Jordan, River Ise, Slade Brook, Swanspool Brook, River Nene and numerous unnamed ordinary watercourses. It also contains Flood Zones 2 and 3 around these waterbodies. Principle highways in the Section include the A427, A6, A14, A43, A509, A4500 and A45. Other roads include the B664, B574 and B573. The Market Harborough to Kettering rail line is also present. Within the Section there are several footpaths, bridleways and local access roads that provide links between rural dwellings and villages. Environmental features include the Upper Nene Valley Gravel Pits SPA and Ramsar which the existing ZA overhead line passes through. Other features within the Section comprise Cribbs Birch Spinney and Mawsley Marsh SSSI, Badsaddle Withmale Park and Bush Walk Woods SSSI, and Upper Nene Valley Gravel Pits SSSI. Faxton Corner, Mawsley Wood, Cransley Wood, Badsaddle Wood and Withmale Wood ancient woodlands is also encompassed by the Section. There are multiple listed buildings are within this Section, and the following scheduled monuments: • Braybrooke Bridge; • Braybrooke Castle: the remains of a medieval moated manor and medieval settlement remains; • Site of manor house; • Earls Barton motte castle;

Section Name	Local Authority	County Authority	Project Proposals and Approximate Section Length	Description of Principal Features within the Section
				• Roman villa 200m W of Doddington Mill; and • Medieval cross 170 m south west of Hall Farm.

4.4 Project Design Approach

Good Design Principles

4.4.1 The Project will be designed, constructed, maintained, operated and decommissioned in accordance with applicable health and safety legislation and regulations. The Project will comply with relevant design safety standards including the National Electricity Transmission System Security and Quality of Supply Standards (NETS SQSS) (Ref 4.1) which sets out the criteria and methodology for planning and operating the National Electricity Transmission System. National Grid policies and processes, which contain details on design standards required to be met when designing, constructing, maintaining, and operating assets such as those proposed on the Project, will be adhered to.

4.4.2 Design principles will be established, informed by National Infrastructure Commission (NIC) guidance (Ref 4.2 and Ref 4.1) and the Planning Inspectorate advice on Good Design (Ref 4.3) to inform the development of the Project design, both for construction and operation. Design principles set desirable design outcomes which the Project should endeavour to achieve, as far as is reasonably practicable, and facilitate an integrated design approach which draws together engineering, environment, sustainability and social value design considerations. Design principles ensure that these aspects are robustly addressed during the design, assurance and environmental assessment of the Project. Applying the design principles additionally helps to ensure that the Project meets the criteria in the relevant National Policy Statements (NPS), which are EN-1 (Ref 4.4), the Overarching National Policy Statement for energy and EN-5 (Ref 4.5), the National Policy Statement for electricity networks infrastructure.

4.4.3 The new section of the Project is currently being designed as an overhead line using the guidance provided in Section 2.9.20 in EN-5 (Ref 4.4): *"overhead lines should be the strong starting presumption for electricity networks developments in general, this presumption is reversed when proposed developments will cross part of a nationally designated landscape (i.e. National Park, The Broads, or Area of Outstanding Natural Beauty).".* As the Project does not cross any part of a nationally designated landscape there is presumption for overhead electricity lines.

4.4.4 The Project is being designed in accordance with The Holford Rules (Ref 4.6) which are mentioned in Sections 2.9.16 and 2.9.17 of EN-5 (Ref 4.5), as well as The Horlock Rules (Ref 4.7) which are also mentioned in EN-5 in Sections 2.9.18 and 2.9.19.

The Holford Rules

4.4.5 Paragraph 2.8.7 of the existing NPS EN-5 (Ref 4.6) makes clear "*that the Holford Rules, and any updates, form the basis for the approach to routeing new overhead lines*".

4.4.6 Whilst the guidelines were initially developed in 1959, they have been reviewed on a number of occasions by National Grid and by the other UK transmission licence holders. One of the reviews was against the Electricity Act 1989. The guidelines have

stood the test of time and have become accepted industry best practice in overhead line routeing.

The Horlock Rules

4.4.7 The Horlock Rules (Ref 4.7) predominately apply to the siting of substations and line approaches. The general principles underlying the Horlock Rules (Ref 4.7) are the avoidance of areas of high amenity and apply equally to the siting of Sealing End Compounds (SECs), although the balance of impacts and constraints will often be different.

4.4.8 As detailed above, the National Policy Statement for Electricity Networks Infrastructure (EN-5) (Ref 4.5) in paragraph 2.9.18 confirms that the Horlock Rules *"should be embodied in applicants' proposals for the infrastructure associated with new overhead lines"*.

4.5 Planning Policy

4.5.1 **Chapter 2 Regulatory and Planning Context** sets out the overarching policy relevant to the Project including NPS EN-1 (Ref 4.4) and EN-5 (Ref 4.5). Paragraph 4.7.1- 4.72 of EN-1 states:

'The visual appearance of a building, structure, or piece of infrastructure, and how it relates to the landscape it sits within, is sometimes considered to be the most important factor in good design. But high quality and inclusive design goes far beyond aesthetic considerations. The functionality of an object – be it a building or other type of infrastructure – including fitness for purpose and sustainability, is equally important.

Applying good design to energy projects should produce sustainable infrastructure sensitive to place, including impacts on heritage, efficient in the use of natural resources, including land-use, and energy used in their construction and operation, matched by an appearance that demonstrates good aesthetic as far as possible. It is acknowledged, however that the nature of energy infrastructure development will often limit the extent to which it can contribute to the enhancement of the quality of the area.'

4.5.2 Paragraph 2.4.3 of NPS EN-5 (Ref 4.5) states that the design principles set out in EN-1 should be considered by the Applicant however '*the Secretary of State should bear in mind that electricity networks infrastructure must in the first instance be safe and secure, and that the functional design constraints of safety and security may limit an applicant's ability to influence the aesthetic appearance of that infrastructure.'*

4.6 Design and control mitigation measures

4.6.1 National Grid's options appraisal process seeks to embed and mitigate environmental effects through route and site selection as part of the design process.

4.6.2 Sensitive routeing and siting is a principal design measure that has been embedded into the Project design since the start. This measure aims to avoid and reduce, as far as practicable, impacts on identified receptors and ensures compliance with NPS EN-1 (Ref 4.4) and NPS EN-5 (Ref 4.5) as well as The Holford (Ref 4.6) and Horlock Rules (Ref 4.7).

4.6.3 Another design measure that will be embedded into the Project is the selection of the most appropriate technology type which is currently under consideration.

Compliance with policy

4.6.4 The Project will be compliant with the guidelines and policies relating to transmission infrastructure stated in NPS EN-5 (Ref 4.5), and the International Commission on Non-Ionizing Radiation Protection (ICNIRP) guidelines (1998) (Ref 4.8), as well as adhering to National Grid design standards. Compliance with these guidelines ensures the Project is adhering to policies related to: biodiversity and geological conservation, landscape and visual, noise and vibration, Electromagnetic fields (EMF) and sulphur hexafluoride (SF_6).

4.6.5 The Project will also comply with design safety standards including NETS SQSS (Ref 4.1) and the suite of National Grid policies and processes which contain details on design standards required to be met when designing, constructing, and operating its projects.

4.6.6 Standard control and management measures would be implemented during construction of the Project to limit impacts through adherence to good site practices and achieving legal compliance. Such measures are detailed within **Appendix 4A Initial Outline Code of Construction Practice.**

Limits of Deviation

4.6.7 The ES will include the proposed locations of the Project infrastructure. However, as recognised by the Planning Inspectorate's Advice Note Nine (Ref 4.9), a necessary and proportionate degree of flexibility needs to be incorporated into the design of a development so that unforeseen issues encountered after a development has been consented can be addressed. In this instance, for example, previously unidentified poor ground conditions, or the identification of significant unrecorded archaeological remains, may require a tower to be re-sited. Therefore, to allow for this necessary and proportionate degree of flexibility, Limits of Deviation (LoD) will be developed for the Project components. The LoD would provide a maximum distance or measurement (horizontal and/or vertical) of variation within which every component of the Project would be located. All surveys and assessments will be of sufficient spatial scale to incorporate any LoD for all permanent infrastructure.

Approach to materials and waste

4.6.8 Delivery of the Project requires sourcing of materials for construction. These fall into the following broad categories:

- new materials required for the Project, such as galvanised steel for towers, reinforced concrete for the foundations, insulator sets (typically glass, porcelain or polymeric) and aluminium/copper conductors.
- recycled materials.
- temporary materials, such as aggregate for access routes and site compounds, works cabins and security fencing would be required during construction. Where practicable temporary materials would be sourced from other construction projects within the region and reused at other construction projects after completion of the Project.

4.6.9 The ES will include a description of the nature and quantity of the materials used, and information regarding the anticipated quantities and types of waste that will be produced during construction only, as operational waste and materials for an infrastructure project of this nature will be negligible and not quantifiable. This information will only be used to inform those assessments that consider waste generation and material consumption in their assessment methodology, for example, greenhouse gas calculations or vehicle trips used in traffic and transport, not warrant separate assessment of waste generated on waste infrastructure capacity or material supply chains, for the reasons set out below.

4.6.10 The material sources are unlikely to be identified until the detailed design stage of the Project, which would typically happen post consent. The nature of the Project means that it is difficult to use secondary sources during construction of the Project, as this can affect the operation and the design life of the Project. However, National Grid has existing processes in place to source materials from sustainable sources and to use recycled materials where these do not compromise the required design standards and operational life of the Project.

4.6.11 Waste materials would be produced by the Project. The contractor would be required to produce a Site Waste Management Plan (SWMP) prior to construction (commitment GG23 in **Appendix 4A Initial Outline Code of Construction Practice**). This would set out the measures to reduce the generation of waste in the first place and appropriate measures to reuse and recycle materials where practicable. It would also identify appropriate waste facilities to dispose of materials.

4.6.12 Soil may need to be removed from site in certain circumstances, such as where the soil was found to be contaminated, in which case, the soils would be managed in an appropriate manner, as set out in the good practice measures within **Appendix 4A Initial Outline Code of Construction Practice** and the future SWMP.

4.6.13 Where the Project crosses through mineral safeguarding areas, a standalone Minerals Assessment Report will be provided with the application for development consent to ensure compliance with policy on this matter. This will identify all safeguarded minerals and provide an appraisal of the effects of the Project against relevant minerals policy. However, the limited presence of minerals and nature of the Project, i.e. the small permanent footprint of towers (which can be micro sited with approximately 300 to 350 m between them) it is not likely to result in significant effects in EIA terms.

4.6.14 If an assessment of material and waste effects from a project of this type were to be carried out, it would be undertaken following Institute of Sustainability and Environmental Professionals (ISEP) (formally Institute of Environmental Management and Assessment (IEMA)) Guidance (Ref 4.10) and consider the potential material use against known supply chain availability, and the amount of waste produced against the likely impact on landfill void capacity. However, given the limited amounts of waste produced and measures to reduce and manage it, and the landfill capacity across the counties and region over which the Project will be delivered, it is unlikely that any assessment would identify a likely significant effect. Material supplies are typically readily available and/or planned well in advance across the Great Grid Programme (GGP), therefore, it is also unlikely that any assessment would identity significant impacts on the availability of materials.

4.6.15 Therefore, waste and materials are proposed to be **scoped out** of further assessment and will not be considered further in the ES. This approach and scope

has been accepted on recent examples of similar National Grid overhead line projects for which Scoping Opinions have been adopted.

Approach to energy consumption

4.6.16 The Project aims to support the UK's transition to Net Zero emissions by 2050. As outlined in **Chapter 3 Main Alternatives Considered**, National Grid has a statutory duty to develop and maintain an efficient, coordinated, and economical electricity transmission system. Therefore, the Project would contribute to supporting the UK's Net Zero transition. Notwithstanding the role of the Project in achieving the UK's Net Zero transition, it will result in energy consumption during construction.

4.6.17 The Project would consume energy during manufacture and construction. The Project will consider a range of measures to reduce energy consumption during construction, such as the use of energy efficient plant and tools. The Project will aim to use local grid connections for temporary site power, where viable. Where not viable an alternative sustainable option should be used, such as appropriately sized alternatively fuelled or hybrid generators, where practicable.

4.6.18 An outline Construction Traffic Management Plan (CTMP) will be submitted with the ES which will set out measures to reduce journeys and hence energy consumption from those journeys, such as car sharing and using public transport where practicable. It will also set out commitments regarding using electric vehicles or vehicles conforming with emission standards ratings (see commitment TT01 and TT02 in **Appendix 4A Initial Outline Code of Construction Practice**).

4.6.19 Energy consumption during maintenance and operation would be limited to the energy required to maintain and operate the Project and transmission losses. National Grid also has existing processes in place to monitor its energy consumption across the network. If consented, the operational energy requirements would be managed as part of the wider network operation.

4.6.20 The measures outlined above would reduce the energy consumption of the Project during both construction and operation in line with the good design principles.

4.7 Project Components

Overhead Line

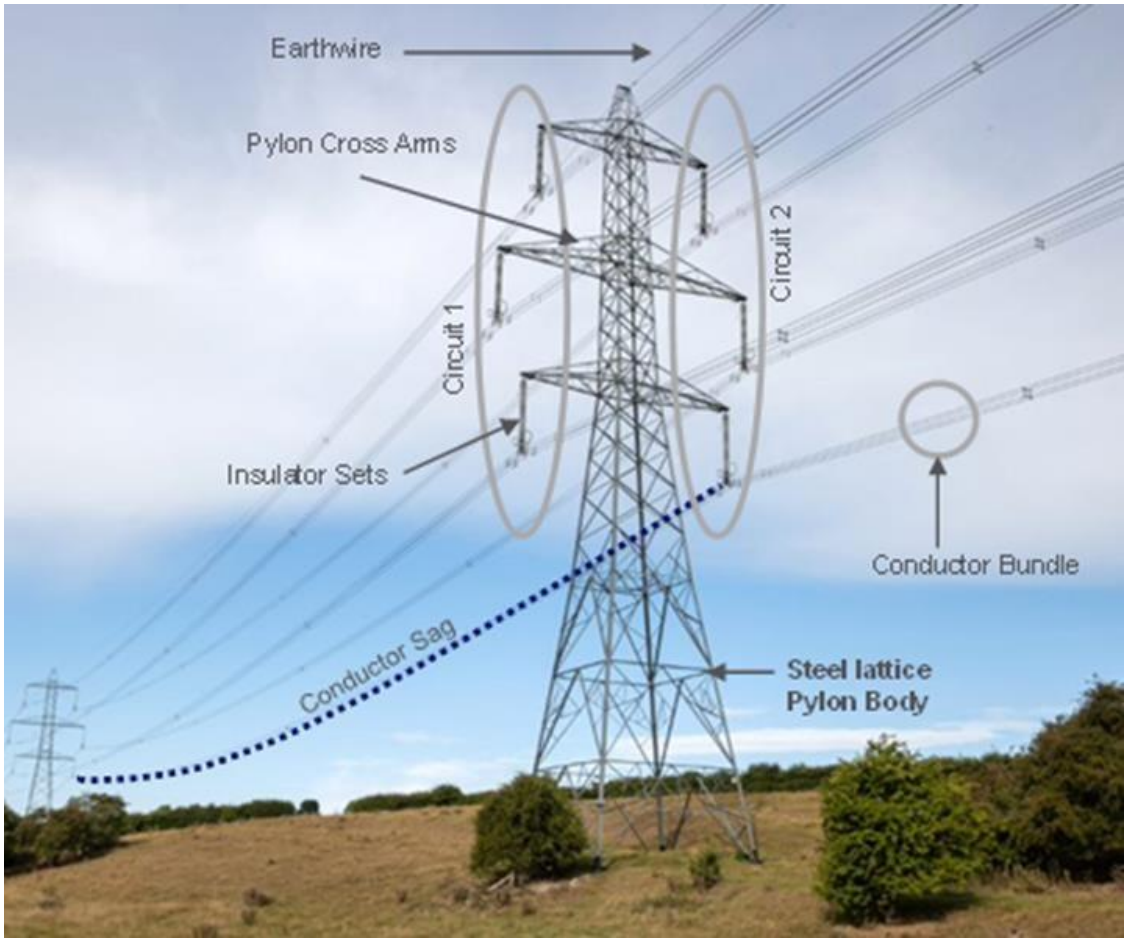
4.7.1 It is an assumption under paragraph 2.9.20 of NPS EN-5 (Ref 4.5) that "*overhead lines should be the strong starting presumption for electricity networks in general*". Where used on the Project the overhead line would comprise of conductors supported by towers. A typical tower operating at 400 kV is approximately 50 m in height but can be 60 m in height if required, depending on topography and to allow extra height to clear existing features. A typical span distance between towers is approximately 350 m. In broad terms there are typically three towers for every kilometre of overhead line. The ES will provide parameters for the towers to be constructed, including maximum heights and widths of the steel work itself, along with information on the foundations that would be required.

4.7.2 Towers are either suspension (line) towers, which support the overhead line in a straight line; or tension (angle) towers, which support the overhead line where the line changes direction. The conductors are connected to the tower by an assembly of insulators and steel fittings and conductor clamps. Additional fittings, such as spacers

and vibration dampers, would be fitted to the conductors. Spacers prevent the sub-conductors from touching each other and vibration dampers prevent oscillations from the conductors from reaching the insulator fittings and minimise effects of fatigue loading. Arcing horns will also be required to protect insulators from damage due to dangerous electrical conditions, such as overvoltages due to electrical faults or lightning strikes.

4.7.3 The main components of an overhead line are shown in **Image 4.1**, which shows a typical steel lattice suspension tower.

Image 4.1 Components of a Typical Transmission Connection (towers are synonymous with 'pylons' in this image')



4.7.4 Where the route of the overhead line changes, angle towers (sometimes referred to as tension towers) are used. Angle towers have slightly wider bases and differing alignments between the insulators and conductors, as they take strain of the sideways forces created by the change in direction. An angle (tension) tower is shown in **Image 4.2**.

Image 4.2 Suspension tower (left) and Angle tower (right)



Towers

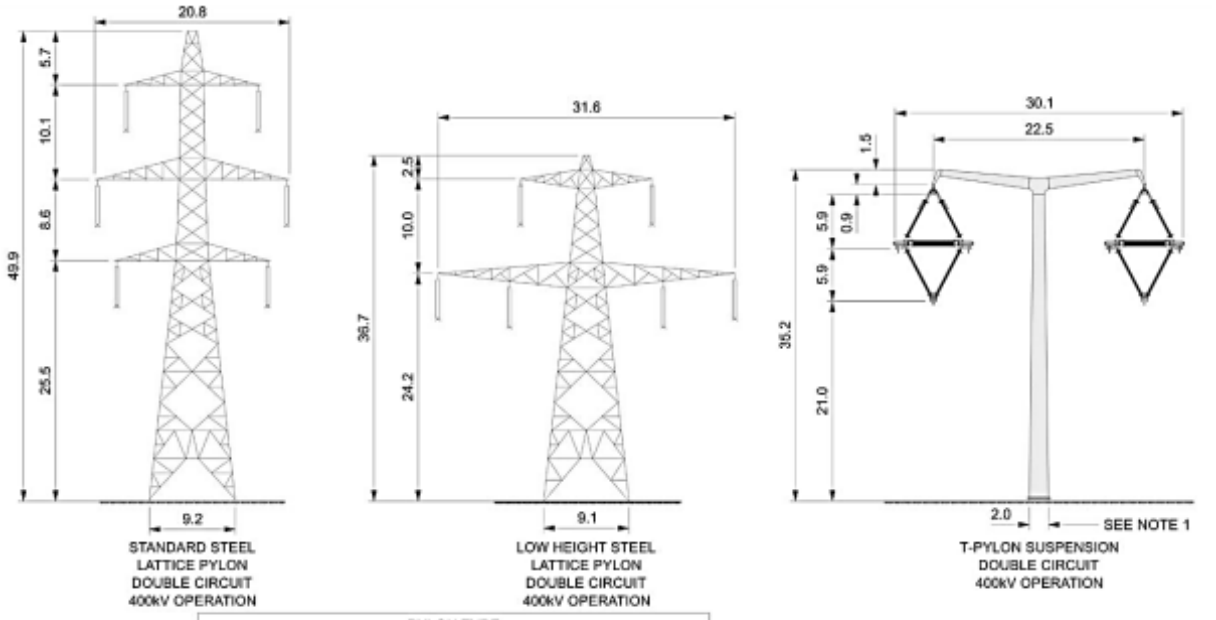
4.7.5 It is likely that the proposed towers for the Project would comprise steel lattice with three arms on either side of a central body. Typical heights for steel lattice towers are around 50 m, however the proposed height of each tower would depend on the specifics of each location such as topography, land use and crossings. Indicative tower heights will be provided within the ES which will be limited by a vertical LoD to be defined through the development of the Project and the need to cross other electricity networks, watercourses and other obstacles.

4.7.6 Alternative tower designs may also be considered, where mitigation (e.g. for landscape and visual effects) is required. This will be considered during design development and assessment and reported in the chapter on alternatives in the ES. The alternative designs which may be considered are:

- Low height steel lattice
- T pylon.

4.7.7 Alternative tower designs are illustrated in **Image 4.3.**

Image 4.3 Alternative Tower Types (towers are synonymous with ‘pylons’ in this image’)



CHARACTERISTIC	PYLON TYPE: STANDARD LATTICE PYLON	LOW HEIGHT LATTICE PYLON	T-PYLON	
STANDARD HEIGHT	49.9m	36.7m	35.2m	
STANDARD PYLON DESIGN WIDTH	20.8m	31.6m	30.1m	
STANDARD BASE DIMENSIONS	9.2m SQUARE	9.1m SQUARE	2m DIAMETER	SEE NOTE 1
MIN & MAX PYLON HEIGHTS	43.9m - 67.9m	32.23m - 45.73m	32.2m - 38.2m	
MIN & MAX PYLON BASE WIDTHS	7.96m - 13.32 SQUARE	7.93m - 11.26m SQUARE	APPROX 2m MIN to MAX	SEE NOTE 1

NOTE 1

1. FOR T-PYLON SUSPENSION, 2m IS MEASURED ABOVE BASEPLATE. EXACT DIMENSION AT GROUND LEVEL MAY VARY.

Conductors and insulators

4.7.8 The conductor (shown in **Image 4-1**) type is expected to be triple Araucaria comprising a maximum of three conductors per bundle, and a total of 18 conductors per tower together with an earthwire/fibre optic cable.

4.7.9 Insulators can be made of different types of material, but the most common industry standard is either glass, porcelain, or polymeric.

4.7.10 Suspension towers would typically have a single insulator string hanging vertically downwards from each crossarm end to carry the conductor bundle. A tension tower would typically have one insulator string per conductor on both sides of the tower (i.e. two insulator strings for a conductor bundle consisting of two conductors, giving four insulator strings on each cross arm when both sides of the tower are taken into account) and these are oriented roughly horizontally outwards from the crossarm ends and take the tension of the conductors.

Substation Connections

4.7.11 The Project would connect up to four new 400 kV substations and ensure that the Project meets the relevant technical standards for the network reinforcement it is seeking to achieve.

4.7.12 There are two main types of substations: Air Insulated Switchgear (AIS) substations and Gas Insulated Switchgear (GIS) substations.

4.7.13 An AIS substation is constructed with switchgear which relies on open air components, can require large clearance areas for operation and safety and takes up a larger area of land compared to a GIS substation. AIS substations are typically

lower cost and typically involve less construction time, with fewer components required and easier maintenance. However, they require a larger area of land and, as they are exposed to the elements, are not recommended for certain environments such as coastal areas.

4.7.14 A GIS substation is constructed with switchgear using gas filled components, which allows operation and safety clearances to be reduced when compared to an AIS substation. GIS substations typically require less space, and this may have a reduced visual impact as a result. However, they tend to be more costly, require specialised operation and maintenance, have longer outage repair times and typically require the use of sulphur hexafluoride (SF_6) - a greenhouse gas that has a global warming impact 22,800 times that of carbon dioxide.

New Weston Marsh substation infrastructure

4.7.15 The new Weston Marsh substation infrastructure will allow for up to two new substations to connect to the existing 400 kV 4ZM transmission line that runs south east of Sleaford towards King's Lynn, and the existing 400 kV 2WS transmission line that runs east of Spalding towards a Tee-Point with the 400 kV 4ZM transmission line between Sleaford and King's Lynn.

4.7.16 The new Weston Marsh substation infrastructure will be located within Section 1 of the Scoping Boundary, situated in the local authority of South Holland. With reference to **Figure 1.2 Scoping Boundary**, the Refined Siting Zone for the Weston Marsh substation infrastructure is located at the eastern end of the Scoping Boundary, to the north east of Spalding. The functional footprint of the substation(s), assuming that they are AIS substations, would be approximately 550 m by 200 m (approximately 11 ha) and approximately 380 m by 200 m (approximately 8 ha). It should be noted that this excludes related development including access arrangements, drainage, landscaping and other associated environmental works. See **Image 4.4** below for an illustrative example of an AIS substation.

Image 4.4 Illustrative example of a typical AIS substation



New WMEL-A and WMEL-B substations

4.7.17 These two new substations are known as WMEL-A and WMEL-B. The exact footprint of these two new substations is yet to be determined precisely, however, they are currently assumed to be located within the emerging preferred Siting Areas shown in **Figure 3.8 WMEL-A Substation Graduated Swathe** and **Figure 3.9 WMEL-B**

Substation Graduated Swathe. These locations are within the Scoping Boundary and considered in this report.

4.7.18 The two new substations (WMEL-A and WMEL-B) are required to connect the new 400 kV overhead line to the existing 400 kV 4VK (Cottam - Eaton Socon – Wymondley) overhead line and 400kV ZA (Cottam - Grendon – Staythorpe) overhead line.

4.7.19 The new WMEL-A Substation will be located within Section 2, approximately 1.2 km west of Corby Glen and 1.54 km north west of Swayfield. The new WMEL-B substation will be located within Section 3 approximately 0.35 km south west of Wartnaby and 0.6 km north of Saxelbye.

4.7.20 The precise location of the substations will be confirmed through further design, assessment, and consideration of stakeholder feedback, published at statutory consultation. The functional footprint of the substations will also be confirmed however, assuming that it is an AIS substation the WMEL-A Siting Area considered to date allows for an area approximately 575 m in length by 250 m wide, with eight to ten bays, and gantries approximately 12 m in height. Assuming that it is an AIS substation WMEL-B allows for an area 575 m in length by 225m to 300m in width with eight to ten bays, and gantries approximately 12 m in height. It should be noted that this excludes related development including access arrangements, drainage, landscaping and other associated environmental works.

Reconductoring

4.7.21 Reconductoring involves upgrading existing electricity transmission lines by replacing old conductors with new, more efficient ones. This process is crucial for enhancing the capacity and reliability of the existing ZA overhead line to which the Project will connect. Reconductoring aims to increase the amount of electricity that can be transmitted over existing lines by using efficient conductors that generally operate at higher temperatures and carry more power.

4.7.22 The process involves replacing the existing conductors strung between transmission towers with new ones that can transfer higher electrical loads. This will require careful planning and coordination to minimise disruptions to the power supply, however, as the works replace existing conductors, there is no horizontal, and limited vertical realignment proposed that that would result in some potentially significant operational effects, which are typically expected from new overhead line. These include landscape and visual impacts, or impacts to the setting of heritage assets, as the electricity transmission lines already exist in the environment.

4.7.23 The reconductoring is part of a broader project to modernise the 4VA overhead line (known as ‘SGRE’) to ensure it is capable of meeting future energy demands and supporting the transition to a cleaner energy system. The reconductoring of the existing ZA overhead line in this Project would extend from the WMEL-B substation to the existing Grendon substation near Northampton, as shown in **Figure 1.2**. The works would comprise replacement of existing conductors and associated fittings, possibly strengthening of tower steelwork. Structural surveys have not yet been undertaken however one side of the conductors was replaced around 12 years ago and it is anticipated that strengthening works would likely be required, rather than tower replacement. If any tower replacement is identified as required by proposed condition surveys it is likely to be limited in number. Any replacement towers would be in similar locations in close proximity to existing towers and of similar heights and

appearance to the towers that they would replace and, if required, will be considered in the ES.

4.7.24 The existing ZA overhead line requiring reconductoring is located in Section 3, Section 4 and Section 5, in the Local Authorities of Melton, Harborough and West Northamptonshire and North Northamptonshire.

4.8 Construction

4.8.1 This section describes how the infrastructure described above would typically be constructed and installed. An Initial Outline Code of Construction Practice (Initial Outline CoCP) has been produced and is included in **Appendix 4A Initial Outline Code of Construction Practice**. The topic chapters (**Chapters 6 to19**) have taken account of the control and management measures which are set out in the Initial Outline CoCP when determining the proposed scope of assessment.

4.8.2 The ES will describe the number of anticipated vehicle movements during all phases of the Project (including diverted traffic) and explain the assumptions upon which these have been established. An Outline CoCP will be submitted with the application for development consent and its delivery secured as a Requirement of the DCO.

Construction Programme

4.8.3 Subject to gaining development consent, assumed to be granted in 2029 following an application in 2028, it is anticipated that access and construction of the Project would commence in 2030, starting with enabling works including site clearance activities, the installation of construction compounds and access roads. It is expected the main construction works (construction of substations and overhead line) would continue through to 2034 (four years).

4.8.4 Reinstatement would be required following the construction period.

4.8.5 The construction programme will be developed as the Project progresses and will take account of seasonal constraints such as protected species breeding or hibernation seasons.

Construction Compounds

4.8.6 Construction activities would begin with the preparation and installation of construction compounds. The main and satellite construction compound locations and dimensions will be determined through the development of the Project, and any likely significant effects associated with the construction compounds will be assessed in the ES.

4.8.7 A typical layout for a construction compound includes the following:

- security gate house
- plant and construction vehicle parking
- site office parking area
- site offices and welfare facilities
- fencing

- lighting
- laydown area
- storage area
- wheel wash
- collection, storage and disposal of surface water, in addition to water from within the compound including grey and foul water
- soil bund
- spoil storage area
- power supplies (where feasible to do so, alternatively fuelled generators will be used and/or a local grid connection)
- fuel storage.

4.8.8 Smaller satellite compounds may be required at specific working areas along the route to ensure the provision of welfare, storage, and mess room facilities for site operatives.

Overhead Line Construction

4.8.9 The construction of the 400 kV overhead line would generally follow the sequence outlined below as work progresses along the length of the overhead line:

- survey
- ground investigation
- installation of bellmouths and creation of visibility splays at highway accesses
- installation of stock proof fencing and gates or equivalent
- topsoil stripping, temporary drainage installation where required
- installation of access tracks (including culverts and bridges) and demarcated tower
- working areas
- installation of tower foundations (pad and column, mini pile, pile or bespoke)
- working area and layout of steelwork in preparation for erection
- assembly (painting if required) and erection of steelwork
- installation of protection prior to stringing of conductors, including scaffolding
- installation of insulator assemblies on suspension towers
- establishment of machine sites for conductor stringing
- conductor stringing
- temporary earthing
- installation of insulator assemblies on tension and terminal towers

- installation of tower signage including safety notice plate and anti-climbing devices
- removal of construction equipment and reinstatement of ground and restoration of soils
- removal of access tracks and bellmouths
- removal of construction compounds and reinstatement of ground.

4.8.10 Activities such as surveys, archaeological investigation, ground investigation, construction of bellmouths and access tracks could commence without the full construction compounds in place.

4.8.11 Vegetation clearance may be undertaken prior to or during any of the activities identified above, this would be in accordance with any ecological requirements identified through the ES assessment.

4.8.12 Dependant on local conditions, haul roads may be required to be established from suitable access points from the existing road network in the area.

4.8.13 The following sections provide summary information about the activities listed above.

Installation of bellmouths and the creation of visibility splays

4.8.14 Where new accesses or widening of existing accesses from the public highway are required, bellmouths would be installed. The installation of bellmouths may require realignment of existing underground services and the creation of visibility splays to create a line of sight for the safe use of the bellmouth. Within the visibility splay, vegetation would need to be cut to a specified height or visual obstacles removed depending on local conditions, the speed rating of the road and whether traffic management was in place.

Topsoil stripping

4.8.15 The topsoil may be required to be stripped from the access tracks, site compounds and tower working areas. The topsoil would be stored carefully to one side; typically, topsoil would be stored in bunds. To avoid the growth of weeds, such as thistles and ragwort, a suitable herbicide application will be used. Temporary drainage would be installed as required, with necessary environmental protection measures (such as fabric silt fences).

Drainage

4.8.16 Temporary drainage would be required during construction, to deal with rainfall and water encountered during excavation where appropriate. The drainage design will include a variety of potential measures to address silt runoff. Construction sustainable drainage systems (SuDS) or proprietary measures would be used if necessary and where appropriate to do so.

Installation of access tracks (including culverts and bridges) and tower working areas

4.8.17 A two-way stone access track/haul road would typically be 9-10 m wide, which, coupled with the area for soil storage and drainage between the track and the fence line, would give a typical swathe of 21 m. There would be stone laid on geotextile

membrane. Other accesses may also be used comprising of interlocking panels, depending on ground conditions and the duration and type of use. Soil stabilisation techniques could be considered subject to local conditions.

4.8.18 The stone access tracks would be constructed using secondary or primary aggregates. The total amount of aggregate material that would be needed for the construction of the stone access tracks (including bellmouths) and tower working areas will be determined through the development of the Project and reported in the ES. On completion of construction, the access tracks would be removed, and aggregates taken to an appropriate facility which could include recycling, or onward use, for example as secondary aggregate in the construction industry or being reused by other construction projects.

4.8.19 Where possible existing field and site accesses will be used. However, where this is not possible and watercourses are present, temporary culvert installations would be required for temporary access tracks to cross ditches and smaller watercourses. The location, type, size and depth of the temporary culvert is dependent upon the dimensions of the crossing, sensitivity, and importance of the watercourse. The location and type of temporary culverts for crossings will be identified in the ES. As culverts would be installed online with the watercourses, a dry working area will be created by either over pumping or fluming the flow through the working area. Throughout all the stages of the Project, close engagement will be undertaken with the Environment Agency regarding Main Rivers, and relevant Lead Local Flood Authority and Internal Drainage Boards (IDBs) in relation to Ordinary Watercourses. Temporary culverts would be removed at the end of the works and the bed and banks of the watercourse reinstated.

4.8.20 Should culverts not be suitable for a particular crossing, due to either the sensitivity of the watercourse, it's size or other engineering requirements, a temporary bridge would be installed. Temporary bridges may need to accommodate a mobile crane (approximately 250 t capacity, subject to detailed design) and the temporary bridge support requirements would be assessed on a site-by-site basis. Most bridge crossings would be of a short span and flat deck construction; however, portable, re-fabricated bridges supported by beams may also be used. All bridges would be clear span, with a sufficient soffit height, and the foundations would be placed clear of the main channel of the watercourse, where feasible.

4.8.21 Once the foundations are in place the temporary bridge would be fitted. Although the installation method is dependent on the type of bridge being installed, a typical bridge would be delivered in sections. Each bridge component would be assembled on site and lifted into position by crane. With the bridge in position, decking panels would be lifted and fixed into position. As with temporary culverts, the temporary bridges will be removed at the end of the works and the bed and banks of the watercourses reinstated.

4.8.22 Tower working areas would typically be 70 m x 70 m. They would either be stone laid on a geotextile, or formed of interlocking panels, depending on ground conditions and the duration and type of use. Soil stabilisation techniques could be considered subject to local conditions.

Installation of tower foundations (pad and column, mini pile or pile)

4.8.23 The foundations for the towers would either be pad and column, mini pile or tube pile (or bespoke if required). The selection of foundation type would depend upon the ground conditions encountered. Towers would be located at least 15 m from the top

of the bank, batter, edge of a culvert or landward toe of any flood defence around a watercourse, where possible. The ES will assess the foundation design to be used, or where this is still to be determined, a worst case scenario will be adopted to identify any likely significant effects.

Assembly and erection of steelwork[2]

4.8.24 The steelwork components would be brought to each tower working area. In some circumstances, construction may be undertaken using helicopters, although at this stage specific locations are not currently known.

4.8.25 The steelwork components would be bolted together on the ground. The tower would be assembled in sections beginning from ground upwards, using a mobile crane.

4.8.26 To lift the topmost sections of the towers, a crane with a capacity of up to 250 t may be required for the reach and weight of the sections to be positioned into place. A smaller capacity crane could be used to lift tower sections up to the limit of reach of the crane considering load to be lifted; though in this instance the larger capacity crane would still be required to complete the tower.

Crossing protection prior to stringing of conductors

4.8.27 Temporary scaffolding and nets would be installed during construction where required as a safety measure to protect assets such as roads, railways, and distribution network overhead lines (where not already relocated underground) and could include hedgerows which would be crossed by the proposed 400 kV overhead line. This is required to protect these features during conductor stringing from the accidental dropping of conductors and any of the associated equipment. Temporary closures of some affected assets, such as roads, may be required during these works in order to install the protective netting, or indeed may be used instead of installing scaffolding.

4.8.28 The scaffolding would be transported to site using a lorry or tractor and trailer and assembled either side of the feature being protected.

4.8.29 Alternative methods of protection may be utilised dependant on local site conditions/restrictions, such as aerial catenary support systems, where feasible.

Installation of insulators

4.8.30 The insulators would be fastened to the cross arms of the towers, with running wheels hung from the end of the insulators to carry the pilot wires in preparation for installing the conductors.

Establishment of machine sites for conductor stringing

4.8.31 The conductors are usually installed from tension tower to tension tower, often termed a ‘section’, with machine sites required at either end of the section.

4.8.32 The machine sites for conductor stringing would normally be located within the tower conductor pulling positions, sited on interlocking panels laid directly onto the ground surface reducing disturbance to the underlying soils.

[2]This is based on a steel lattice tower.

4.8.33 A conductor pulling position would be established at each end of the section with a winching machine ('winch') and empty steel reels to accept pilot wires. At the other end of the section the full conductor drums would be arranged in close proximity to the tensioning machine ('tensioner').

Conductor stringing

4.8.34 The conductors would be delivered to pulling positions, using lorries, or tractor and trailer on large cable drums and, depending on the conductor type, each completed drum could weigh up to 8 t, although larger and heavier drums are possible depending on the supplier and the length of conductor.

4.8.35 The drums containing the conductors would typically be delivered to the construction compound, or satellite compound, first, and would be distributed from there.

4.8.36 Light pilot wires would be laid at ground level (and over temporary scaffolding protecting assets such as roads and railway lines) along the length of the section between the pulling positions. Some vegetation management could be required. The pilot wires would be lifted and fed through running wheels on the cross arms of all the towers in the section, and then fed around the winch at the pulling position. The light pilot wires are used to pull through heavier, stronger pilot wires which are in turn used to pull conductors through from their drums. The tensioning machine would keep the wires off the ground and prevent the conductors running freely when the winch pulls the pilot wire. When the conductor is fully 'run out', it would be fastened at its finished tension and height above ground by a linesman working from platforms on the towers which are suspended beneath the conductors. Additional fittings, such as spacers, vibration dampers and arcing horns would be fitted.

4.8.37 To counterbalance the out of balance loading at the tension towers at the end of a conductor stringing section, it is normal to install temporary backstays with ground or concrete blocks for safety of installation. The temporary backstays, anchors and concrete blocks would be removed as the conductor stringing process starts on the next section. Temporary backstays might also be required at other locations such as connecting new conductor to existing conductor, temporary diversions, and temporary spans.

Removal of construction equipment, reinstatement of ground and restoration of soils

4.8.38 Once the 400 kV overhead line is constructed, the access tracks and working areas at the tower site would be removed and the ground reinstated to its previous condition. Other surfaces would be reinstated, and accesses would be restored to the condition they were in at the commencement of the works, unless agreed otherwise.

Reconductoring

4.8.39 Construction activities during reconductoring would exclude those activities listed above that relate to towers and steel works; therefore, reconductoring would only include:

- survey
- ground investigation

- installation of bellmouths and creation of visibility splays at highway accesses (if required)
- installation of stock proof fencing and gates or equivalent
- topsoil stripping, temporary drainage installation where required
- installation of access tracks (including culverts and bridges)
- installation of protection prior to stringing of conductors, including scaffolding
- replacement of insulator assemblies on suspension towers
- establishment of machine sites for conductor stringing;
- conductor stringing
- temporary earthing
- replacement of insulator assemblies on tension and terminal towers
- removal of construction equipment and reinstatement of ground and restoration of soils
- removal of access tracks and bellmouths
- removal of construction compounds and reinstatement of ground.

Cable Installation

4.8.40 It is currently assumed that the new transmission line for this Project would be overhead line in accordance with national policy for electricity transmission networks (Section 2.9.20 in EN-5 (Ref 4.4)). Should underground cables be required, cables would normally be installed in excavated trenches. A cement-bound sand mix is used as backfill to protect the cables and help dissipate any heat generated by the cables in operation.

4.8.41 For a new 400 kV transmission circuit installed underground, the working width of the land required for construction is typically between 40 m and 120 m, subject to a range of factors such as the number of circuits being installed and the number and size of cables needed.

4.8.42 Due to the weight and size of underground cables needed to operate at 400 kV, the maximum single cable length that can be transported to a project location by road is typically between 800 m and 1,000 m. To achieve cable routes in excess of these lengths individual cables must be joined together on site. This necessitates joint bays at intervals along the route. Where joint bays are located the working width may need to be wider than 120 m.

4.8.43 Where specific environmental or infrastructure features preclude the installation of underground cables as described above, it may be practicable to install ducts using a trenchless installation technique such as horizontal directional drilling (HDD). In this instance cables are pulled into pre-installed ducts. The maximum length of HDD installed ducts is limited by the weight of the cables to be installed. Where trenchless techniques are required, the working width may need to be wider than 120 m.

4.8.44 Where HDD is not technically viable, then a tunnelled solution for underground cables can be considered. Tunnels can be constructed using a variety of techniques, but all involve major civil engineering activities, which result in substantial additional

costs, increased construction risks and extended programme durations. Typically, permanent buildings are required at either end of the tunnel section to support operation, including access to and potential ventilation of the tunnel and for cooling of the underground cables.

New Substations

4.8.45 Construction activity would begin with site preparation including setting up the temporary accommodation, parking and laydown area and will incorporate measures to address any associated flood risk. Temporary fencing would be installed early in the construction programme to secure the construction area. The permanent access road would be installed to connect the proposed substations to the nearest main road. On completion a permanent, appropriate level of security fence would remain in place to ensure 24 hour security for the site.

4.8.46 The initial preparatory works would comprise the temporary removal of the top layer of ground and laying a temporary stone capping to provide a clean and stable working area. Typically, the topsoil and a layer of subsoil would be excavated within the footprint, and this would be replaced with clean imported granular fill to form the surface of the compound. A series of copper earth tapes would be installed below the ground to create an earth mat to distribute any electrical charge transferred to the ground by earthed equipment and infrastructure in the proposed substations.

4.8.47 The permanent foul, oily water, including below ground oil separator, and surface water drainage systems would be installed once the preparatory works are complete. In addition, concrete foundations would be installed for the electrical equipment and control buildings. The majority of electrical equipment would be mounted on steel posts fixed to concrete foundations.

4.8.48 Reinforced concrete bunds would be installed for each supergrid transformer (SGT) and would comprise a perimeter concrete wall, a base slab continuous with the wall and a central plinth for supporting the SGT. The bunds act as a secondary oil containment measure. SGTs would be transported to site as Abnormal Indivisible Load (AIL) and installed within the bunds.

4.8.49 Logistics planning will be undertaken to ensure appropriate routes and mitigation strategies are adopted for abnormal load movements to ensure safe delivery of heavy substation equipment (e.g. supergrid transformers).

4.8.50 Concrete for the foundations and bunds would be ready-mixed, brought to site in lorries and placed using small plant such as cranes and excavators.

4.8.51 Once the electrical equipment is installed, commissioning tests would be undertaken to check that the individual items of plant and the system as a whole works as required.

4.8.52 Following successful testing, the substations would be connected to the electricity transmission system ready for operation.

4.9 Operation

Overhead Line

4.9.1 During operation, the Project would reinforce the electricity transmission network across the region. The Project would be operated remotely in the same way as National Grid operates the rest of the network.

4.9.2 The overhead line would be subject to annual inspection from the ground by foot patrol, small van, or by air using drone/helicopter to check for visible faults or signs of wear. The inspections would also indicate if plant/tree growth or third-party developments were at risk of affecting safety clearances. Inspections would provide input as to when refurbishment was required.

4.9.3 The overhead line could support telecommunication equipment such as small mobile telephone antennae and would contain optical fibres within the earthwire. If this were to be the case, independent companies would require access for maintenance purposes using pickup trucks and vans. Access for the optical fibres will usually be at the joint box positions located just above the anticlimbing devices on certain towers. Position and frequency of joint boxes is subject to further design work.

4.9.4 Access for vegetation management, telecommunications and fibre optic maintenance would be along routes agreed with the landowners and may require interlocking track mat panels.

4.9.5 The overhead line would be made up of a variety of materials, including concrete and steel for the foundations, steelwork for the tower and aluminium for the conductors. All these materials have an expected lifespan, which would vary depending on how the overhead line was used and where it is located. Typically, tower steelwork and foundations have a life expectancy of approximately 80 years, the conductors have a life expectancy of approximately 40 to 60 years and the insulators and fittings have a life expectancy of approximately 25 to 40 years. The lifespan of the overhead line may be longer than the anticipated 80 years, depending on its condition, the environment to which it is exposed, refurbishments and transmission network requirements.

4.9.6 Minor repairs or modifications may be required from time to time for local earthwire damage, addition of jumper weights, local conductor damage, broken insulator units, damaged or broken spacers, broken or damaged vibration dampers, damaged or broken anti climbing guards. Minor repairs would be programmed locally by a maintenance team using pickup trucks and vans to access site along routes agreed with landowners. Access may require interlocking track mat panels.

4.9.7 Refurbishment work would be undertaken typically on one side of the tower at a time, so that the other side could be kept ‘live’ or in use.

4.9.8 Refurbishment work could involve:

- the replacement of conductors and earth wires
- conductor greasing
- the replacement of insulators and steelwork that holds the conductors and insulators in place, insulator fittings, conductor fittings, tower signage
- painting or replacement of the tower steelwork

- replacement of telecommunication equipment (by separate companies)
- foundation repairs/upgrades.

4.9.9 Refurbishment would usually be carried out in two stages because the overhead line has two circuits, one on each side of the tower. This means that work can be undertaken on one side only, so that the other side can be kept 'live'. Once all the work has been completed on the first side, the circuit would be re-energised, and the opposite side switched off, so that the work could be carried out on the other side.

4.9.10 The refurbishment works would require temporary access tracks, a small compound and potentially scaffolding to protect roads and other features during the work.

4.9.11 Vans are used to carry workers in and out of site and trucks are used to bring new materials and equipment to site and remove old equipment. Temporary works including installation of access routes and installation of scaffolding to protect roads, railways and footpaths would be required as necessary for the overhead line refurbishment (similar to the initial construction requirements).

New Substations

4.9.12 The substations would be typically unmanned during operation; however operational requirements may require sites to be manned permanently or temporarily. Routine site visits would be required to visually inspect the condition of equipment, structures, and buildings for signs of damage or wear. The routine maintenance would be carried out in line with maintenance policies and procedures.

4.10 Decommissioning

4.10.1 NPS EN-1 (Ref 4.4) paragraph 4.3.5 states that the ES should cover the decommissioning of a project, however decommissioning of electricity networks is not specifically covered in NPS EN-5 (paragraph 2.1.4) (Ref 4.5) which recognises that generally, nationally significant electricity networks are likely to have an ongoing function, but will be subject to maintenance, reinforcement works and for assets to be replaced when they come to the end of their lifespan.

4.10.2 The initial design life of the Project is around 40 years but with regular maintenance, such as changing out the conductors for new ones, is likely to extend further. It is expected that the transmission of electricity would continue for as long as there is a business case for doing so and that any decommissioning activity would occur decades into the future. To date, relatively few transmission projects have been decommissioned since the main expansion of such infrastructure in the 1950s and 1960s. It is assumed that decommissioning would only be undertaken if there were substantial changes to how electricity is transmitted around the country or significant changes to the sources of generation and areas of demand. At the time that decommissioning would take place, the regulatory framework, good industry practices and the future baseline are likely to have altered. At the point where the Project requires decommissioning, National Grid would consider and implement an appropriate decommissioning strategy taking account of good industry practice, its obligations to landowners under the relevant agreements and all relevant statutory requirements. The environmental effects associated with decommissioning are likely to be similar to those associated with construction, subject to any changes to the baseline environment in the intervening period.

4.10.3 As the regulatory framework, good working practices, and the future baseline are all likely to have altered at the time of decommissioning, it is not possible to assess the probable future effects at the present time. Therefore, decommissioning is **scoped out** and will not be assessed in the ES.

References

Ref 4.1 National Electricity Transmission (February 2017). System Security and Quality of Supply Standard [online]. Available at https://www.nationalgrid.com/sites/default/files/documents/NETS%20SQSS%20V2.3.pdf [Accessed 17 June 2025].

Ref 4.2 National Infrastructure Commission (February 2020). Design Principles for National Infrastructure. [online] Available at https://nic.org.uk/app/uploads/NIC-Design-Challenges-Pamphlet-Print-Spread-Version.pdf. [Accessed 17 June 2025].

Ref 4.3 Planning Inspectorate, Nationally Significant Infrastructure Projects: Advice on Good Design, 16 April 2025 [Accessed: 18 September 2025]

Ref 4.4 Department for Energy Security & Net Zero (January 2024). Overarching National Policy Statement for Energy (EN-1) [online]. Available at https://assets.publishing.service.gov.uk/media/65bbfbdc709fe1000f637052/overarching-nps-for-energy-en1.pdf [Accessed: 17 June 2025].

Ref 4.5 Department of Energy Security & Net Zero (January 2024). 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 1 July 2025].

Ref 4.6 National Grid. Holford Rules. [online] Available at https://www.nationalgrid.com/sites/default/files/documents/13795-The%20Holford%20Rules.pdf [Accessed 1 July 2025].

Ref 4.7 National Grid. Horlock Rules. [online] Available at https://www.nationalgrid.com/sites/default/files/documents/13796-The%20Horlock%20Rules.pdf [Accessed 1 July 2025].

Ref 4.8 International Commission on Non-Ionizing Radiation Protection (2020). ICNIPR Guidelines for Limiting Exposure to Electromagnetic Fields (100 kHz to 300 GHz) [online]. Available at https://www.icnirp.org/cms/upload/publications/ICNIRPrfgdl2020.pdf. [Accessed 1 July 2025].

Ref 4.9 Planning Inspectorate (July 2018). Nationally Significant Infrastructure Projects – Advice Note Nine: Rochdale Envelope [online]. Available at https://www.gov.uk/government/publications/nationally-significant-infrastructure-projects-advice-note-nine-rochdale-envelope/nationally-significant-infrastructure-projects-advice-note-nine-rochdale-envelope (Accessed 1 July 2025).

Ref 4.10 IEMA (2020) IEMA guide to: Materials and Waste in Environmental Impact Assessment, Guidance for a proportionate approach

Ref 4.11 National Grid (June 2025). Weston Marsh to East Leicestershire Corridor Preliminary Routing and Siting Study

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5. EIA Approach and Methodology

nationalgrid

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5. EIA Approach and Methodology

5.1 Introduction

5.1.1 This Chapter outlines the overall methodology that will be used to undertake the Environmental Impact Assessment (EIA). The EIA will follow the requirements of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (EIA Regulations) (Ref 5.1) and other relevant guidance, as specified in this Chapter.

5.1.2 EIA is a process of compiling, evaluating and presenting information about the likely significant environmental effects, both adverse and beneficial, that could occur as a result of a project. The assessment is designed to inform both environmentally led design and project delivery. The assessment is also designed to provide decision makers and statutory consultees with the environmental information they require during determination of an application for consent. The early detection of likely significant adverse environmental effects enables appropriate mitigation (i.e. measures to avoid, reduce or offset likely significant adverse effects) to be identified and incorporated into the design of a project, or commitments to be made, for example to environmentally sensitive construction methods and practices. The approach is iterative and involves close collaborative working across a multidisciplinary team.

5.1.3 Three main EIA documents are produced as part the Development Consent Order (DCO) pre-application process:

- **Scoping Report**: The Scoping Report (this report) identifies the likely significant effects from a project, and sets out those effects that will be considered in the ES and those which are proposed to be scoped out. It also presents the data collected, the proposed assessment methodology and approach that would be followed during the EIA. The Scoping Report is prepared by the Applicant and issued by the Planning Inspectorate to consultation bodies for comment on the scope and methodology proposed, to inform the scoping opinion to be adopted and published by the Planning Inspectorate (on behalf of the Secretary of State (SoS)).
- **Preliminary Environmental Information Report (PEIR)**: The PEIR sets out the information that '*is reasonably required for the consultation bodies to develop an informed view of the likely significant environmental effects of the development*' (Ref 5.1). The PEIR is used by consultees to inform their consultation responses during the Statutory Consultation.
- **Environmental Statement (ES)**: The ES presents the results of the EIA undertaken for the Project. It identifies the likely significant effects that would result if the Project was implemented, and any proposed mitigation to reduce those significant effects. The ES is submitted as part of the application for development consent and is taken into account during the decision-making process.

5.2 General Approach

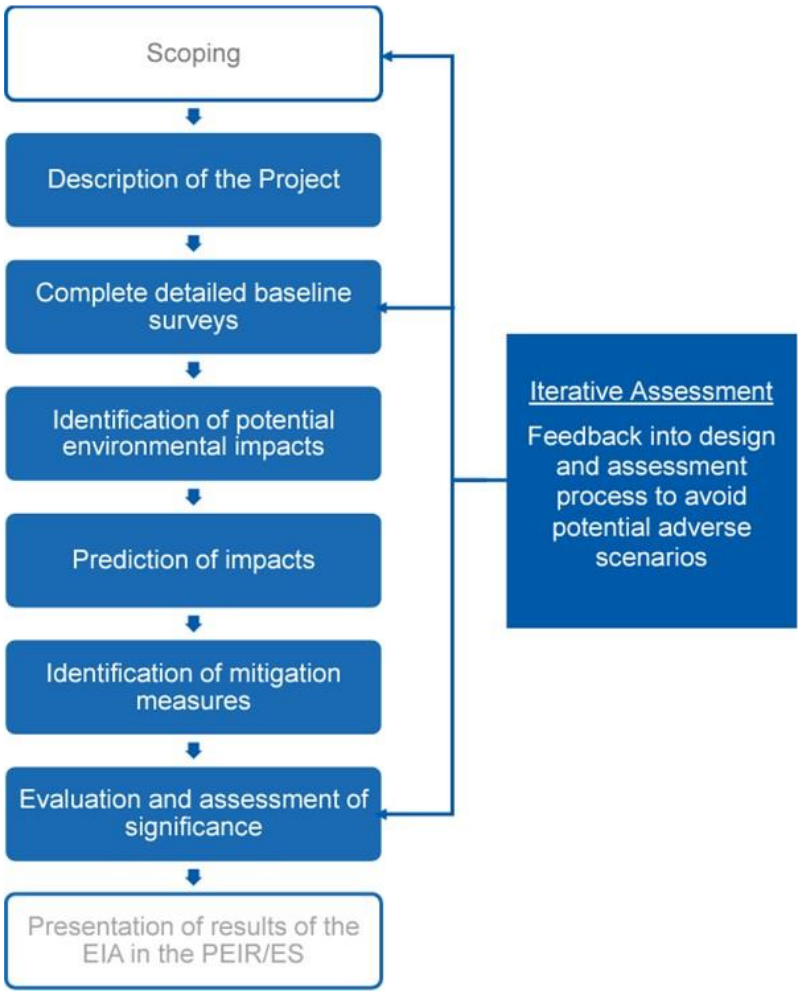
5.2.1 This chapter describes the methodology which will be used to assess the potential effects on the natural, human and built environment as a result of the Project. In accordance with the EIA Regulations (Ref 5.1), the assessments undertaken will evaluate and identify the likely significant environmental effects arising from the proposed pre- construction, construction and operational phases of the Project. This information will be presented in the ES.

5.2.2 Each topic chapter within this Scoping Report includes a description of the methodology that is proposed for determining significant effects for that relevant topic. The Scoping Report, and ultimately the ES, would also be supported by professional judgement and discussion from the technical specialist author to justify the final judgements on significance.

5.2.3 In general, the assessment within the ES would follow a receptor-based assessment approach. Receptors are those components of the environment which are sensitive to change as a result of impacts such as dust, noise, and construction activities. When deciding on which receptors to include within the Scoping Report, consideration has been given to Regulation 5(2) and Schedule 4 paragraph 4 of the EIA Regulations and the Planning Inspectorate Advice Note Seven: Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements (Ref 5.2). The ES will identify the likely significant effects of the Project on the environment and, if appropriate, propose project specific mitigation measures to avoid, reduce or offset adverse environmental effects or maximise environmental benefits.

5.2.4 The EIA process involves the main steps on **Image 5.1**.

Image 5.1 EIA Process



The 'Rochdale Envelope' Approach

5.2.5 Major infrastructure projects such as linear infrastructure projects for overhead lines, above ground installations and underground cables typically need some flexibility to be maintained for detailed design and construction, if conditions are found that would otherwise prevent or delay construction. Examples can include previously unknown archaeological assets which interact with the location of proposed towers. To mitigate such issues, a flexible approach to design parameters is used within the EIA process which is typically referred to as the 'Rochdale Envelope' (Ref 5.3). This approach allows for a realistic worst-case assessment to be undertaken and is the basis for the assessment in technical **Chapters 6-19** of this Scoping Report.

5.2.6 By developing a realistic worst-case scenario in response to critical technical and engineering parameters, as well as the emerging findings of the EIA and feedback from stakeholders, it is possible to strike a balance between the level of design information needed for the purpose of EIA and the application for development consent, while still retaining a level of design flexibility needed as the Project moves into detailed design and construction.

5.2.7 The EIA process will aid and inform the design process and support the identification of an application design that is flexible enough to accommodate change in future

stages but not so flexible that it could over-state or unnecessarily amplify the potential environmental impacts of the Project.

5.3 Approach to Scoping

5.3.1 Scoping sets the proposed scope of the ES and, when done right, it makes the subsequent phases more straightforward. A robust scope, focussed on the potential for likely significant environmental effects is required in order to ensure the ES is focused and proportionate. The process of scoping helps to ensure that the topics covered, the baseline information used, and the methods of assessment are appropriate, and have considered the views of decision makers and consultees where appropriate.

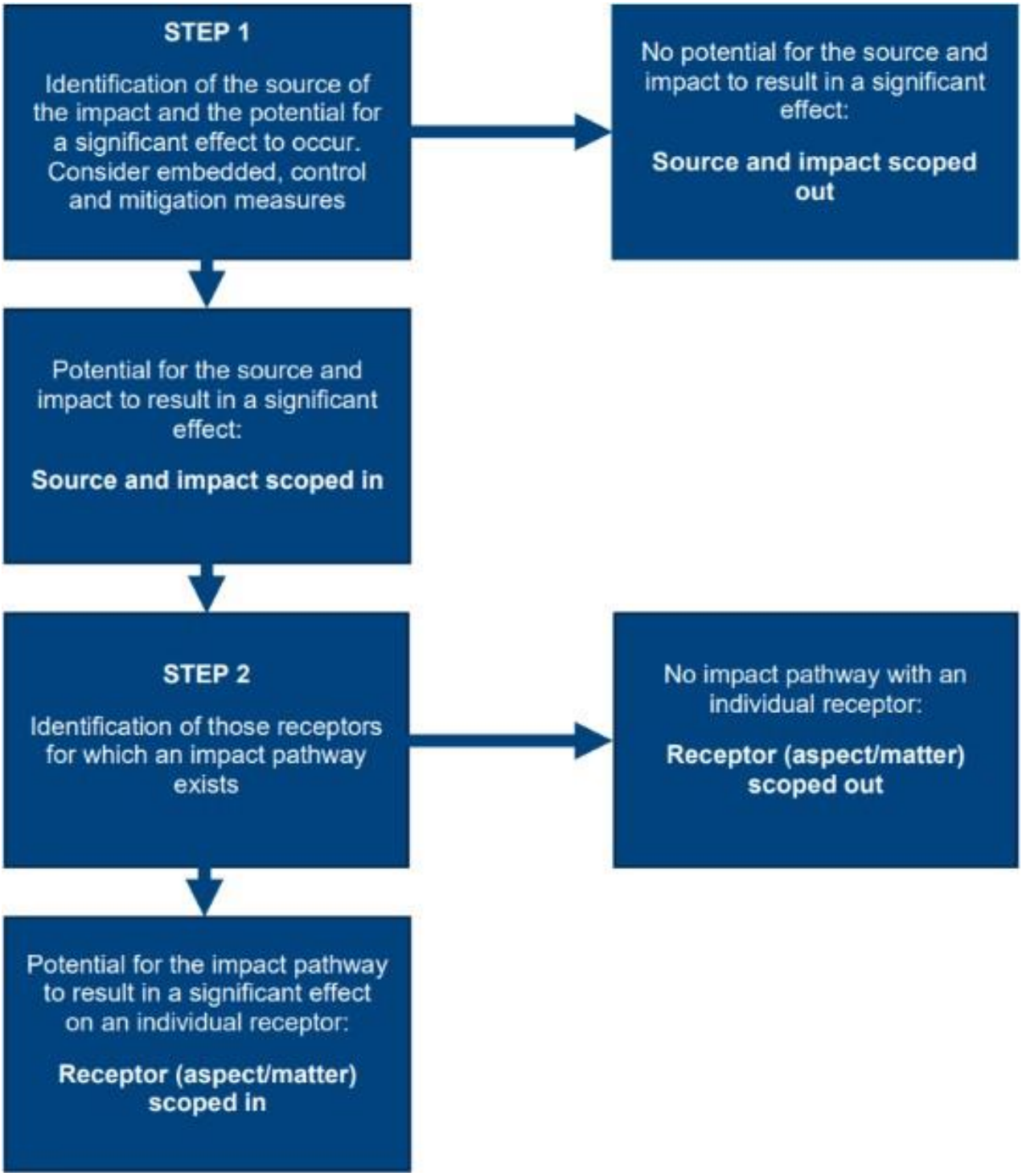
5.3.2 The EIA scoping process establishes which aspects and matters of the environment are likely to be significantly affected by the Project and involves identifying:

- the people and environmental resources (collectively known as “receptors”) that could be significantly affected by the Project; and
- the work required to take forward the assessment of potential likely significant effects.

5.3.3 The approach taken in preparation of this Scoping Report has also been informed by the Planning Inspectorate’s Advice Note Seven (Ref 5.2) and reflects that the EIA Regulations require an ES to focus on aspects of the environment likely to be subject to significant effects. In line with guidance and legislation, this Scoping Report seeks to, where appropriate, scope out aspects/matters from further assessment with suitable justification provided. This will streamline the assessment to focus on key likely significant effects and ensure the EIA for the Project is proportionate in accordance with the Institute of Sustainability and Environmental Professionals (formally Institute of Environmental Management and Assessment (IEMA)) (2017) Delivering Proportionate EIA guidance document (Ref 5.4).

5.3.4 The method used to determine the proposed scope of the ES has utilised a staged process, which assesses the probability of significant impacts through a source, pathway, and receptor-based approach. This is to ensure transparency and provide a clear justification as to why particular receptors and aspects/matters are either proposed to be scoped in or scoped out of the ES, with the aim of ensuring that the ES is proportionate. The approach taken to the identification of the proposed scope is presented in **Image 5.2**.

Image 5.2 Approach to the identification of the proposed scope of assessment



Technical Scope

5.3.5 The technical scope of assessment for each environmental aspect is detailed in technical **Chapters 6-19** and this includes proposals for scoping matters in or out of the EIA. The technical scope also details the approach to baseline data collection and assessment methodologies and is the basis for the assessment in technical **Chapters 6-19** of this Scoping Report.

Spatial Scope

5.3.6 The Project Scoping Boundary is described in **Chapter 4 Description of the Project** and shown in **Figure 1.2 Scoping Boundary**. At the current stage of the design process, the land within the Scoping Boundary has been identified as potentially being required for temporary or permanent purposes for the construction or operation of the Project.

5.3.7 Each topic chapter applies a buffer to the Scoping Boundary, if required, to determine the extent of the Study Area. The extent of the Study Area is determined by the environmental topic and specific receptors under consideration and is described in each topic chapter. The Study Area proposed for each topic therefore comprises an area sufficient to encompass the spatial extent over which impacts relevant to that topic and the related receptors may result in significant effects. These Study Areas will be refined in relation to the Order Limits (the maximum area of land potentially required for the construction, operation and maintenance of the Project), once determined.

5.3.8 The spatial scope for each environmental aspect, the area over which changes to the environment are predicted to occur as a consequence of the Project, depends on the nature of the potential effects and the location of receptors that could be affected. The spatial scope takes account of:

- the physical area of the Project;
- the nature of the baseline environment;
- the manner and extent to which environmental effects may occur; and
- relevant guidance, best practice and/or legislation.

5.3.9 The Study Areas are based on the distance over which an impact is likely to occur, and could potentially result in a significant effect. The spatial scope of each assessment may be refined for both the PEIR and the ES in response to comments from consultees or further assessment work.

Temporal Scope

5.3.10 The temporal scope refers to the time periods over which impacts and effects may be experienced by identified receptors.

5.3.11 Subject to gaining development consent, construction works would be expected to start in 2030 and be completed by 2034.

5.3.12 The EIA will predict the changes (impacts) to the current and future baseline during the construction and operation phases of the Project and the consequence (effect). The general approach is summarised below and any variations from this are discussed in the relevant topic chapters:

- Baseline year: the baseline is the reference level of the environmental conditions without implementation of the Project, against which the potential effects of the Project are assessed. The baseline year is 2026, when the majority of baseline surveys are to take place. For certain topics the baseline environment is expected to change over time, and for these topics this change has been predicted to enable robust identification of the effects of the Project against a 'future baseline.
- Construction Phase: these are effects that are likely to occur during the construction phase of the Project. This will include effects resulting from the activities associated with installation of the new overhead line, substations and works to facilitate the connection of the overhead line into the substations, and reconductoring of the existing overhead line. It also includes effects associated with the temporary works such as access tracks, haul roads, construction compound areas and work activities.
- Operational Phase: these are effects that will potentially occur as a result of the presence, operation and maintenance of the Project.

5.3.13 The EIA will use defined temporal scales to characterise the duration of potential effects. For the purposes of assessment, the following definitions are applied unless otherwise defined in the specific topic chapter:

- Permanent – these are effects that will remain even when the Project is complete, although these effects may be caused by environmental changes that are permanent or temporary.
- Temporary – these are effects that are related to environmental changes associated with a particular activity and that will cease when that activity finishes.

5.3.14 The temporal nature of effects could be different to the phase in which the effects occur. For example, effects as a result of vegetation clearance during construction may be felt for a number of years after construction has been completed, before any replanted habitats have matured. For the purposes of the EIA, the effects are described under the phase within which the impact arises, (i.e. in the above example, vegetation loss assessed for the construction phase).

Future baseline

5.3.15 The future baseline is the theoretical situation that would exist in the absence of the Project. This is based upon extrapolating the current baseline using technical knowledge of likely changes to predict this (e.g. predictable changes such as climate change, changes that can be predicted based on reasonable assumptions and modelling calculations, information about other relevant developments).

5.3.16 Each technical chapter of the ES will define the baseline (current or future or both) against which the environmental effects of the Project will be assessed. The baseline conditions to be assessed for each environmental topic are outlined in technical chapters of this Scoping Report. Where relevant, topic chapters provide further information on the temporal elements within the Project programme that will be considered for their assessment.

Mitigation Measures Adopted as Part of The Project

5.3.17 A number of measures would be adopted as part of the Project to avoid and reduce the likely significant effects that would be experienced during implementation. These fall into one of three categories as detailed below.

5.3.18 **Design (or embedded) mitigation measures** are those that are intrinsic to and built into the design. Design measures may include, for example, working within the existing topography to reduce tower visibility and reducing habitat loss by minimising land take. They can also include the avoidance of designated sites through sensitive routeing, siting and design. Initial embedded measures are described within **Chapter 3 Main Alternatives Considered** and **Chapter 4 Description of the Project**.

5.3.19 The embedded mitigation measures which form an intrinsic part of the Project design would be described and considered in place when assessing effects within the ES.

5.3.20 **Control and management measures** comprise management activities, control measures and techniques, that would be implemented during construction of the Project to limit impacts. They include adherence to good site practices and achieving legal compliance that can be assumed to be in place in the assessment reported of the ES. These measures may include, for example, applying construction site dust suppression techniques within working areas, which the contractor(s) would be required to implement as part of their working practices under the terms of their contract. Control and management measures to address construction-related impacts are identified in each of the technical chapters and are detailed in **Appendix 4A Initial Outline Code of Construction Practice (CoCP)**. As the Project evolves these will be added to as appropriate and will be supplemented by other control and management documents such as the Construction Traffic Management Plan (CTMP).

5.3.21 In addition, licenses through separate regimes may also be required. For example, ecological licences and assents granted by Natural England and various permits relating to water and waste granted by the Environment Agency. On the presumption that the regulatory authorities would not permit the works unless the potential impacts have been appropriately managed, it is assumed that these licensable activities are considered measures adopted as part of the Project.

5.3.22 **Additional Mitigation Measures** comprise measures over and above any embedded and good practice standard mitigation measures, for which the EIA has identified a requirement to further reduce significant environmental effects, for example landscape planting.

5.3.23 All additional mitigation measures will be described within the ES and secured through the DCO or through other statutory agreements.

5.3.24 Environmental compensation is considered where mitigation at an affected location is not possible to avoid or reduce a significant effect. Where identified, compensation measures forming part of the Project would be described within the ES.

5.3.25 Mitigation measures are assumed to be in place or at least achievable prior to undertaking the scoping of likely significant effects, in accordance with guidance from the ISEP (formally IEMA) Guide to Shaping Quality Development (Ref 5.5).

5.4 Assessment of Effects and Determination of Significance

5.4.1 Regulation 5(2) of the EIA Regulations (Ref 5.1) states that "*the EIA must identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the proposed development on the following factors: (a) population and human health, (b) biodiversity…, (c) land, soil, water, air and climate, (d) material assets, cultural heritage and the landscape; e) the interaction between the factors referred to in sub-paragraphs (a) to (d)*."

5.4.2 Schedule 4 paragraph 5 of the EIA Regulations (Ref 5.1) requires a description of the likely significant effects of the development on the environment. The assessment of the significance of effects for the majority of topics will be based on the steps set out in the following paragraphs.

Identification of Potential Effects

5.4.3 The likely significant effects (beneficial and adverse) of the Project will be predicted and evaluated using appropriate evaluative techniques, many of which follow specific best practice guidelines for a particular topic. Potential effects will be identified first, usually in summary, as an indication of what effects could theoretically occur in the absence of mitigation (other than mitigation inherent in the design of the Project).

Assessing Effects and Determining Residual Significance

5.4.4 There is no statutory definition of what constitutes a "significant" effect within the EIA Regulations and whilst the determination of the significance of effects is important to informing the decision-making process, defining what is significant is not a simple task. The process typically involves consideration of two aspects of a potential effect, namely the sensitivity and/or value of the receptor or resource, and the magnitude of the impact on the receptor/resource.

5.4.5 The significance of the residual effects (those that are predicted to remain after the environmental mitigation measures have been implemented) will be determined by reference to criteria for each assessment topic. Specific significance criteria for each technical discipline will give due regard to the following:

- scale of the impact;
- impact duration, and whether effects are temporary, revisable, or permanent;
- effect nature (whether direct or indirect, reversible or irreversible, beneficial or adverse);
- where the effect occurs in isolation, is cumulative, or will interact with other effects;
- performance against any relevant environmental quality standards;
- sensitivity of the receptor; and
- compatibility with environmental policies.

5.4.6 Each technical chapter of this Scoping Report includes a description of the proposed approach to determining the significance of effects, including how professional judgement may be applied. The technical chapters use the terminology for magnitude, sensitivity and significance similar to that described in the following

sections as an example of the process, unless there is specific topic guidance available that should be employed as industry standard or preferred. Where there is a requirement to adopt other terminology or methods, it is described in that technical chapter with justification.

Magnitude of impact

5.4.7 General criteria for defining the magnitude of an impact, or change, are set out in **Table 5.1**. Key factors that influence this include:

- **Scale of change** – the scale of change refers to the degree of change to or from the baseline environment caused by the impact being described.
- **Spatial extent** – the spatial extent is the full area over which the impact occurs.
- **Duration and frequency** – the duration is a measure of how long the impact is expected to last. Frequency refers to how often the impact would occur; it may be continuous or periodic.

Table 5.1 Impact magnitude criteria

Magnitude	General criteria
Large	Adverse: Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features, or elements. Beneficial: Large scale or major improvement of resource, including extensive restoration or major improvement of attribute quality.
Medium	Adverse: Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements. Beneficial: Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.
Small	Adverse: Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements. Beneficial: Minor benefit to, or in addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk or negative impact occurring.
Negligible	Adverse: Very minor loss of detrimental alteration to one or more characteristics, features or elements. Beneficial: Very minor benefit to or positive addition of one or more characteristics, features or elements.

Sensitivity and value of the receptor

5.4.8 The sensitivity of a receptor or feature is characterised by its vulnerability to change and its ability to recover. The value of a receptor or feature reflects its overall importance and the value placed on it by society; this may be reflected by its level of statutory or policy protection or else a value may be attributed through consultation and the application of professional judgement. Criteria for defining the sensitivity and/or value of a receptor are set out in **Table 5.2**. Characterisation of the receptor is

achieved by balancing out these considerations to determine the receptors sensitivity:

- Vulnerability – the vulnerability of the receptor relates to its capacity to accommodate change i.e. the tolerance/intolerance of the receptor to change.
- Recoverability – the ability of the receptor to return to the baseline state.
- Importance – the importance of the receptor or feature is a measure of the value assigned to that receptor based on biodiversity and ecosystem services, social value and economic value. Importance of the receptor is also defined within a geographical context, whether it is important internationally, nationally or locally.

Table 5.2 Sensitivity criteria

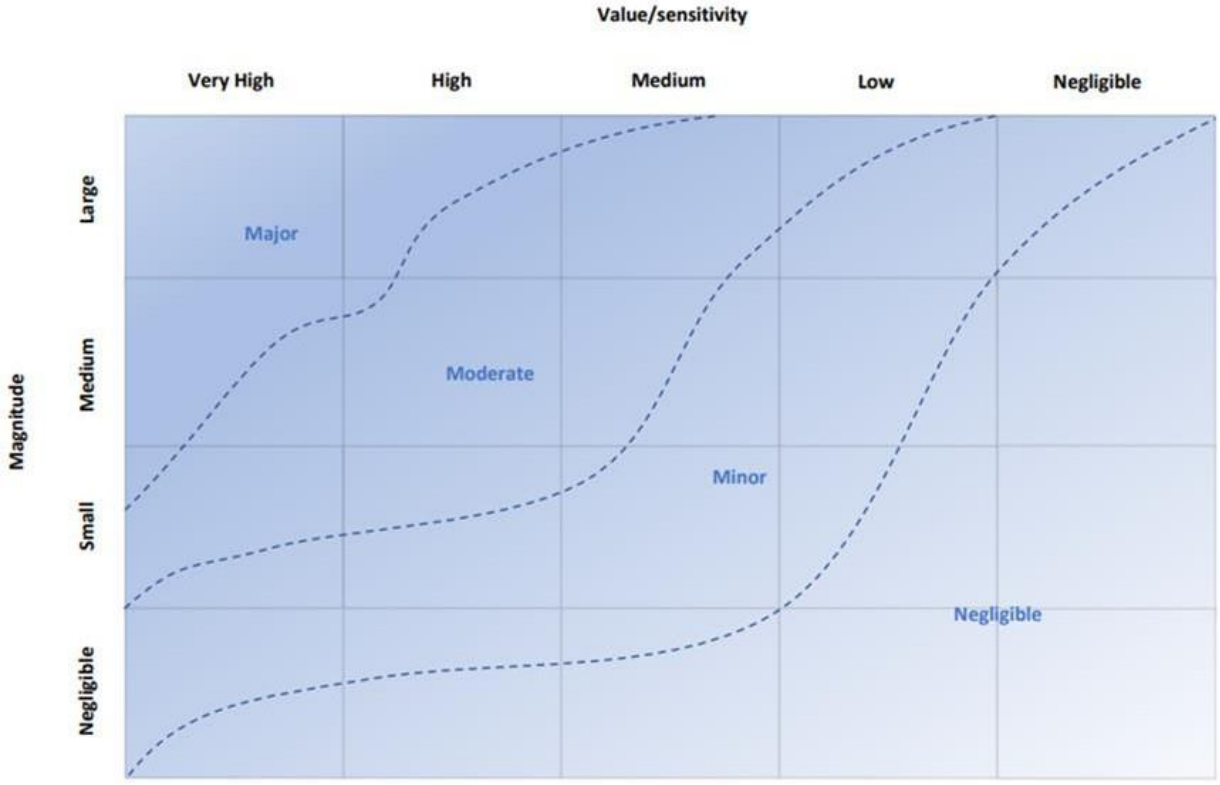
Value	General criteria
Very High	Very high importance and rarity, value at an international level and limited potential for recovery or substitution.
High	High importance and rarity, value at a national level and limited potential for recovery or substitution.
Medium	Medium importance and rarity, value at a regional level and limited potential for recovery or substitution.
Small	Low or medium importance and rarity, value at local level and limited potential for recovery or substitution.
Negligible	Not considered to be important, valued at a local level, easy to replace

Evaluating the significance of effects

5.4.9 Having established the magnitude of change and sensitivity of the receptor, the significance of an effect can be assessed. To aid transparency in the assessment process, the matrix shown in **Image 5.3** will be used as the basis for assigning significance to an effect; however, the identification of significance typically requires the application of professional judgement. As an illustration, a high sensitivity receptor subject to a large magnitude of change would experience a major or moderate effect, and a low sensitivity receptor subject to a small magnitude of change would experience a minor or negligible effect.

5.4.10 Each of the specialist disciplines will apply magnitude and sensitivity criteria that best suit the topic area, and for some topics these may be defined in industry guidelines.

Image 5.3 Basis of assigning significance



5.4.11 Following the classification of an effect using the methodology, a clear statement will then be made in the ES as to whether that effect is significant or not significant. Major and moderate effects are typically considered to be **significant**, whilst minor and negligible effects are considered to be **not significant**. However, professional judgement will also be applied in reaching conclusions as to the significance of effects. Typical definitions for the classification of effects are shown in **Table 5.3**.

Table 5.3 Classification of effects

Significance	General criteria	Significant effect
Major	A large and detrimental change to a valuable/sensitive receptor; likely exceeding an accepted (often legal) threshold. A large and beneficial change, resulting in improvements to the baseline or a major contribution being made to national targets. These effects may represent key factors in the decision-making process. Potentially associated with sites and features of international and national importance or likely to be important considerations at a regional or district scale.	Yes

Significance	General criteria	Significant effect
	Major effects may relate to resources or features that are unique and which, if lost, cannot be replaced or relocated.	
Moderate	A medium scale change that, although not beyond an accepted threshold, is still considered to be material, unless balanced out by other significant positive benefits of a project. Potentially in breach of planning policy, rather than legal statute. These effects, if adverse, are likely to be important at a regional scale and on their own could have a material influence on decision making. A positive moderate effect is a medium scale change that is significant in that the baseline conditions are improved to the extent that guideline targets (e.g. UK Biodiversity Action Plan targets) are contributed to.	Yes (typically)
Minor	A small change that, whilst adverse, does not exceed legal or planning policy thresholds. A small positive change, but not one that is likely to be a key factor in the overall balance of issues. These effects may be raised as local issues and may be of relevance in the detailed design of a project but are unlikely to be critical in the decision-making process.	No
Negligible	A very small change that is so small and unimportant that it is considered acceptable to disregard. Effects which are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error, these effects are unlikely to influence decision making, irrespective of other effects.	No

Residual effects

5.4.12 Residual effects are those that are predicted to remain after the proposed mitigation measures have been implemented. These will be described at the end of each topic chapter within the ES.

5.5 Cumulative Effects

Introduction

5.5.1 Cumulative effects are the result of multiple actions on environmental receptors or resources. The assessment of cumulative effects of the Project would consider the following types of effect:

- Intra-project cumulative effects (sometimes referred to as combined or interactive effects): these effects occur where a single receptor is affected by more than one source of effect from the Project.

- Inter-project cumulative effects: these effects occur as a result of a number of developments, including effects which individually might not be of significance, but when considered together could create a significant cumulative effect on a shared receptor when considered together with the Project.

5.5.2 The assessment of cumulative effects will form a key element of the EIA for this Project. As set out in **Chapter 4 Description of the Project** this Project connects to Weston Marsh substation infrastructure and the Grimsby to Walpole project also being developed by National Grid, as well as other transmission projects in the region. In addition, other proposed infrastructure projects are currently being developed within the region including various solar developments, housing, and the Lincolnshire Reservoir and pipeline project. The Applicant is currently working closely with a number of these projects to provide a co-ordinated approach to project development, where possible.

5.5.3 The assessment of cumulative effects will be based on publicly available data relating to proposed and committed developments as set out in the Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment (Ref 5.6) which are in the public domain or have been provided to the Project team. As far as possible, the Project team will collaborate with customers, other developers and relevant statutory consultees, to identify information which may be pertinent to the assessment of cumulative effects.

5.5.4 Where there are specific limitations associated with available data, these would be highlighted within the assessment that would be presented in the ES.

Legislation, Planning Policy and Technical Guidance

5.5.5 Schedule 4 of the EIA Regulations (Ref 5.1) states that an ES is to include a description of the likely significant effects of a development on the environment, which should cover, amongst others, cumulative effects. Paragraph 5(e) describes cumulative as: "*the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources*".

5.5.6 There is currently no standard methodology for an in-combination or a Cumulative Effects Assessment (CEA), however, there is a range of public sector and industry led guidance available.

5.5.7 The Planning Inspectorate's Advice Page: Nationally Significant Infrastructure Projects Advice on Cumulative Effects Assessment (Ref 5.6) provides advice regarding a staged approach for documenting the CEA within an ES, relevant to Nationally Significant Infrastructure Projects (NSIPs). The guidance highlights the need to consider the potential for cumulative effects arising due to the interactions between different components of the development, as well as with other existing development and/or approved development. This guidance defines 'other existing and/or approved' development as including those submitted into planning regimes but not yet determined and other plans and programmes, which goes beyond 'existing or approved', accepting that there is greater uncertainty that these development types will be delivered and less information on them and their potential effects available.

5.5.8 In addition, Regulation 5(2)(e) of the EIA Regulations requires that the EIA considers the interaction of environmental effects associated with the Project. The inter-related effects assessment considers likely significant effects from multiple impacts and

activities from the construction and operation of the Project on the same receptor, or group of receptors.

5.5.9 National Policy Statement (NPS) EN-1 (Ref 5.7) states at paragraph 4.3.3 that "*The Regulations require an assessment of the likely significant effects of the proposed project on the environment, covering the direct effects and any indirect, secondary, cumulative, transboundary, short, medium and long-term, permanent and temporary, positive and negative effects at all stages of the project*."

5.5.10 NPS EN-5 (Ref 5.9) provides topic-specific guidance for electrical infrastructure including overhead line but makes only limited reference to cumulative considerations. Paragraph 2.9.10 states that "*Cumulative adverse landscape, seascape and visual impacts may arise where new overhead lines are required along with other related developments such as substations, windfarms and/or other new sources of generation*."

5.5.11 Paragraph 116 of the National Planning Policy Framework (NPPF) (Ref 5.10) states that "*Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe, taking into account all reasonable future scenarios*". Paragraph 198 states that "*Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development*". Paragraph 199 states that "*Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas*".

5.5.12 Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment (Ref 5.6), sets out a staged approach to the assessment of cumulative effects for Nationally Significant Infrastructure Projects and provides template formats for documenting the assessment within an applicant's ES.

Approach to Cumulative Effects Assessment

5.5.13 The Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment (Ref 5.6) and professional judgement would be used to inform the scope of the assessment of cumulative effects , and to assist the identification and mitigation of likely significant effects.

Intra-project cumulative effects

5.5.14 Intra-project cumulative effects (sometimes referred to as combined or interactive effects) occur where a single receptor is affected by more than one source of impact or aspect of the Project. An example of an intra-project effect would be where a local community is affected by dust, noise, and traffic disruption during the construction of the Project, with the result being a greater level of nuisance than each individual effect alone.

5.5.15 A description of the likely significant intra-project cumulative effects will be provided within the ES.

5.5.16 There is no standard approach to the assessment of intra-project effects although it should be carried out with reference to guidance and to professional judgement. Some environmental topics consider receptors that are not considered by any other topics and so intra-project cumulative assessment is unlikely to be necessary. Other receptors may be considered by multiple topics, and as such intra-project cumulative effects are more likely to occur. Receptors considered in multiple chapters are likely to include local residents, communities, and businesses. It should be noted that some elements of the assessment inherently consider intra-related effects. For example, the terrestrial ecology and nature conservation assessment of effects considers the potential for multiple impacts affecting particular features such as disturbance effects on faunal receptors resulting from noise and vibration, visual disturbance and lighting. Where this is the case, this is described within the individual aspect chapter.

5.5.17 It is proposed to undertake the assessment of intra-project cumulative effects using a three-stage approach. The first stage consists of a pre-screening exercise to determine whether a receptor is exposed to more than one type of effect. Those receptors identified as experiencing more than one type of effect will be taken through to the second stage. The second stage will consist of a screening exercise to identify the significance each type of effect has on each receptor. Those receptors exposed to two or more types of effect, with a significance of effect greater than negligible, will be taken forward to the third stage. The third stage is the main intra-project assessment, which will consider if the combination of effects is likely to lead to overall effects of greater significance.

5.5.18 An initial pre-screening assessment is presented in **Table 5.4** showing how the receptor groups are likely to interact between chapters. This will be revisited as part of the ES to ensure all receptors considered within the ES are taken through this pre-screening assessment.

Table 5.4 Pre-screening stage

Receptors	Topic Chapters														
	Landscape	Visual	Ecology and Biodiversity	Historic Environment	Water Environment	Geology and Hydrogeology	Agriculture and Soils	Transport and Transport	Air Quality	Noise and Vibration	Socio-economics, Recreation and Tourism	Health and Wellbeing	Climate Change	Major Accidents and Disasters
Landscape Character and Designations	✓	✓	✓	✓										
Visual Receptors	✓	✓		✓					✓	✓	✓			
Commercial Receptors										✓	✓			
Ecological Receptors			✓						✓	✓				
Notable Habitats			✓		✓				✓					
Designated Heritage Assets	✓	✓		✓						✓				
Non-designated Heritage Assets				✓						✓				

Receptors	Topic Chapters														
	Landscape	Visual	Ecology and Biodiversity	Historic Environment	Water Environment	Geology and Hydrogeology	Agriculture and Soils	Transport and Transport	Air Quality	Noise and Vibration	Socio-economics, Recreation and Tourism	Health and Wellbeing	Climate Change	Major Accidents and Disasters
Water Resources					✓	✓								
Watercourses and Waterbodies					✓	✓								
Flood Risk Receptors					✓									
Best, Most Versatile Agricultural Land							✓							
Agricultural Holdings							✓				✓			
Soil							✓				✓			
Public Rights of Way	✓							✓			✓			
Cycle Routes	✓							✓			✓			
Roads								✓						
Communities		✓							✓	✓	✓	✓	✓	

Receptors	Topic Chapters														
	Landscape	Visual	Ecology and Biodiversity	Historic Environment	Water Environment	Geology and Hydrogeology	Agriculture and Soils	Transport and Transport	Air Quality	Noise and Vibration	Socio-economics, Recreation and Tourism	Health and Wellbeing	Climate Change	Major Accidents and Disasters
Geology						✓								
Mineral Reserves						✓					✓			
Groundwater						✓								
Human Health	✓	✓			✓			✓	✓	✓	✓	✓		✓
Climate			✓		✓								✓	

Inter-project cumulative effects

5.5.19 Inter-project cumulative effects occur where a receptor is affected by two or more projects at the same time, potentially amplifying the overall effect. Individually the effects may not be significant, but when considered together could create a significant cumulative effect.

5.5.20 In accordance with the approach contained within the Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment (Ref 5.6), the approach to the assessment of inter-project cumulative effects would follow a staged approach.

Stage 1a: Identify Zone of Influence (ZoI)

5.5.21 The Zone of Influence (ZoI) is the geographic area within which a development is likely to affect environmental receptors. As such, the ZoI would vary for different types of receptors. The ZoI used for this Scoping Report is based on a distance extending from either side of the Scoping Boundary. As the Project develops, the ZoI would be based on the relevant distances (according to the individual environmental topic) around the proposed Order Limits.

5.5.22 The ZoI used for environmental topics are listed in **Table 5.5**. The rationales for the distances chosen are explained in the relevant topic chapters.

Table 5.5 ZoI for environmental topics

Environmental Topic	Study Areas
Landscape and visual	3km from the Scoping Boundary
Ecology and biodiversity	10km from the Scoping Boundary[1]
Historic Environment	3km from the Scoping Boundary
Water environment	1km from the Scoping Boundary
Geology and hydrogeology	250m from the Scoping Boundary for geology and land contamination 500 m from the Scoping Boundary for hydrogeology
Agriculture and soils	the Scoping Boundary
Traffic and movement	the Scoping Boundary
Air quality	250m from the Scoping Boundary
Noise and vibration	300m from the Scoping Boundary

[1] the 10 km Study Area encompasses statutory designated sites of international, national and local nature conservation value, and non-designated sites. A wider 30 km Study Area is identified in **Chapter 8 Ecology and Biodiversity** for the identification of any Special Areas of Conservation or Special Protection Areas where (respectively) bats or bird species with large foraging ranges are noted as, or one of, the qualifying features.

Environmental Topic	Study Areas
Socio-economics, recreation and tourism	Harborough; Melton; North Northamptonshire; South Holland; South Kesteven; West Northamptonshire local authorities for population and deprivation, and economy and employment receptors. 5km from the Scoping Boundary for tourism and recreation and aviation and defence infrastructure. 500m from the Scoping Boundary for the remaining relevant receptors.
Health and wellbeing	500m from the Scoping Boundary for loss of land, access and amenity impacts
Climate change	Not applicable
Major accidents and disasters	Not applicable

Stage 1b: Identify long list of other development

5.5.23 The Study Area within which to search for other developments that have the potential to have cumulative effects with the Project is based on the ZoI for environmental effects. This is illustrated on **Figure 5.1 Inter-Project Cumulative Effects Assessment Study Area**. This will be kept under review as the Project develops and the long list updated as required.

5.5.24 The long list will be categorised into three tiers as outlined in **Table 5.6**. Minor planning applications (those below the 'Major development' criteria as defined in The Town and Country Planning (Development Management Procedure) (England) Order 2015 (Ref 5.7)) will be excluded from the assessment, as these relate to projects of small scale and local significance. These projects are highly unlikely to give rise to significant cumulative environmental effects over and above the Project in isolation. All reasons for excluding any development from further consideration will be clearly recorded and presented in the ES to present a clear audit trail.

Table 5.6 'Other development' for inclusion in the inter-project cumulative effects assessment

Tier	Development
Tier 1	Under construction, where the project is classified as 'major development', whether under the Planning Act 2008 (PA 2008) (Ref 5.11) or other consent regimes.
	Permitted application(s), where the project is classified as 'major development,' whether under the PA 2008 (Ref 5.11) or other consent regimes, but not yet implemented.
	Submitted application(s), where the project is classified as 'major development,' whether under the PA 2008 (Ref 5.11) or other consent regimes, but not yet determined.

Tier	Development
Tier 2	Projects on the Planning Inspectorate's Programme of Projects (publicly available), and/or the relevant local planning authorities planning portal where the project is classified as 'major development' and a scoping or screening report has been submitted.
Tier 3	Projects on the Planning Inspectorate's Programme of Projects (publicly available), and/or the subject of pre-application discussion with a relevant local planning authority, where a scoping or screening report has not been submitted. Projects registered on the local planning authority's portal classed as major development but do not require EIA.
	Identified in the relevant Development Plan (and emerging Development Plans - with appropriate weight being given as they move closer to adoption) recognising that the amount of information on any relevant proposals will be limited.
	Identified in other plans and programmes (as appropriate) which set the framework for future development consents/approvals, where such development is reasonably likely to come forward.

Stage 2: Establishing a shortlist of 'other existing development and/ or approved development'

5.5.25 Following Stage 1, the projects included on the long list will be screened as to the temporal scope, scale and nature of the development to identify whether they would be likely to result in potential for a significant cumulative effect with the Project. Professional judgement would be used during the assessment of threshold criteria to determine whether developments should be scoped in or out of the assessment. This would include developments that were below the threshold criteria, but with characteristics that were likely to give rise to a significant effect or could give rise to cumulative effects by virtue of its proximity to the Project.

5.5.26 The following inclusion/exclusion criteria will be used for the assessment:

- **Temporal Scope**: other projects with an overlapping construction phase (currently expected to be 2030-2034 and in some cases operational effects would be scoped into the assessment. Planning applications considered include those submitted five years prior to submission of the application for development consent, this is because planning permissions typically expire after a period of three to five years (unless an application for extension is permitted). The status of planning applications will be monitored to include committed projects and those applications that remain undetermined but could still provide forthcoming committed developments.
- **Scale and nature of development**: development identified as Schedule 1 and 2 developments in the EIA Regulations (Ref 5.1) would be considered further. Development not identified as Schedule 1 or 2 developments would be scoped out of the assessment, except where professional judgement identifies specific scenarios where there is a high likelihood of significant environmental effects arising in combination with the Project.
- **Sensitivity of the receiving environment**: where there are potential connections between the Project and other existing or planned developments, known as

source- pathway-receptor linkages, cumulative effects would be considered. Other developments with no clear source-pathway-receptor linkage would be scoped out of the assessment.

- **Consultation**: requests from relevant stakeholders for the inclusion of specific projects and/or plans within the cumulative effects assessment.

Stage 3: Information gathering

5.5.27 Further information on the short-listed developments will be gathered to inform the final cumulative effects assessment, where this is available. This will include:

- proposed design and location information;
- construction and operational timescales; and
- results of any environmental assessments completed for the other developments.

5.5.28 Project data will be gathered and obtained from local planning authority planning portals, the Planning Inspectorate's website, discussion with other developers and engagement with local planning authorities.

Stage 4: Assessment

5.5.29 An assessment of the cumulative effects of the Project with the 'other existing and/or approved development' identified in Stage 2 will be undertaken using the following methodology:

- Each of the 'other existing developments and/or approved development' will be assessed in turn with the Project to determine if both activities/proposals give rise to significant cumulative effects during either construction or operation.
- The assessment will consider the apportionment of effect between the Project and the 'other existing development' e.g. is the contribution to the effect demonstrably related to one development or is there an equal contribution from either development based on professional judgement.
- The assessment will consider whether certain assessments (e.g. transport and associated air quality/ noise vehicular emissions assessments) are inherently cumulative and have been undertaken on a worse-case basis. In such circumstances no additional cumulative assessment will be undertaken.
- Cumulative effects will be identified by considering whether:
  - there would be any change in the significant effects from the Project, as identified within the individual topic chapters of the PEIR and ES, taking into consideration any effects from the short listed 'other existing development and/or approved development':
    - for example, a moderate adverse significant effect on key receptors becoming a major adverse significant effect cumulatively from the effects of the Project and the short listed other developments; or
    - where the effects of the Project on key receptors potentially affected by the short listed other developments would trigger a significant effect where the effects of the Project in isolation would be non-significant, for example, a minor adverse **non-significant** effect becoming a moderate adverse **significant** effect;

- significant and non-significant effects of the Project will be taken from the environmental topic chapters to inform the significance of cumulative effects with other developments. Effects will be identified as direct, indirect, short-term or long- term, permanent or temporary; and
- all likely significant cumulative effects and a description of the proposed mitigation and monitoring measures that may be required will be documented and presented in an accessible format similar to that in Matrix 2 provided in Appendix 2 of Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment (Ref 5.6) and tabulated within the ES.

5.6 Monitoring

5.6.1 Schedule 4, Paragraph 7 of the EIA Regulations (Ref 5.1) states that, where appropriate, the ES should include a description of any proposed monitoring arrangements where likely significant residual effects have been identified. The monitoring requirements will be detailed within the ES topic chapters to include clear and proportionate objectives for monitoring, the parameters to be monitored, the methodology for the monitoring, a timescale for implementation, identification of the party who will be responsible for the monitoring, and an outline of the remedial actions to be undertaken should results be adverse.

5.7 Approach to the Environmental Statement

5.7.1 The Planning Inspectorate Advice Note Seven: Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements (Ref 5.1) requires that applicants provide an outline structure of what the ES will contain. The structure of the ES for the Project will broadly follow the same order of chapters that are presented in this Scoping Report, acknowledging that changes may need to be made within the ES to address the advice from the Scoping Opinion, both in terms of presentation of the Project to aid understanding and address the design requirements as they evolve.

5.7.2 An indicative outline structure of the ES is set out in **Table 5.7**, however, this may be revised following receipt of the Scoping Opinion or development of the design and assessment.

Table 5.7 Indicative structure of the ES

ES Volume	Title
Not applicable	Non-technical Summary (NTS)
Volume 1	Chapter 1 Introduction
	Chapter 2 Regulatory and Planning Policy Context
	Chapter 3 Main Alternatives Considered
	Chapter 4 Description of the Project
	Chapter 5 EIA Approach
	Chapter 6 Landscape

ES Volume	Title
	Chapter 7 Visual
	Chapter 8 Ecology and Biodiversity
	Chapter 9 Cultural Heritage
	Chapter 10 Water Environment
	Chapter 11 Geology and Hydrogeology
	Chapter 12 Agriculture and Soils
	Chapter 13 Traffic and Transport
	Chapter 14 Air Quality
	Chapter 15 Noise and Vibration
	Chapter 16 Socio-economics, Recreation and Tourism
	Chapter 17 Health and Wellbeing
	Chapter 18 Climate Change
	Chapter 19 Cumulative Effects
Volume 2	Will provide the Appendices which support Volume 1.
Volume 3	Will provide the Figures which support Volume 1.

5.8 Other Assessments

5.8.1 The application for development consent will be supported by several technical assessments and management plans undertaken in line with specific and relevant policy or legislation. These provide additional information to inform the design, the potential effects of the Project and any mitigation measures. An outline of these is provided below for information.

Flood Risk Assessment

5.8.2 A Flood Risk Assessment (FRA) will be undertaken in accordance with NPS EN-1 (Ref 5.8) and the NPPF (Ref 5.10).

5.8.3 The FRA will consider flood risk both to and from the Project. It will demonstrate how this risk is intended to be managed in the future, including with the influence of climate change. It will provide appropriate evidence of consideration of the Sequential Test during design development and assessment and, if required, the Exception Test. The FRA would be carried out in accordance with the latest applicable technical planning guidance, and data and modelling available from the Environmental Agency.

Water Framework Directive Assessment

5.8.4 A Water Framework Directive (WFD) Assessment will be undertaken in accordance with the Water Framework Directive (2000) (Ref 5.12), transposed into domestic law by the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 (the "WER Regulations") (Ref 5.13). It provides a structure for the protection and enhancement of surface fresh water, estuaries, coastal waters and groundwater.

5.8.5 A WFD Screening and Scoping Assessment has been completed, and is provided as Appendix 10A of this Scoping Report.

5.8.6 Further assessment will be undertaken and reported in the WFD documentation and where relevant, in the ES. The assessments will be appropriately co-ordinated.

Habitats Regulations Assessment

5.8.7 A Habitats Regulations Assessment (HRA) Stage 1: test of Likely Significant Effects and, if required, Stage 2: Statement to Inform Appropriate Assessment will be undertaken in line with the Conservation of Habitats and Species Regulations 2017 (the "Habitats Regulations") (Ref 5.14) and the Planning Inspectorate's advice note on HRA (Ref 5.15). The assessment will be provided with the application for development consent.

5.8.8 Although the emerging preferred corridor for the new overhead line has avoided direct impacts on European sites, there is the potential for impacts on birds associated with European sites that are located in the region. Also, the Upper Nene Valley Gravel Pits Ramsar and Special Protection Area is adjacent to Grendon substation, which includes the tie in point of the reconductoring works proposed to the existing overhead line. Ecology surveys will progress to define the baseline and be considered in design development and assessment. Any requirement for Stage 2 assessment will be considered and discussed with Natural England.

5.8.9 Further assessment will be undertaken and reported in the HRA documentation and where relevant, in the ES. The assessments will be appropriately co-ordinated.

Arboricultural Impact Assessment

5.8.10 Trees are a material consideration when determining planning applications, whether or not they are afforded the statutory protection of a tree preservation order or conservation area.

5.8.11 British Standard BS 5837:2012 Trees in Relation to Design, Demolition and Construction (Ref 5.16) sets out the principles and procedures to be applied to achieve a harmonious and sustainable relationship between trees and new developments.

5.8.12 An Arboricultural Impact Assessment (AIA) will be undertaken and provided with the application for development consent. The AIA will report on the direct and indirect impacts of the Project on trees in terms of both the buildability and the long-term impact of the Project, and where necessary present mitigation for these impacts.

References

Ref 5.1 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.

Ref 5.2 Planning Inspectorate (2020). Advice Note Seven: Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements. [online] Available at: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advicenote-seven-environmental-impact-assessment-process-preliminary-environmental-information-and-environmental-statements/ [Accessed: 21 August 2025].

Ref 5.3 Planning Inspectorate (2018). Advice Note Nine: Rochdale Envelope. [online] Available at: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-nine-rochdale-envelope/ [Accessed: 21 August 2025].

Ref 5.4 Institute for Environmental Management and Assessment (2017). Delivering Proportionate EIA: A Collaborative Strategy for Enhancing UK Environmental Impact Assessment Practice. [online] Available at: https://www.iema.net/resources/reading-room/2017/07/18/delivering-proportionate-eia [Accessed: 21 August 2025].

Ref 5.5 Institute of Environmental Management and Assessment (2015). Environmental Impact Assessment Guide to Shaping Quality Development. [online] Available at: https://www.iaia.org/pdf/wab/IEMA%20Guidance%20Documents%20EIA%20Guide%20to%20Shaping%20Quality%20Development%20V6.pdf [Accessed: 21 August 2025].

Ref 5.6 Planning Inspectorate (2024). Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment. [online] Available at: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-17/ [Accessed: 21 August 2025].

Ref 5.7 HM Government (2015). The Town and Country Planning (Development Management Procedure) (England) Order 2015. [online] Available at: https://www.legislation.gov.uk/uksi/2015/595/pdfs/uksi_20150595_en.pdf [Accessed 21 August 2025]

Ref 5.8 Department for Energy Security & Net Zero (January 2024). Overarching National Policy Statement for Energy (EN-1) [online]. Available at: Overarching National Policy Statement for energy (EN-1) - GOV.UK (www.gov.uk) (Accessed: 21 August 2025).

Ref 5.9 Department of Energy Security & Net Zero (November 2023). National Policy Statement for Electricity Networks Infrastructure (EN-5) [online]. Available at: Electricity Networks National Policy Statement - EN-5 (publishing.service.gov.uk) (21 August 2025).

Ref 5.10 Department for Levelling Up, Housing and Communities (2024). National Planning Policy Framework [online] Available at: https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf [21 August 2025].

Ref 5.11 Planning Act 2008 [online]. Available at: https://www.legislation.gov.uk/ukpga/2008/29/contents [Accessed 21 August 2025]

Ref 5.12 Water Framework Directive 2000 [online]. Available at: https://eur-lex.europa.eu/eli/dir/2000/60/oj/ [Accessed 21 August 2025]

Ref 5.13 The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 [online]. Available at: https://www.legislation.gov.uk/uksi/2017/407/contents/made [Accessed 08 July 2024]

Ref 5.14 The Conservation of Habitats and Species Regulations 2017 [online]. Available at: https://www.legislation.gov.uk/uksi/2017/1012/contents/made [Accessed 08 July 2024].

Ref 5.15 H.M Government (2024) Nationally Significant Infrastructure Projects: Advice on Habitats Regulations Assessments (Online) Available at: https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-advice-on-habitats-regulations-assessments [Accessed 31st July 2025]

Ref 5.16 British Standards (2012). Trees in relation to design, demolition and construction [online]. https://www.bathnes.gov.uk/sites/default/files/2020-01/BS5837%202012%20Trees.pdf [Accessed 21 August 2025]

6. Landscape

nationalgrid

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6. Landscape

6.1 Introduction

6.1.1 This chapter presents how the landscape assessment will consider the potential likely significant effects on landscape receptors that may arise from the construction, operation and maintenance of the Project (as described in **Chapter 4, Description of the Project**). It describes the methodology and datasets to be used within the assessment, presents an overview of the baseline conditions, and identifies the potential likely significant effects to be considered within the assessment, and how these will be assessed for the purpose of an Environmental Statement (ES). As detailed in **Chapter 4, Description of the Project**, the decommissioning of the Project has been scoped out of the environmental assessment.

6.1.2 Although closely related, potential effects on landscape receptors are considered and reported separately to potential effects on visual receptors in **Chapter 7 Visual**. Consideration will be given to minimising potential repetition between these assessments within the ES.

6.1.3 The Scoping Boundary is illustrated on **Figure 1.2 Scoping Boundary**.

6.1.4 This chapter should be read in conjunction with the following chapters which provide the Project context and approach to EIA:

- **Chapter 2 Regulatory and Planning Policy Context**;
- **Chapter 3 Main Alternatives Considered**;
- **Chapter 4 Description of the Project**; and
- **Chapter 5 EIA Approach and Methodology**.

6.1.5 There may be interrelationships with other disciplines. Therefore, this chapter should also be read in conjunction with the following chapters:

- **Chapter 7 Visual** includes the identification and assessment of effects for visual receptors and considers the impact on views and the visual experience of observers. As above, landscape and visual effects are closely related;
- **Chapter 8 Ecology and Biodiversity** includes the identification of ecological designations and existing habitats and vegetation cover which informs landscape character (and value);
- **Chapter 9 Cultural Heritage** identifies heritage assets which are factors that can contribute towards landscape value; and
- **Chapter 14 Air Quality** and **Chapter 15 Noise and Vibration** assess the potential impacts on receptors, recognising that changes in air quality and noise and vibration levels can influence how people perceive and experience the landscape.

6.1.6 This chapter is supported by the following figures:

- **Figure 6.1 Proposed Landscape Study Area;**

- **Figure 6.2 Landscape Constraints;**
- **Figure 6.3 National Landscape Character;**
- **Figure 6.4 Regional Landscape Character;** and
- **Figure 6.5 District and Local Landscape Character.**

6.2 Legislation, Policy and Guidance

6.2.1 **Chapter 2 Regulatory and Planning Policy Context** describes the overall regulatory and planning policy context for the Project. Key legislation, policy, and planning guidance relevant to the assessment of potential effects on landscape receptors associated with the construction, operation, and maintenance of the Project is provided in **Chapter 2 Regulatory and Planning Policy Context. Appendix 2A Key Legislation, Appendix 2B National and Regional Planning Policy** and **Appendix 2C Local Policy.**

6.2.2 The relevant principle guidance and standards that have informed the scoping process are listed below. This, along with other relevant material, will be taken into account as part of the ES assessment:

- Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA) (Ref 6.1);
- Notes and Clarifications on Aspects of Guidelines for Landscape and Visual Impact Assessment Third edition, Technical Guidance Note - 2024-01 (Ref 6.2);
- Assessing Landscape Value Outside National Designations, Technical Guidance Note 02/21 (Ref 6.3); and
- Visual Representation of Development Proposals, Technical Guidance Note 06/19 (currently under review) (Ref 6.4);
- An Approach to Landscape Character Assessment (Ref 6.5);
- The Holford Rules, National Grid (Ref 6.6);
- The Horlock Rules, National Grid (Ref 6.7); and
- Planning Inspectorate Advice (updated March 2025) Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment (Ref 6.8).

6.3 Consultation and Engagement

6.3.1 The ES will be informed by consultation and engagement with stakeholders, including statutory consultees, such as Historic England and Natural England and host local authorities namely:

- Lincolnshire County Council, South Holland District Council and South Kesteven District Council;
- Leicestershire County Council, Melton District Council and Harborough District Council;
- North Northamptonshire Council; and
- West Northamptonshire Council.

6.3.2 In addition, engagement will be undertaken with non-statutory stakeholders as required to ensure that specialist local views and expertise can be considered as part of the ES.

6.3.3 In preparing this Scoping Report chapter, consideration has been given to stakeholder feedback received following Non-Statutory Consultation held between 11 June and 6 August 2025, as set out in **Table 6.1.**

Table 6.1 Engagement with Stakeholders

Stakeholder	Summary of response	Consideration in the Scoping Report
South Holland District Council	Concerns that the new overhead line and 50-metre-high towers between Weston Marsh and South Forty Foot Drain will have a negative effect on areas known for their flat landscape and big skies, including the Fens. There are also concerns over the potential cumulative effects.	Potential landscape receptors have been identified through an initial review of the baseline environment and set out within **Section 6.5**. **Table 6.2** sets out the proposed scope of assessment for landscape receptors. The proposed methodology for the assessment of landscape effects is set out in **Section 6.8** and includes consideration of both physical and perceptual aspects of landscape character. A cumulative effects assessment will be undertaken and reported in the ES as described in **Chapter 5 EIA Approach and Methodology,** an overview of the approach for landscape effects is provided in **Section 6.8**.
South Kesteven District Council	Concerns on various issues and request their consideration, including: • Assessment of visual intrusion of pylons from Public Rights of Way, residential properties, and other sensitive land uses. • Mitigation measures such as alternative designs, reduced-height pylons,	Visual amenity will be assessed as described in **Chapter 7 Visual**, including lighting. The proposed assessment methodology and receptors to be considered and reported in the ES are described in **Sections 6.5 to 6.8**.

Stakeholder	Summary of response	Consideration in the Scoping Report
	strategic placement to minimise visibility, visual screening • Lighting • Visual amenity • Exploration of alternatives • Policy context, including South Kesteven Local Plan (2020), and neighbourhood plans	Alternative designs for towers may be considered in some locations where conditions dictate the requirement. Other mitigation will be considered as the design and assessment develop iteratively, as described in **Section 6.6**. **Chapter 3 Main Alternatives Considered** summarises the consideration of alternatives to date. The ES will report the further consideration of reasonable alternatives. **Chapter 2 Regulatory and Planning Policy Context** and associated appendices list the policy relevant to this report and the assessment it describes, including South Kesteven Local Plan and Neighbourhood Plans.
Campaign to Protect Rural England (CPRE) Lincolnshire	Concerns over the potential negative impacts on the significant landscape and the potential negative views from Corby Glen's Conservation Area from a 400kV outdoor substation with 50m high gantries. Concern that rural character will be eroded.	Potential landscape receptors have been identified through an initial review of the baseline environment and set out within **Section 6.5**. **Table 6.2** sets out the proposed scope of assessment for landscape receptors. The proposed methodology for the assessment of landscape effects is set out in **Section 6.8** and includes consideration of both physical and perceptual aspects of landscape character, and size and scale of development.

Stakeholder	Summary of response	Consideration in the Scoping Report
		A range of measures relevant to landscape and visual impacts are referenced in **Section 6.6** and described in further detail in **Appendix 4A Initial Outline CoCP.**

6.4 Study Area

6.4.1 Identification of an initial Study Area has involved a desk-based review of mapping and landscape character information and the maximum parameters of each element of the Project, targeted field survey to gain an understanding of the existing baseline, and the application of professional judgement.

6.4.2 In accordance with good practice guidance set out in the Guideline for Landscape and Visual Impact Assessment (GLVIA) (Ref 6.1), the Study Area for the landscape assessment seeks to encompass all landscape receptors with the potential to be significantly affected by the Project.

6.4.3 An initial Study Area extending 3 km from the Scoping Boundary of the new overhead line and substations, including up to two substations at Weston Marsh and new substations near Corby Glen and west of Ab Kettleby, has been used to inform the Scoping Report, as illustrated on **Figure 6.1**. It is proposed that the Study Area for the landscape assessment in the ES is defined as 3 km from the outer boundary of the Order Limits.

6.4.4 It is acknowledged that elements of the Project may be visible beyond the Study Area extents. However, at locations beyond the Study Area, the separation distances will be such that potential indirect impacts resulting from the Project are unlikely to lead to a fundamental change to the perception or experience of the landscape and as such potential effects are unlikely to be significant.

6.4.5 The Study Area will be reviewed and further refined at the assessment stage, through the use of the Order Limits, Zone of Theoretical Visibility (ZTV) modelling and targeted field surveys to ensure a proportionate approach focused on potential for significant effects. ZTV modelling will give an indication of the theoretical extent of potential indirect change related to visibility of elements of the Project, and also allow identification of areas and landscape receptors where change is unlikely to occur and can therefore be excluded from the assessment.

6.4.6 For the purposes of this Scoping Report, a Study Area of 1 km from the Scoping Boundary of the existing ZA (Cottam – Sundon) 400 kV overhead line (reconductoring) between the new substation near Ab Kettleby and the existing Grendon substation has been used (refer to **Figure 6.1**). This has allowed for identification of potential receptors related to the proposed reconductoring. As detailed in Section 6.7, impacts from the reconductoring element of the Project are proposed to be **scoped out** of the landscape assessment.

6.5 Baseline Conditions

Data Sources

6.5.1 The known or predicted current and future baseline environment described in this section of the scoping chapter has been informed by the following data sources:

- Ordnance Survey (OS) mapping and aerial photography;
- Natural England National Character Area Profiles (Ref 6.9);
- East Midlands Regional Landscape Character Assessment (Ref 6.10); and
- Published local landscape character assessments (listed and referenced in paragraph 6.5.14, below).

Baseline

6.5.2 An initial review of the baseline environment has been undertaken through desk-based research and targeted field surveys.

6.5.3 Desk-based research has involved a review of mapping and aerial photography, planning and policy documents, landscape character assessments and other sources of information relevant to the baseline environment within the Study Area. An initial targeted field survey was undertaken in January 2025 as part of the optioneering stage and allowed ground truthing of desk-based research to confirm key landscape characteristics. An additional targeted field survey was undertaken in September 2025 to inform this Scoping Report and the design process.

6.5.4 Further detailed research and surveys will be undertaken as part of the assessment process to define the existing baseline conditions within the Study Area and inform detailed siting, routeing and assessment. The ES assessment will include a detailed baseline description for each of the identified landscape receptors within the Study Area. The baseline description will set out the key characteristics that define each area and provide information on the landscape value for each receptor.

6.5.5 The Project has been divided into five Sections as described in **Chapter 4, Description of the Project** and shown on **Figure 1.2 Scoping Boundary**. Each of the five Sections are defined by the geographical alignment of the Scoping Boundary and the administrative boundaries of the local authorities. The paragraphs below identify potential landscape receptors within the Study Area.

Landscape Designations

6.5.6 No National Landscapes have been identified within the Study Area, the closest being the Norfolk Coast National Landscape, located over 30 km to the east of the Project.

6.5.7 The following locally designated Special Landscape Areas (SLA) have been identified within the Study Area for the reconductoring of the existing ZA overhead line, as shown on **Figure 6.2**:

- Welland Valley SLA, located to the south of Market Harborough along the western fringe of part of the Study Area; and

- Castle Ashby & Yardley Chase SLA, located at the southern extent of the Study Area, adjacent to the existing Grendon substation.

6.5.8 In addition to the above landscape designations, the following Registered Parks and Gardens (RPG) have been identified within the Study Area for the new overhead line and substations, as shown on **Figure 6.2**:

- Grimsthorpe Castle RPG, located approximately 4 km west of Bourne within the Study Area for Section 2; and

6.5.9 Stapleford Hall RPG, located approximately 4.5 km east of Melton Mowbray within the Study Area for Section 3. The following Registered Parks and Gardens (RPG) have been identified within the Study Area for the reconductoring of the existing ZA overhead line, as shown on **Figure 6.2:**

- Baggrave Hall RPG and Quenby Hall RPG, located approximately 5 km east of Leicester within the Study Area for Section 4;
- Lowesby Hall RPG, located approximately 7.5 km east of Leicester within the Study Area for Section 4;
- Langton Hall RPG, located on the western fringe of the Study Area, approximately 2.5 km east of Kibworth Beauchamp on the Study Area boundary for Section 4;
- Harrington RPG, located approximately 3.5 km west of Rothwell within the Study Area for Section 5;
- Great Harrowden Hall RPG, located on the northern fringe of Wellingborough within the Study Area for Section 5; and
- Castle Ashby RPG, located at the southern extent of the Study Area, adjacent to the existing Grendon substation within the Study Area for Section 5.

Landscape Character Units

6.5.10 Landscape character is a composite of physical and cultural elements. Landform, hydrology, vegetation, land cover, land use pattern, cultural and historic features and associations combine to create a common ‘sense of place’ and identity which can be used to categorise the landscape into definable units. The level of detail and size of unit can be varied to reflect the scale of definition required. It can be applied at a national, regional, and local level.

6.5.11 The hierarchy of landscape classification of the Study Area is set out below, initially highlighting the national and regional level characterisation before identifying the more detailed local landscape units. The national and regional scale units provide a useful context. However, it is anticipated that the local landscape units will be used to define the baseline against which potential effects will be assessed.

National Landscape Character

6.5.12 The following National Character Areas (NCA), as defined by Natural England (Ref 6.9), are partially located within the Study Area, as shown on **Figure 6.3**:

- NCA 46: The Fens;
- NCA 75: Kesteven Uplands;
- NCA 74: Leicestershire and Nottinghamshire Wolds;

- NCA 93: High Leicestershire;
- NCA 94: Leicestershire Vales;
- NCA 89 Northamptonshire Vales;
- NCA 95 Northamptonshire Uplands;
- NCA 92: Rockingham Forest; and
- NCA 91: Yardley-Whittlewood Ridge.

Regional Landscape Character

6.5.13 At a regional level, the landscape character of the Study Area is defined and described in The East Midlands Regional Landscape Character Assessment (Ref 6.10). The following Regional Landscape Character Types (RLCT) are located within the Study Area, as shown on **Figure 6.4**:

- RLCT 2a: Settled Fens and Marshes;
- RLCT 2b: Planned and Drained Fens and Carrlands;
- RLCT 2c: Fen and Marsh Margin Farmlands;
- RLCT 3a: Floodplain Valleys;
- RLCT 4a: Unwooded Vales;
- RLCT 5c: Undulating Mixed Farmlands;
- RLCT 8a: Clay Wolds; and
- RLCT 10a: Forest Hills and Ridges.

Local Landscape Character

6.5.14 At a local level, the following published landscape character assessments are relevant to the Study Area:

- South Holland District - Strategic Landscape Capacity Study for South Holland District Council (Ref 6.11);
- South Kesteven District - South Kesteven Landscape Character Assessment (Ref 6.12);
- Rutland District – Rutland Landscape Character Assessment (Ref 6.13);
- Melton District – Melton Landscape Character Assessment (Ref 6.14);
- Charnwood District –The Borough of Charnwood Landscape Character Assessment (Ref 6.15);
- Harborough District – Harborough District Landscape Character Assessment (Ref 6.16); and
- West and North Northamptonshire - Northamptonshire Current Landscape Character Assessment (Ref 6.17), with local updates provided by Daventry Landscape Character Assessment (Ref 6.18), Northampton Urban Fringe Landscape Character & Sensitivity Study (Ref 6.19), and South Northamptonshire Landscape Character Assessment (Ref 6.19).

6.5.15 The local landscape character units relevant to each of the Sections along the Scoping Boundary are set out in the respective paragraphs below and shown on **Figure 6.5**.

6.5.16 The local landscape character units will form the basis of the baseline description and subsequent assessment of potential effects within the landscape assessment.

Section 1

6.5.17 The landscape of Section 1 in South Holland is characterised by a relatively flat, low-lying topography and productive arable land use. It is a large scale and predominantly open landscape, divided by linear ditches and drains and occasional linear tree belts along field boundaries. This is a well settled landscape with a series of small settlements and dispersed individual properties.

6.5.18 The local landscape character of South Holland is defined within the Strategic Landscape Capacity Study for South Holland District Council (Ref 6.11), identifying three distinct Landscape Character Types (LCT). The following two LCTs are located within the Study Area related to Section 1:

- Settled Fens LCT; and
- Peaty Fens LCT.

Section 2

6.5.19 The landscape of Section 2 in South Kesteven transitions from open flat fens to the east and more elevated rolling landform to the west. The fens are a low-lying and productive arable landscape, divided by a network of ditches and drains and occasional trees. Further west the topography is more variable consisting of a series of low, broadly north south ridges and valleys, creating a large-scale undulating agricultural landscape.

6.5.20 The local landscape character of the South Kesteven is defined within the South Kesteven Landscape Character Assessment (Ref 6.12). This document identifies a series of seven distinct Landscape Character Areas (LCA). The following three LCAs are located within the Study Area related to Section 2:

- The Fens LCA;
- Fen Margins LCA; and
- Kesteven Uplands LCA.

6.5.21 A small part of the Study Area related to Section 2 is also covered by the Rutland Landscape Character Assessment (Ref 6.13), and includes the fringes of the following two LCAs:

- Di - Cottesmore Plateau LCA; and
- Dii - Clay Woodlands LCA.

Section 3

6.5.22 The landscape of Section 3 in Melton is broadly characterised by undulating agricultural land with a variable sense of scale, openness and enclosure, influenced by topography, tree cover and field pattern. This is a well settled landscape, including Melton Mowbray and a range of smaller villages and scattered rural properties.

6.5.23 The local landscape character of Melton District is defined within the Melton Landscape Character Assessment (Ref 6.14) which identifies a series of 21 LCAs, the following 18 of which are located within the Study Area related to Section 3:

- 1 - Vale of Belvoir LCA;
- 3 - Wolds Scarp LCA;
- 4 - Wolds Top LCA;
- 6 - Ridge and Valley LCA;
- 7 - Village Pastures LCA;
- 8 - Limestone Edge LCA;
- 9 - Parkland LCA;
- 10 - Mixed Farmland LCA;
- 11 - Pastoral Farmland LCA;
- 12 - Wreake Valley LCA;
- 13 - Eye Valley LCA;
- 14 - Gaddesby Valley LCA;
- 15 - High Leicestershire Hills LCA;
- 16 - Farmland Patchwork LCA;
- 17 - Open Arable LCA;
- 19 - Asfordby Quarry LCA;
- 20 - Melton Farmland Fringe LCA; and
- 21 - Melton LCA.

6.5.24 Small parts of the Study Area related to Section 3 are also covered by the Rutland Landscape Character Assessment (Ref 6.13) and Borough of Charnwood Landscape Character Assessment (Ref 6.15). The fringes of the following three LCAs are located within the Study Area related to Section 3:

- B - Vale of Catmose LCA (Rutland);
- Di - Cottesmore Plateau LCA (Rutland); and
- High Leicestershire LCA (Charnwood).

Section 4

6.5.25 The landscape of Section 4 in Harborough is broadly characterised by rolling topography forming broad ridges and shallow valleys. This is a predominantly agricultural landscape with pasture on higher, sloping land and arable fields on lower, flatter areas. Tree cover is variable and largely confined to field boundaries and small woodlands. There is a variable sense of scale, largely related to the underlying field pattern.

6.5.26 The local landscape character of Harborough is defined within the Harborough District Landscape Character Assessment (Ref 6.16) which identifies a series of 26

distinct LCAs, the following 12 LCAs are located within the Study Area related to Section 4:

- 1a - Tilton on the Hill and Skeffington LCA;
- 2a - Marefield and Owston LCA;
- 2b - Hungarton and Lowesby Estates LCA:
- 2c - Houghton-on-the-Hill to Keyham LCA;
- 2d - Burton Overy to Billesdon LCA;
- 2e - Shangton to East Langton LCA;
- 3a - Loddington LCA;
- 3b - Rolleston to Allexton LCA;
- 5c – Market Harborough LCA
- 6a - Hallaton to Stoton Wyville LCA;
- 7a - Great Bowden to Welham LCA; and
- 7b - Medbourne to Great Easton LCA.

6.5.27 A small part of the Study Area related to this Section is also covered by the Borough of Charnwood Landscape Character Assessment (Ref 6.15), with the fringe of the High Leicestershire LCA located adjacent to the Scoping Boundary.

Section 5

6.5.28 The landscape of Section 5 in North Northamptonshire and West Northamptonshire is broadly characterised by a large scale and gently undulating landform and occasional steeper scarp slopes. It is an open and variable landscape of mixed agricultural land use, with arable fields on the broad, flat river terraces and pasture on more undulating land and slopes. It is a relatively well settled landscape including a series of small and medium sized villages and the fringes of large settlements such as Kettering, Wellingborough and Northampton.

6.5.29 The local landscape character of North Northamptonshire and West Northamptonshire is defined within the Northamptonshire Current Landscape Character Assessment (Ref 6.17), although with additional updated information for parts of West Northamptonshire provided within the Daventry Landscape Character Assessment (Ref 6.18), the Northampton Urban Fringe Landscape Character & Sensitivity Study (Ref 6.19), and the South Northamptonshire Landscape Character Assessment (Ref 6.20). These documents identify a series of 64 distinct LCAs and 15 urban areas, with the following 21 LCAs located within the Study Area related to Section 5:

- North Northamptonshire LCAs
- 4f - Kettering and Wellingborough Plateau LCA;
- 7a - Geddington Chase LCA;
- 12a – Wollaston to Irchester LCA;
- 13e Cottesbrook and Arthingworth LCA;

- 18d – The Nene – Billing Wharfe to Woodford Mill LCA;
- 18i - The Welland – Market Harborough to Cottingham LCA; and
- 19c - Welland Vale LCA.

Daventry LCAs

- 4e - Pitsford Water LCA;
- 5a - Naseby Plateau LCA;
- 5b - Sywell Plateau LCA;
- 13d - Cottesbrooke and Arthingworth LCA;
- 15a - Hothorpe Hills to Great Oxendon LCA; and
- 19c - Welland Vale LCA.

Northampton Urban Fringe LCAs

- 4e - Overstone Park;
- 4f - Ecton;
- 6a - Brafield-on-the-Green;
- 12b Cogenhoe; and
- 18d – Nene Valley – The Washlands.

South Northamptonshire LCAs

- 6b - Hackleton Claylands LCA;
- 12a – Little Houghton to Castle Ashby; and
- 18c – The Nene – Billing Wharf

Future Baseline

6.5.30 The future baseline relates to anticipated changes to the current baseline in the future which are predicted to occur in the absence of the Project. Landscapes change and evolve over time through both natural process and as a result of human influence through changes in land use, management or development and climate change.

6.5.31 The landscape assessment will make predictions relating to potential change to the baseline, informed by known development pressures, local development plan allocations, local policy and observations in the field. In addition, the future baseline will consider proposed and committed developments that will be completed before this Project commences, including renewable energy schemes and other National Grid infrastructure projects, that may influence the character and perception of the landscape. The future baseline will seek to highlight potential changes in the baseline that may influence the assessment outcomes.

6.6 Design and Control Measures

Design Measures

6.6.1 The Project has been carefully planned to avoid designated sites and sensitive landscape receptors as far as reasonably practicable through an initial siting and routeing process as described in **Chapter 3 Main Alternatives Considered** and **Chapter 4, Description of the Project**. This approach aligns with the principles outlined in the Holford Rules (Ref 6.6) and Horlock Rules (Ref 6.7). These principles will continue to guide the siting, routeing and design processes in order to avoid or minimise potential adverse landscape effects.

6.6.2 It is acknowledged within paragraphs 2.9.7 and 2.9.9 of National Policy Statement (NPS) EN-5 (Ref 6.21) that new overhead lines and new substations, sealing end compounds, and other associated above-ground installations can result in adverse landscape and visual impacts.

6.6.3 The landscape assessment will be an iterative process with progressive levels of survey and appraisal informing detailed siting and routeing, and refinement of the design of the Project. This will include evaluation of detailed alignment options and locations of individual overhead line towers, positioning and design of the substations, and the identification of appropriate mitigation measures to minimise potential residual effects.

Control and Management Measures

6.6.4 A range of standard measures for the Project will be adopted throughout the duration of the construction phase An Initial Outline Code of Construction Practice (CoCP) is provided in **Appendix 4A.** Measures relevant to the control and management of impacts that could affect landscape are (refer to **Appendix 4A** for the full description of each measure):

- GG09 – on reinstatement of land used temporarily;
- GG10 – on protection of retained sensitive features;
- GG13 – on design of construction sites relative to residential properties;
- GG20 and AS01 – on earthworks, soil storage and protection;
- GG22 and LV04 – on design and position of construction lighting;
- GG26 – on fencing of working areas;
- LV01 – on retention and replacement of vegetation;
- LV02 – on tree protection measures; and
- LV03 – on aftercare and establishment period.

6.6.5 An Outline Landscape and Ecology Management Plan (LEMP) will be provided with the application for development consent and secured through appropriate Requirement of the DCO. This will set out the details of proposed landscape and habitat reinstatement, mitigation and/or enhancement measures and associated maintenance, management and monitoring requirements.

6.7 Potential for Significant Effects

6.7.1 The landscape assessment in the ES will consider the construction and operation of the Project. A description of each of these stages is set out in **Chapter 4 Description of the Project**. The potential for significant effects and inclusion (Scoped in) and exclusion (Scoped out) of matters in the scope of the landscape ES assessment is set out below and has been determined using the approach described in **Chapter 5 EIA Approach and Methodology.**

6.7.2 The anticipated embedded design, control and management measures described in Section 6.6 have been taken into account when determining the potential for the Project to result in significant effects.

6.7.3 Impacts on landscape receptors can be either direct or indirect. Direct impacts relate to physical changes to the landscape through loss or alteration of existing features and/or addition of new elements. Indirect impacts relate to changes to perceptual attributes of the landscape and its character, such as a sense of remoteness, naturalness or tranquillity.

Potential sources of impacts

Sources of construction impacts

6.7.4 Potential sources of temporary landscape impacts associated with construction of the Project, such as installation of new substations and new overhead line, are likely to include:

- direct and indirect change resulting from temporary clearance of vegetation and alteration of landform;
- direct and indirect change resulting from introduction of temporary structures, fencing, lighting and/or other features such as at construction compounds, material storage and laydown areas, and introduction of temporary access tracks and car parks; and
- indirect change resulting from movement, noise and lights associated with construction traffic, plant and machinery.

Sources of operation and maintenance impacts

6.7.5 Potential sources of landscape impacts associated with operation and maintenance of the Project are likely to include:

- direct change resulting from loss or alteration of vegetation not reinstated as part of construction and/or topography;
- direct and indirect change resulting from introduction of a new 400 kV overhead line into the landscape;
- direct and indirect change resulting from introduction of proposed substation structures and associated access roads, fencing and lighting into the landscape; and
- direct and indirect change resulting from temporary movement, noise and lights associated with periodic maintenance traffic, plant and machinery for essential

repairs and maintenance. This may include cutting back of vegetation where required.

Potential impacts

6.7.6 **Table 6.2** describes the sources of potential impacts on landscape receptors identified in the initial Study Area. Where an impact could give rise to potentially significant effects these are then scoped into the ES. Impact pathways that are unlikely to give rise to significant effects are proposed to be scoped out of the ES.

6.7.7 A precautionary approach has been taken to the identification of potential for significant effects and where there is uncertainty the receptor is proposed to be included in the assessment at this stage. A further review of those aspects scoped in will be undertaken as part of the assessment process to ensure a targeted and proportional approach is taken, focused on potential significant effects.

6.7.8 As highlighted in Section 6.4, the Study Area will be refined as part of the assessment phase to be based on an offset from the Order Limits, rather than the Scoping Boundary. All landscape designations and landscape character areas which fall outside of the final Study Area and/or the extent of the ZTV (once ground-truthed by field work) will be **scoped out** of the ES due to no potential for significant effects as a result of the offset distance and/or lack of visibility.

Landscape Designations

6.7.9 It is anticipated that direct impacts (physical change) on landscape designations from the new 400 kV overhead line and new substations will be avoided through siting and design, as advocated in the Holford Rules (Ref 6.6) and Horlock Rules (Ref 6.7). However, there is potential for indirect impacts on perceptual attributes of some of the identified landscape designations as a result of change occurring in adjacent or nearby landscapes. **Table 6.2** below identifies landscape designations to be scoped in and those proposed to be scoped out of the assessment for each phase of the Project.

Landscape Character Units

6.7.10 There is potential for both direct and indirect impacts on landscape character within the Study Area as a result of construction and operation of the Project.

6.7.11 Construction compounds, access tracks, scaffolds and construction activities will introduce new features and increased movement into parts of the landscape and views. It is anticipated that construction compounds will be carefully sited to help minimise potential impacts by avoiding key landscape features and where possible making use of existing vegetation or topography for screening.

6.7.12 The proposed new substations and new overhead line will introduce new structures into the landscape, with potential for change to physical attributes of the landscape, including topography, vegetation and land use, and perceptual attributes, such as the sense of tranquillity, remoteness or naturalness. Careful siting and routeing will help to reduce potential impacts, with additional mitigation measures identified where required. However, the potential remains for significant effects on landscape character from the construction and operation of the new substations and new overhead line to occur and therefore these aspects have been **scoped in** to the ES.

Reconductoring

6.7.13 In relation to reconductoring of the existing ZA overhead line, potential impacts will be temporary in nature and of a short duration, and experienced in the context of the existing overhead line and movement of existing traffic on the well-developed road network. At operation, all areas disturbed by construction will be reinstated and the reconductored towers will appear the same as the existing overhead line, with no horizontal, and limited vertical realignment proposed, and therefore very little or no discernible change is anticipated to the landscape upon completion. Impacts from reconductoring would represent minimal change from existing landscape baseline conditions and is unlikely to result in significant effects on landscape receptors. As such, impacts from reconductoring are proposed to be **scoped out** of the ES.

Table 6.2 Impacts, receptors and the potential for significant effect

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
Nationally designated or nationally important landscapes					
Construction	Introduction of temporary structures, access tracks, activity and lighting associated with construction of the new overhead line and substations.	Temporary alteration to key characteristics and/or the impression of the landscape, resulting from direct and/or indirect change.	Norfolk Coast National Landscape	No – North Norfolk Coast is the National Landscape in closest proximity to the Project, there would be no discernible change due to separation distance of over 30 km.	Scoped out
			All RPGs.	No – no direct change anticipated through careful siting of construction works in line with the Initial Outline CoCP (refer to **Appendix 4A Initial Outline Code of Construction Practice)**. Indirect change will be limited by screening from existing boundary vegetation and will be temporary and of short duration.	Scoped out
	Introduction of temporary structures, access tracks, activity and lights associated with reconductoring of the existing ZA overhead line.	Temporary localised alteration to key characteristics and/or the impression of the landscape, resulting from direct and/or	All RPGs.	No – construction will occur along an existing overhead line, will be temporary, with only limited and localised influence for a short duration.	Scoped out

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
		indirect change.			
Locally designated landscapes					
Construction	Introduction of temporary structures, access tracks, activity and lighting associated with construction of the new overhead line and substations.	Temporary localised alteration to key characteristics and/or the impression of the landscape, resulting from direct and/or indirect change.	All locally designated landscapes (SLAs).	No – there are no SLAs located within the Study Area.	Scoped out.
Construction	Introduction of temporary structures, access tracks, activity and lights associated with reconductoring of the existing ZA overhead line.	Temporary localised alteration to key characteristics and/or the impression of the landscape, resulting from direct and/or indirect change.	All locally designated landscapes (SLAs).	No – construction will occur along an existing overhead line, will be temporary, with only limited and localised influence for a short duration.	Scoped out

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
National Landscape Character Areas					
Construction	Introduction of temporary structures, access tracks, activity and lighting associated with construction of the new overhead line and substations.	Temporary alteration to key characteristics and/or the impression of the landscape, resulting from direct and/or indirect change.	NLCA 46: The Fens, NLCA 75: Kesteven Uplands, and NLCA 74: Leicestershire and Nottinghamshire Wolds	Yes – potential for direct effects on landscape elements and features and indirect effects on perceptual attributes across wide area.	**Scoped in** (summary assessment based on local character units)
			All other NLCA	No – located greater than 3km from the new overhead line and substations, meaning there is limited potential for discernible change.	Scoped out
	Introduction of temporary structures, access tracks, activity and lights associated with reconductoring of the existing ZA overhead line.	Temporary localised alteration to key characteristics and/or the impression of the landscape, resulting from direct and/or indirect change.	All NLCA	No – construction will occur along an existing overhead line, will be temporary, with only limited and localised influence for a short duration.	Scoped out
Local landscape character units					

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
Construction	Introduction of temporary structures, access tracks, activity and lighting associated with construction of the new overhead line and substations.	Temporary alteration to key characteristics and/or the impression of the landscape, resulting from direct and/or indirect change.	Rutland units: Vale of Catmose LCA; Cottesmore Plateau LCA; and Clay Woodlands LCA. Melton unit: Vale of Belvoir LCA.	No – these LCAs are located outside of the Scoping Boundary and therefore no direct change will occur. Only small parts are within the Study Area. Potential change to perceptual attributes will be limited in extent and duration and will not result in discernible change.	Scoped out
			Melton unit: Melton LCA.	No – this LCA covers the urban area of Melton Mowbray defined by settlement and development. Construction will not occur within this LCA and will not alter the existing perceptual attributes.	Scoped out
			All remaining local character units (LCTs and LCAs) within the assessment Study Area and ZTV.	Yes - potential for localised direct effects on landscape features and more widespread indirect effects on perceptual attributes and overall impression of character.	**Scoped in**
	Introduction of temporary structures, access tracks, activity and lights associated with reconductoring of	Temporary localised alteration to key characteristics and/or the	All local landscape units (LCTs and LCAs).	No – construction will occur along an existing overhead line and be undertaken in accordance with the Initial Outline CoCP (refer to **Appendix 4A: Initial Outline CoCP**). Any change will be	Scoped out

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
	the existing ZA overhead line.	impression of the landscape, resulting from direct and/or indirect change.		temporary and of a short duration and will be localised, with only limited influence on landscape character.	
Nationally designated or nationally important landscapes					
Operation	Introduction of new 400 kV overhead line and substations.	Alteration to key characteristics and/or the impression of the landscape, resulting from direct and/or indirect change.	Norfolk Coast National Landscape.	No – North Norfolk Coast is the National Landscape in closest proximity to the Project, there would be no discernible change due to separation distance of over 30 km.	Scoped out
			Grimsthorpe Castle RPG.	Yes – in relation to the new overhead line, there is potential for long-term indirect change to perceptual aspects and in relation to designed vistas from the castle and grounds which may locally alter the impression of the landscape. No - in relation to the substations, as the nearest proposed substation is located approximately 4.5 km from the RPG.	**Scoped in** for new overhead line. Scoped out for substations.
			Stapleford Hall RPG.	No – this RPG is located approximately 2 km from Scoping Boundary. Potential indirect change	Scoped out

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
				limited by distance, local topography and vegetation.	
	Reconductored existing ZA overhead line.	Alteration to key characteristics and/or the impression of the landscape, resulting from direct and/or indirect change.	All RPGs.	No – reconductored overhead line will appear similar to existing with very little or no change from the baseline.	Scoped out
Locally designated landscapes					
Operation	Introduction of new 400kV overhead line and substations	Alteration to key characteristics and/or the impression of the landscape, resulting from direct and/or indirect change.	All locally designated landscapes (SLAs).	No – there are no SLAs located within the Study Area.	Scoped out
Operation	Reconductored existing ZA overhead line.	Alteration to key characteristics and/or the	All locally designated landscapes (SLAs).	No – reconductored overhead line will appear similar to existing with very little or no change from the baseline.	Scoped out

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
		impression of the landscape, resulting from direct and/or indirect change.			
National Landscape Character Areas					
Operation	Introduction of new 400 kV overhead line and new substations.	Alteration to key characteristics and/or the impression of the landscape, resulting from direct and/or indirect change.	NLCA 46: The Fens, NLCA 75: Kesteven Uplands, and NLCA 74: Leicestershire and Nottinghamshire Wolds	Yes – potential for direct effects on landscape elements and features and indirect effects on perceptual attributes across wide area.	**Scoped in** (summary assessment based on local character units)
			All other NLCA	No – located greater than 3km from the new overhead line and substations, limiting potential for discernible change.	Scoped out
	Reconductored existing ZA overhead line.	Alteration to key characteristics and/or the impression of the landscape, resulting from direct and/or	All NLCA	No – reconductored overhead line will appear similar to existing with very little or no change from the baseline.	Scoped out

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
		indirect change.			
Local landscape character units					
Operation	Introduction of new 400 kV overhead line and new substations.	Alteration to key characteristics and/or the impression of the landscape, resulting from direct and/or indirect change.	Rutland units: Vale of Catmose LCA; Cottesmore Plateau LCA; and Clay Woodlands LCA. Melton unit: Vale of Belvoir LCA.	No – only small parts of these LCAs are within the Study Area. No direct change will occur. Change to perceptual attributes limited and localised, very little or no alteration of baseline.	Scoped out
			Melton unit: Melton LCA.	No – this LCA is located outside the Scoping Boundary, therefore no direct change will occur. Existing character defined by settlement and development, which will not be influenced by the new overhead line located outside this LCA.	Scoped out
			All remaining local character units (LCTs and LCAs) within the assessment Study Area and ZTV.	Yes - potential for localised direct change and more widespread indirect change to perceptual attributes and overall impression of character.	**Scoped in**

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
	Reconductored existing ZA overhead line.	Alteration to key characteristics and/or the impression of the landscape, resulting from direct and/or indirect change.	All local landscape units (LCTs and LCAs).	No – reconductored overhead line will appear largely the same as existing with very little or no change from the baseline.	Scoped out
All landscape designations and landscape character units					
All phases	Construction and operation of all components of the Project.	Alteration to key characteristics and/or the impression of the landscape, resulting from direct and/or indirect change.	All identified landscape designations and landscape character units outside the final Study Area (3 km from Order Limits) and/or outside the ZTV/ extent of potential visibility.	No – no potential for change on receptors outside the ZTV, and little potential for impacts on those greater than 3 km from the Project.	Scoped out
Maintenance	Periodic maintenance of new 400 kV overhead line, new substations and reconductored existing ZA overhead line.	Temporary localised alteration to key characteristics and/or the	All identified landscape receptors.	No – any change would be limited and localised and occur in the context of the overhead lines and substations, would be temporary and of a short duration.	Scoped out

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
		impression of the landscape, resulting from direct and/or indirect change.			

6.8 Proposed Assessment Methodology

Proposed Data Sources

6.8.1 The guidance listed in Section 6.2 and data sources listed in Section 6.5, will be used to inform the assessment.

Proposed Assessment Methodology

6.8.2 The following section summarises the methodology proposed to be used for the landscape assessment in the ES, which is based on the principles set out in GLVIA (Ref 6.1). Elements of the landscape assessment methodology therefore differ from the general assessment methodology presented in **Chapter 5 EIA Approach and Methodology**. For example, landscape sensitivity includes consideration of both the landscape value, identified as part of the baseline, and susceptibility, which is influenced by the specific nature of the Project. The landscape assessment also refers to '*magnitude of effect*' rather than '*magnitude of impact*' in accordance with GLVIA.

6.8.3 The assessment is part of an iterative process where, as potentially significant effects are identified, these inform the siting, routeing and design of the Project alongside consideration of other constraints. The assessment will be carried out based on the following key steps:

- Establishment of the baseline conditions, including identification and evaluation of key physical and perceptual attributes and receptor value. The landscape baseline will be based on local landscape character units defined within published district and local landscape character assessments.
- Appreciation of the Project, including an understanding of the location, nature scale and maximum parameters of each element and any embedded mitigation measures. Consideration will also be given to any required tree removals identified within the arboriculture surveys and reports for the Project.
- Assessment of effects on landscape receptors, with a focus on potential for significant effects.

6.8.4 Each of the above steps will be informed by a combination of desk-based research, evaluation and site-based survey. Surveys will be undertaken both during winter months and in the summer to gain an appreciation of how the landscape changes with the seasons.

6.8.5 GLVIA (Ref 6.1) places a strong emphasis on the importance of professional judgement in identifying and defining the significance of landscape effects. The landscape assessment will be undertaken by experienced Chartered Landscape Architects and professional judgement will be used in combination with structured methods and criteria to determine the significance of effect.

6.8.6 The detailed assessment will be based on an evaluation of the sensitivity to change and the magnitude of effect for each of the identified landscape receptors with potential for significant effects.

6.8.7 The level and nature of effects can vary at different stages of the Project and can change over time, particularly where mitigation planting is proposed. The landscape

assessment will therefore include consideration of temporary effects associated with construction, and more permanent effects related to the operational phase. Where mitigation planting is proposed the assessment of operational stage effects will include consideration of impacts at Year 1 (after all construction activities are completed), to indicate the potential worst case, and at Year 15, to indicate the influence of mitigation planting on longer term effects.

Sensitivity

6.8.8 Landscape receptors are described as components of the landscape that are likely to be affected by the Project. These can include overall character and key characteristics, individual elements or features and specific aesthetic or perceptual attributes. It is the interaction between the different components of the Project and these landscape receptors which has potential to result in landscape effects (both adverse and beneficial).

6.8.9 The sensitivity of the landscape receptor will be derived by consideration of the value of the landscape (undertaken as part of the baseline study) and the susceptibility to change of the receptor to the specific type of development being assessed.

Value

6.8.10 Landscape value is frequently addressed by reference to international, national, regional and local designations. Absence of such a designation does not necessarily imply a lack of quality or value. Factors such as accessibility and local scarcity can render areas of nationally unremarkable quality, highly valuable as a local resource. The evaluation of landscape value will be informed by guidance provided in GLVIA (Ref 6.1) and Landscape Institute TGN 02/21 (Ref 6.3) which includes consideration of the following key factors:

- *Natural heritage* – extent to which a landscape has clear evidence of ecological, geological, geomorphological, or physiographic interest which contribute positively to the landscape.
- *Cultural heritage* – extent to which a landscape has clear evidence of archaeological, historical or cultural interest which contribute positively to the landscape.
- *Landscape quality/condition* - the measure of the physical state of the landscape including the intactness of the landscape and the condition of individual elements.
- *Association* - extent that connections with notable people, events and the arts contribute to the perception of the landscape receptor.
- *Distinctiveness* – a measure of the strength of identity and expression of characteristics, presence of distinct, rare or unusual features and contribution to character or identity of a settlement.
- *Recreation* - the extent of recreational opportunities and activities where appreciation of the landscape is important to the experience/enjoyment.
- *Scenic quality* - the level of visual and sensory appeal of the landscape.
- *Perceptual aspects* - the extent that the landscape receptor is recognised for its perceptual qualities or attributes (e.g. wildness, tranquillity and/or dark skies).

- *Functional* – extent to which the landscape performs a clearly identifiable and valuable function, particularly in the healthy functioning of the landscape.

6.8.11 Many of the above factors overlap and/or are interrelated and judgements as to the overall landscape value will consider the relative importance and strength of each of the factors. Landscape value will be classified as very high, high, medium, low or very low, with explanation provided as to the basis of the evaluation.

Susceptibility

6.8.12 Landscape susceptibility relates to the ability of a particular landscape to accommodate the Project. It is assessed through consideration of the baseline characteristics of the landscape, including the following:

- *Scale* - a measure of how well the Project would relate to the overall scale of the landscape, landform and/or landscape features.
- *Landform* - the extent to which the Project would relate to and/or integrate with the existing landform and topographic features.
- *Pattern* - the extent to which the Project would relate to the existing landscape pattern.
- *Landcover* - a measure of how well the Project would relate to existing landcover.
- *Openness/enclosure* - the level of which the openness or enclosure of a landscape would influence the ability of a landscape to accommodate the Project.
- *Landmarks* - a measure of how well the Project would relate to existing landmark features.
- *Development context* - the level to which existing similar development within a landscape influences the ability to accommodate the Project.
- *Perceptual qualities (remoteness, tranquillity, dark skies etc.)* - extent to which existing perceptual qualities would influence the ability of the landscape to accommodate the Project.

6.8.13 There is a degree of overlap and interrelationship between the above factors, and this is taken into consideration when forming overall professional judgements. The landscape susceptibility for each receptor is classified as very high, high, medium, low or very low and is supported by explanation of the basis of the evaluation.

Overall Sensitivity

6.8.14 The overall sensitivity assessment of the landscape receptor will be made by applying professional judgement to combine and analyse the identified value and susceptibility ratings. Overall sensitivity will be rated as **very high**, **high**, **medium**, **low** or **very low**.

6.8.15 **Table 6.3** below outlines indicators and typical descriptors for each level of sensitivity, drawing on factors related to landscape value and susceptibility, and has been informed by good practice guidance, including GLVIA (Ref 6.1). The basis of the assessment will be made clear in the evaluation of each landscape receptor.

Table 6.3 Sensitivity of receptors

Sensitivity	Typical Descriptors
Very High	Landscape of national value with distinctive elements and characteristics, highly susceptible and unable to accommodate change of the type proposed without fundamentally altering the present character and baseline situation.
High	Landscape of national or regional value, with some distinctive elements and characteristics and others that may be more common place, which by nature of their character are unlikely to be able to accommodate change of the type proposed without undue consequences for the maintenance of the baseline situation.
Medium	Landscape of regional or local value, with mostly common elements and characteristics, which, by nature of their character, would be able to partly accommodate change of the type proposed without undue consequences for the maintenance of the baseline situation
Low	Landscape of local or limited value and relatively inconsequential elements and characteristics, the nature of which is potentially tolerant of considerable change of the type proposed.
Very Low	Landscape of very limited value that is damaged, degraded or with a substantially modified landscape pattern and few or no natural or original features remaining, such that it is tolerant of substantial change of the type proposed.

Magnitude

6.8.16 Landscape magnitude of effect refers to the extent to which the Project would alter the existing characteristics of the landscape. It is an expression of the size or scale of change to the landscape, the geographical extent of the area influenced, and its duration and reversibility. Notes and Clarifications on Aspects of GLVIA3 (LITGN-2024-01) (Ref 6.2) sets out that the size/scale of effect is likely to be the most important factor with geographical extent and duration/reversibility considered as 'modifiers'. The variables involved are:

- The extent of existing landscape elements that would be lost, the proportion of the total extent that this represents and the contribution of that element to the character of the landscape.
- The extent to which aesthetic or perceptual attributes of the landscape are altered either by removal of existing components of the landscape or by the addition of new components.
- Whether the change alters the key characteristics of the landscape that are integral to its distinctive character.
- The geographic area over which the change will be experienced (for example within the application boundary, the immediate setting around that boundary, at the local landscape character area scale, or on a larger scale influencing broader areas of landscape character).
- The duration of the change (i.e., short term, medium term, or long term) and its reversibility (i.e., whether it is permanent, temporary, or partially reversible).

6.8.17 Landscape change can be both direct, through alteration of physical components, or indirect, resulting from changes to perceptual attributes of character and how it is experienced.

6.8.18 ZTV mapping will be produced to support the landscape assessment and give an indication of the theoretical extent of potential indirect change related to visibility of elements of the Project during operation (e.g. overhead line towers and substation structures). A 'bare earth' ZTV will be produced using Ordnance Survey Terrain 5 digital terrain data and/or Lidar data and based on the maximum parameters of the Project. Additional ZTVs indicating the influence of existing features such as buildings and vegetation on the extent of potential visibility will be prepared if suitable data is available. The ZTV will be used as a tool, alongside professional judgement, to identify areas of potential influence for further targeted survey and assessment.

6.8.19 An overall assessment of the magnitude of landscape effect resulting from the Project on landscape receptors will be made by combining the above judgements using evidence and professional judgement. The levels of landscape magnitude of effect will be described as being **very high**, **high**, **medium**, **low**, **very low** or **none** as outlined in **Table 6.4** below which has been informed by good practice guidance, including the GLVIA (Ref 6.1).

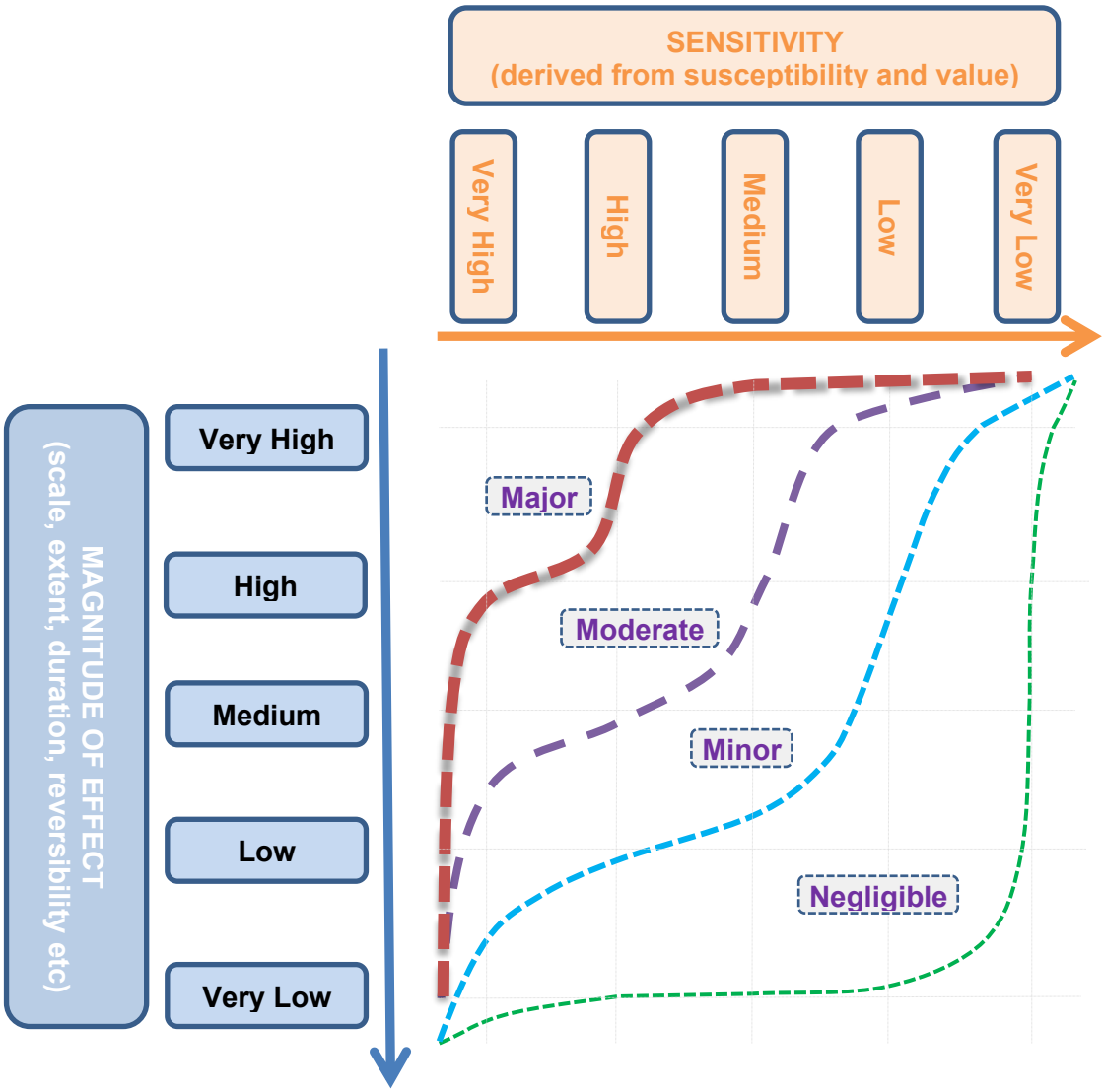
Table 6.4 Magnitude of effect

Magnitude	Typical Descriptors
Very High	Substantial alteration to the landscape receptor or may impact an extensive area or unique and important characteristics. May be longer term, permanent or reversible.
High	Large alteration to the landscape receptor or may impact an extensive area or unique and important characteristics. May be longer term, permanent or reversible.
Medium	Partial alteration to the landscape receptor or may impact a wide area or characteristics at a local level. May be medium term, permanent or reversible.
Low	Slight alteration to the landscape receptor or may impact a restricted area and few key characteristics. May be short to medium term, permanent or reversible.
Very Low	Very slight alteration to the landscape receptor or may impact a limited area or no key characteristics. May be short-term, permanent or reversible.
None	No change to the landscape receptor.

Significance of effects

6.8.20 Determination of the significance of landscape effects will be undertaken by employing professional judgement and experience to combine and analyse the magnitude of effect against the identified sensitivity of landscape receptors. **Image 6.1**, below, draws upon good practice guidance, including the GLVIA (Ref 6.1) and illustrates how sensitivity and magnitude will be considered together to identify the significance of effect.

Image 6.1: Classification of Landscape Effects



6.8.21 The landscape assessment will take account of direct and indirect changes to existing landscape elements, features and key characteristics and will evaluate the extent to which these would be lost or modified, in the context of their importance in determining the existing baseline character

6.8.22 The significance of landscape effects will be described with reference to the criteria presented in **Table 6.5** below which has been informed by good practice guidance, including the GLVIA (Ref 6.1). For the purposes of the assessment, effects rated as being of **moderate** or **major** will be considered to be significant, and **negligible** and **minor** effects will be considered not significant.

Table 6.5 Significance of landscape effect

Significance	Typical Descriptors
Major	Highly noticeable change affecting key characteristics of a very highly sensitive landscape, resulting in a fundamental change to its character.

Significance	Typical Descriptors
Moderate	Noticeable change affecting some key characteristics in a highly sensitive landscape or very noticeable change in a medium sensitivity landscape, resulting in a change to the overall impression of its character.
Minor	Small change affecting few characteristics in a medium to highly sensitive landscape or noticeable change to a less sensitive landscape, resulting in a limited or localised change to the impression of its character.
Negligible	Very little change from baseline conditions, resulting in a barely distinguishable or indistinguishable change.
No change	No alteration to any of the components that contribute to the existing landscape resource

Cumulative Effects

6.8.23 The ES will include consideration of potential cumulative effects of the Project in relation to proposed and committed developments, including renewable energy schemes and other National Grid infrastructure projects. As outlined in **Chapter 5 EIA Approach and Methodology** and in line with Planning Inspectorate Advice (Ref 6.8), an initial evaluation process will be undertaken to first identify a long list followed by a refined short list of other developments to be considered within the cumulative assessment.

6.8.24 The assessment of cumulative effects will follow a similar process to that described above, first identifying and describing the cumulative baseline, followed by an assessment of the magnitude of effect and significance of effect.

6.8.25 The cumulative baseline will be based on a theoretical scenario in which other developments identified and shortlisted as described in **Chapter 5 EIA Approach and Methodology** are present or under construction, in addition to existing schemes. The assessment of cumulative magnitude of effect and significance of effects involves consideration of the additional change resulting from the Project to the defined cumulative baseline scenario.

6.9 Assumptions and limitations

6.9.1 The landscape assessment in the ES will be undertaken based on the data and updated design details available at that time. At this scoping stage, some details of the new overhead line routeing and substation layout and design remain uncertain or under development.

6.9.2 As highlighted above, the landscape assessment will be supported by ZTV mapping, where relevant. It is important to understand the limitations of ZTVs and how they are used in the assessment process. Key limitations include:

- ZTVs are limited by the detail of the digital terrain model data used and generally do not take account of localised topographic variations.

- Some areas of theoretical visibility may comprise woodland or other vegetation or may cover areas with no public access and the likelihood of views being experienced is consequently low.
- ZTV do not take account of the influence of distance, weather or light on the nature of visibility.
- Bare earth ZTVs do not take account of features such as buildings or vegetation which may provide screening. Where screening features are included, these are limited by the detail included within available datasets.
- ZTVs tend to overstate the extent of visibility and should therefore be considered as a tool to guide targeted survey and assessment and should not be used as a measure of effects.

6.9.3 Due to these limitations, ZTVs tend to overestimate the extent of the visibility, therefore, ZTVs should be used as a tool to identify areas of potential visibility, which are then verified and refined through targeted survey and further assessment.

6.9.4 Field surveys to inform establishment of the baseline, capture photography and inform the assessment of effects will be undertaken from publicly accessible locations, such as from the road network and PRoW, in line with standard practice for landscape assessment.

6.10 Conclusion

6.10.1 This Scoping Report chapter has outlined the proposed scope for further assessment in relation to the landscape effects of the Project. The data sources that will be used to define the current and future baselines have been presented, and the impact control and management measures that will be implemented highlighted. The potential for significant effects has been identified, as well as the associated source, impact and receptors in **Table 6.2**.

6.10.2 A summary of the proposed scope of the assessment is provided in **Chapter 20 Summary**.

References

Ref 6.1 Landscape Institute and Institute for Environmental Management and Assessment (2013). Guidelines for Landscape and Visual Impact Assessment – 3rd Edition.

Ref 6.2 Landscape Institute (2024). Notes and Clarifications on Aspects of Guidelines for Landscape and Visual Impact Assessment Third edition (GLVIA3). Technical Guidance Note LITGN-2024-01.

Ref 6.3 Landscape Institute (2021). Assessing Landscape Value Outside National Designations, Technical Guidance Note 02/21.

Ref 6.4 Landscape Institute (2019). Visual Representation of Development Proposals, Technical Guidance Note 06/19.

Ref 6.5 Natural England (2014). An Approach to Landscape Character Assessment.

Ref 6.6 National Grid. Holford Rules. [online] Available at https://www.nationalgrid.com/sites/default/files/documents/13795-The%20Holford%20Rules.pdf [Accessed 25 July 2025].

Ref 6.7 National Grid. Horlock Rules. [online] Available at https://www.nationalgrid.com/sites/default/files/documents/13796-The%20Horlock%20Rules.pdf [Accessed 25 July 2025].

Ref 6.8 Planning Inspectorate (published September 2024, updated March 2025). Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment.

Ref 6.9 Natural England. National Character Area Profiles. [online] Available at: https://nationalcharacterareas.co.uk/ [Accessed 25 July 2025].

Ref 6.10 Natural England (2010). East Midlands Region Landscape Character Assessment. [online]. Available at: https://publications.naturalengland.org.uk/publication/5635681403535360 [Accessed 25 July 2025].

Ref 6.11 South Holland District Council (2003). Strategic Landscape Capacity Study for South Holland District Council.

Ref 6.12 South Kesteven District Council (2007). South Kesteven Landscape Character Assessment.

Ref 6.13 Rutland County Council (2003). Rutland Landscape Character Assessment.

Ref 6.14 Melton Borough Council (2006). Melton Landscape Character Assessment.

Ref 6.15 Charnwood Borough Council (2012). Borough of Charnwood Landscape Character Assessment.

Ref 6.16 Harborough District Council (2024). Harborough District Landscape Character Assessment.

Ref 6.17 Northamptonshire County Council (2003). Current Landscape Character Assessment.

Ref 6.18 Daventry District Council (2018). Daventry Landscape Character Assessment.

Ref 6.19 Northampton Borough Council (2018). Northampton Urban Fringe Landscape Character & Sensitivity Study.

Ref 6.20 South Northamptonshire Council (2020). South Northamptonshire Landscape Character Assessment.

Ref 6.21 Department of Energy Security & Net Zero (January 2024). 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 25 July 2025].

7. Visual

nationalgrid

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7. Visual

7.1 Introduction

7.1.1 This chapter presents how the visual assessment will consider the potential likely significant effects on visual receptors that may arise from the construction, operation and maintenance of the Project (as described in **Chapter 4, Description of the Project**). It describes the methodology and datasets to be used within the assessment, presents an overview of the baseline conditions, and identifies the potential likely significant effects to be considered within the assessment, and how these will be assessed for the purpose of the Environmental Statement (ES). As detailed in **Chapter 4, Description of the Project**, the decommissioning of the Project has been scoped out of the environmental assessment.

7.1.2 Although closely related, potential effects on visual receptors are considered and reported separately to potential effects on landscape receptors. Consideration will be given to minimising potential repetition between these assessments within the ES.

7.1.3 The Scoping Boundary is illustrated on **Figure 1.2 Scoping Boundary**.

7.1.4 This chapter should be read in conjunction with the following chapters which provide the Project context and approach to EIA:

- **Chapter 2 Regulatory and Planning Policy Context**;
- **Chapter 3 Main Alternatives Considered**;
- **Chapter 4 Description of the Project**; and
- **Chapter 5 EIA Approach and Methodology**.

7.1.5 There may be interrelationships with other disciplines. Therefore, this chapter should also be read in conjunction with the following chapters:

- **Chapter 6 Landscape** includes the identification and assessment of effects for landscape receptors and considers the impact on physical and perceptual aspects of the landscape character. Landscape and visual effects are closely related;
- **Chapter 9 Cultural Heritage** identifies heritage assets which are factors that can contribute towards an understanding of value of views;
- **Chapter 13 Traffic and Transport** includes the assessment of effects arising from increased vehicle movements, traffic volumes, and abnormal loads during construction, and increased traffic volumes during operation and maintenance; and
- **Chapter 16 Socio-Economics, Recreation and Tourism** includes consideration of recreational routes and visitor destinations that can contribute to an understanding of value of views and susceptibility of receptors.

7.1.6 This chapter is supported by the following figures and appendices:

- **Figure 7.1 Proposed Visual Study Area**; and

- **Figure 7.2 Potential Visual Receptors.**

7.2 Legislation, Policy and Guidance

7.2.1 **Chapter 2 Regulatory and Planning Policy Context** describes the overall regulatory and planning policy context for the Project. Key legislation, policy, and planning guidance relevant to the assessment of potential effects on views and visual amenity associated with the construction, operation and maintenance of the Project is provided in **Chapter 2 Regulatory and Planning Policy Context**, **Appendix 2A Key Legislation, Appendix 2B National and Regional Planning Policy** and **Appendix 2C Local Policy**.

7.2.2 The relevant principle guidance and standards that have informed the scoping process are listed below. This, along with other relevant material, will be taken into account as part of the ES assessment:

- Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA) (Ref 7.1);
- Notes and Clarifications on Aspects of Guidelines for Landscape and Visual Impact Assessment Third edition, Technical Guidance Note - 2024-01 (Ref 7.2);
- Visual Representation of Development Proposals, Technical Guidance Note 06/19 (Ref 7.3); and
- Residential Visual Amenity Assessment (RVAA), Technical Guidance Note 2/19 (Ref 7.4);
- The Holford Rules, National Grid (Ref 7.5);
- The Horlock Rules, National Grid (Ref 7.6);
- Planning Inspectorate Advice (updated March 2025) Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment (Ref 7.7); and
- Neighbourhood Plans, which often include key or locally valued views, for Colsterworth (Ref 7.8), Corby Glen (Ref 7.9), Rippingale (Ref 7.10), Skillington (Ref 7.11), Ab Kettleby (Ref 7.12), Asfordby (Ref 7.13),Clawson, Hose & Harby (Ref 7.14), Broughton and Old Dalby (Ref 7.15), Scalford (Ref 7.16), Waltham on the Wolds and Thorpe Arnold (Ref 7.17) and Wymondham and Edmondthorpe (Ref 7.18).

7.3 Consultation and Engagement

7.3.1 The ES will be informed by consultation and engagement with stakeholders, including statutory consultees, such as Historic England and Natural England and the host local authorities:

- Lincolnshire County Council, South Holland District Council and South Kesteven District Council;
- Leicestershire County Council, Melton District Council and Harborough District Council;
- North Northamptonshire Council; and
- West Northamptonshire Council.

7.3.2 In addition, engagement will be undertaken with non-statutory stakeholders as required to ensure that specialist local views and expertise can be considered as part of the ES.

7.3.3 In preparing this Scoping Report chapter, consideration has been given to stakeholder feedback received following Non-Statutory Consultation held between 11 June and 6 August 2025, as set out in **Table 7.1.**

Table 7.1 Engagement with Stakeholders

Stakeholder	Summary of response	Consideration in the Scoping Report
South Kesteven District Council	Concerns on various issues and request their consideration, including: • Assessment of visual intrusion of pylons from Public Rights of Way, residential properties, and other sensitive land uses. • Mitigation measures such as alternative designs, reduced-height pylons, strategic placement to minimise visibility, visual screening • Lighting • Visual amenity • Exploration of alternatives • Policy context, including South Kesteven Local Plan (2020), and neighbourhood plans	The proposed assessment methodology and receptors to be considered and reported in the ES are described in **Sections 7.5 to 7.8.** Alternative designs for towers may be considered in some locations where conditions dictate the requirement. Other mitigation will be considered as the design and assessment develop iteratively, as described in **Section 7.6.** **Chapter 3 Main Alternatives Considered** summarises the consideration of alternatives to date. The ES will report the further consideration of reasonable alternatives. **Chapter 2 Regulatory and Planning Policy Context** and associated appendices list the policy relevant to this report and the assessment it describes, including South Kesteven Local Plan and Neighbourhood Plans.
South Holland District Council	Concerns that the new overhead line and towers between Weston Marsh and west of the South Forty Foot Drain will visually litter an area known for its flat landscape and big skies.	Potential visual receptors, including South Forty Foot Drain and the surrounding areas, have been identified through an initial review of the baseline environment and are set out within **Section 7.5**.

Stakeholder	Summary of response	Consideration in the Scoping Report
	There are also concerns over the potential cumulative effects.	**Table 7.2** sets out the proposed scope of assessment for these visual receptors. A cumulative effects assessment will be undertaken and reported in the ES as described in **Chapter 5 EIA Approach and Methodology**. An overview of the approach to assessment of cumulative visual effects is provided in **Section 7.8**.
CPRE Lincolnshire	Concern that a 400kV outdoor substation with 50m high gantries will dominate views from Corby Glen's Conservation Area.	Potential visual receptors including Corby Glen have been identified through an initial review of the baseline environment and are set out within **Section 7.5**. **Table 7.2** sets out the proposed scope of assessment for these visual receptors. The potential impact on the setting of heritage assets will be assessed and reported in the ES, as described in **Chapter 9 Cultural Heritage**.

7.4 Study Area

7.4.1 Identification of an initial Study Area has involved desk-based review of mapping and imagery and the maximum parameters of each element of the Project, targeted field survey to gain an understanding of types and locations of potential receptors and the existing baseline, and the application of professional judgement.

7.4.2 In accordance with good practice guidance set out in the Guideline for Landscape and Visual Impact Assessment (GLVIA) (Ref 7.1), the Study Area for the visual assessment seeks to encompass all visual receptors with the potential to be significantly affected by the Project.

7.4.3 An initial Study Area extending 3 km from the Scoping Boundary of the new overhead line and substations, including up to two substations at Weston Marsh and the WMEL-A and WMEL-B substations near Corby Glen and west of Ab Kettleby respectively, has been used to inform the Scoping Report, as illustrated on **Figure 7.1**. The initial Study Area will be reviewed and refined as necessary, however, it is

proposed that the Study Area for the visual assessment in the ES will be defined as 3 km from the outer boundary of the Order Limits.

7.4.4 It is acknowledged that elements of the Project may be visible beyond the Study Area. However, at locations beyond the Study Area, the separation distances will be such that potential impacts resulting from the Project are unlikely to lead to a fundamental change to nature or overall impression of the view or visual amenity and as such potential effects are unlikely to be significant.

7.4.5 The Study Area will be reviewed and further refined at the assessment stage, through the use of the Order Limits, Zone of Theoretical Visibility (ZTV) modelling and targeted field survey, to ensure a proportionate approach, focused on potential for significant effects. ZTV modelling will give an indication of the theoretical extent of potential visibility of elements of the Project, and help inform the identification of potential visual receptors.

7.4.6 A Study Area of 150 m from the new overhead line and substation structures will be used to help inform the need for and/or scope of RVAA. All residential dwellings within the 150 m Study Area will be evaluated and any that meet the threshold for residential visual amenity impacts taken forward to detailed assessment. This is consistent with the approach set out in Landscape Institute TGN 2/19 (Ref 7.4) which recommends a residential visual amenity Study Area of 100 – 150 m for new overhead lines.

7.4.7 For the purposes of this Scoping Report, a Study Area of 1 km from the Scoping Boundary of the existing ZA (Cottam – Sundon) 400 kV overhead line (reconductoring) between WMEL-B substation and the existing Grendon substation has been used (refer to **Figure 7.1**). This has allowed for identification of potential receptors related to the proposed reconductoring. As detailed in Section 7.7, impacts from the reconductoring element of the Project are proposed to be **scoped out** of the visual assessment.

7.5 Baseline Conditions

Data Sources

7.5.1 The known or predicted current and future baseline environment described in this section has been informed by the following data sources:

- Ordnance Survey (OS) and other available mapping;
- open source aerial photography and imagery;
- open source Geographic Information System (GIS) data; and
- observations made as part of initial site survey.

Baseline

7.5.2 An initial review of the baseline environment has been completed through desk-based research and targeted field surveys, undertaken between January and September 2025.

7.5.3 Visual receptors are the people at locations within the Study Area who will potentially be affected by changes to views or visual amenity as a result of the Project. Visual

receptors can be static or dynamic and include people in their home, users of recognised long distance recreational routes or defined Public Rights of Way (PRoW), visitors to places of interest (e.g. tourist attractions, or specific viewpoints), and users of the road and transport network.

7.5.4 The visual assessment in the ES will be based on a series of groups or clusters of receptors representing different communities within the Study Area, focused on those with the potential for significant effects. The assessment will be supported by representative viewpoints which will be selected to provide a cross-section of receptor types and locations within the Study Area. The number and location of receptor groups and associated viewpoints, as well as the locations for wireframes and photomontages, will be agreed with relevant consultees including local authorities, Historic England and Natural England and will be in line with relevant guidance, where possible.

7.5.5 Adopting this approach, the Project has been divided into five Sections as described in **Chapter 4, Description of the Project** and shown on **Figure 1.2 Scoping Boundary**. Each of the five Sections are defined by the geographical alignment of the Scoping Boundary and the administrative boundaries of the local authorities. Potential visual receptors representing different communities relevant to each Section along the Scoping Boundary are set out in the respective paragraphs below.

Section 1

7.5.6 The landscape in this area of South Holland is generally flat, with low or sparse vegetation cover, and fields are generally large-scale and bound by ditches or drains allowing for long-distance and open views. The following potential visual receptor locations have been identified within the Study Area of Section 1:

- Settlements – receptors at Surfleet and Surfleet Seas End (located directly to the north of the Scoping Boundary) and at Pinchbeck (located directly to the south of the Scoping Boundary). There are receptors with potential open views on the edge of the settlements of Wykeham (Spalding), Pinchbeck, Pinchbeck West, Wargate, Gosberton Clough, and Northgate.
- Scattered residential dwellings – a number of residential dwellings are dispersed along the B1356 between Surfleet and Pinchbeck and between the B1356 and the A16 within the Scoping Boundary. There is also a concentration of scattered dwellings along the minor roads between Gosberton Clough (located to the north of the Scoping Boundary) and Northgate (adjacent to the south of the Scoping Boundary).
- Recreational routes and facilities – recreational routes within Section 1 include part of the Macmillan Way, a long distance walking route between Boston and Abbotsbury and a small number of PRoWs, including alongside the River Welland, River Glen, South Forty Foot Drain, and on the edge of Surfleet. Other potential recreational receptors include those in watercraft on short sections of the River Welland and River Glen and users of Spalding Golf Club.
- Transport routes – Several roads, including the A16, A151 and A152, and the Peterborough-Lincoln rail line are located within the Study Area for Section 1, with a combination of restricted and more open views across the adjacent landscape.

Section 2

7.5.7 The landscape in the east of this area of South Kesteven is generally flat, with low or sparse vegetation cover, and fields are generally large-scale and bound by ditches or drains allowing for long-distance and open views. The landscape in the west of this section is gently undulating with blocks of woodland and trees along field margins which often limit the extent of distant or long-range views. The following potential visual receptor locations have been identified within the Study Area of Section 2:

- Settlements – there are several settlements within the Scoping Boundary including but not limited to Haconby, Stainfield, Corby Glen, and Swayfield from which there are a mix of open and more restricted views. Other settlements within Section 2 near or adjacent to the Scoping Boundary include, but are not limited to Rippingale, Dunsby, Kirkby Underwood, Morton, Hanthorpe, Grimsthorpe, Irnham, Swinstead, Burton-Le-Coggles, Castle Bytham, Colsterworth, North Witham, Gunby, Stainby, Thistleton, and South Witham.
- Scattered residential dwellings – a number of isolated dwellings are present throughout Section 2, including along minor roads within the fens in the east and between the numerous small settlements in the undulating farmland to the west.
- Recreational routes and facilities – no long-distance recreational routes have been identified within Section 2. However, there is a relatively well developed network of local PRoW, often concentrated around or acting as connections between settlements. Several small-scale recreational areas have also been identified and are generally also closely associated with the settlements within the Study Area of Section 2.
- Transport routes – principal transport routes within the Study Area in relation to Section 2 include the A1, A15 and A151, and the East Coast Mainline railway.

Section 3

7.5.8 The landscape in this area of Melton is undulating with some blocks of woodland and vegetated field boundaries. The extent of views varies with potential long-distance views from higher elevations and more limited views where there is intervening landform and vegetation. The following potential visual receptor locations have been identified within the Study Area of Section 3:

- Settlements – a number of settlements are located within the Scoping Boundary including, but not limited to Coston, Garthorpe, Holwell, Ab Kettleby, Wartnaby, Saxelbye, Asfordby, Ashby Folville, Thorpe Satchville and Twyfold. Other settlements within the Study Area of Section 3 include, but are not limited to Melton Mowbray, Buckminster, Sewstern, Market Overton, Wymondham, Sproxton, Saltby, Saxby, Waltham on The Wolds, Scalford, Gadderby, and Great Dalby.
- Scattered residential dwellings – isolated residential dwellings are located along local roads within Section 3 with higher concentrations along roads to the north, west and southwest of Melton Mowbray.
- Recreational routes and facilities – sections of a number of long distance routes are located within Section 3, including the Viking Way, Rutland Round and Mowbray Way towards the east, and the Leicestershire Jubilee Way, Midshires Way, Leicestershire Round, and National Cycle Network (NCN) routes 64 and 48, towards the west and south. There is a relatively well developed network of local

PRoW within the Study Area for Section 3, connecting between settlements and with a greater concentration to the north of Melton Mowbray. A range of other outdoor recreation and visitor locations are also present, including Melton Country Park, Melton Mowbray Golf Club and playing fields at Wartnaby and Asfordby.

- Transport routes – principal transport routes within the Study Area in relation to Section 3 include the A606, A607 and the A6006, and short sections of the railway lines to the west of Melton Mowbray connecting towards Nottingham and Leicester.

Section 4

7.5.9 The landscape in this area of Harborough contains rolling topography forming broad ridges and shallow valleys. Tree cover is variable and largely confined to field boundaries. The extent of views varies with potential long-distance views from higher elevations and within the broad valleys and more limited views where there is intervening landform and vegetation. The existing ZA 400 kV overhead line is a feature of the visual baseline (refer to **Figure 1.1** for the locations of existing 400 kV overhead lines). The following potential visual receptor locations have been identified within the Study Area of Section 4:

- Settlements – a number of settlements are located within the Scoping Boundary including, but not limited to Tilton on The Hill, Skeffington, Tugby, Goadby, Glooston, Welham, Rolleston, and Great Bowden. Other settlements within Section 4 include South Croxton, Billesdon, Slawston, Church Langton, and Thorpe Langton.
- Scattered residential dwellings – individual and clustered residential dwellings, including farms and farmsteads, are located along local roads within rural areas between settlements throughout Section 4.
- Recreational routes and facilities – sections of a number of long distance routes are located within Section 4, including the Midshires Way, Leicestershire Round, and Macmillan Way, and NCN routes 6, 63 and 64. A network of local PRoW are also found concentrated around and connecting between settlements within Section 4. Other outdoor recreation facilities include playing fields, which are generally located within settlements.
- Transport routes – principal transport routes within Section 4 of the Study Area include the A6, A47 and A4304, and a short section of the railway line at Market Harborough, connecting towards Leicester in the north and Kettering to the south east.

Section 5

7.5.10 The landscape in this area (North Northamptonshire and West Northamptonshire) is informed by large-scale gently undulating landform and occasional steeper scarp slopes. The extent of views varies with potential longer-distance views from higher elevations and across open arable land with more limited views where the landscape is undulating and has higher tree cover. The existing ZA 400 kV overhead line is a feature of the visual baseline (refer to Figure 1.1). The following potential visual receptor locations have been identified within the Study Area of Section 5:

- Settlements – a number of small settlements are located within the Scoping Boundary including, but not limited to Weston By Welland, Braybrooke,

Arthingworth, Loddington, Mawsley Village, Broughton, Pytchley, Orlingbury, Little Harrowden, Hardwick, Mears Ashby, Earls Barton, Great Doddington, and Grendon. The larger settlement of Wellingborough is partly located within the Study Area of Section 5, with the western edge within the Scoping Boundary. Other settlements within Section 5 include Desborough, Rothwell and Great Oxendon.

- Scattered residential dwellings – individual and clustered residential dwellings, including farms and farmsteads, are located along the road network within rural areas between settlements throughout Section 5.
- Recreational routes and facilities – sections of a number of long distance routes are located within Section 5, including the Midshires Way, Macmillan Way, Jurassic Way, Northamptonshire Round and the Nene Way, and NCN route 6. A number of PRoW are also present, often connecting between more rural settlements. Other outdoor recreational facilities within the Study Area of Section 5 include, Market Harborough, Kettering and Wellingborough golf clubs, Sywell Country Park and local playing fields and sports grounds.
- Transport routes – principal transport routes within the Study Area in relation to Section 5 include the A6, A427, A14, A43, A509, A45 and A4500, and a short section of the railway line between Market Harborough and Kettering.

Future Baseline

7.5.11 The future baseline relates to anticipated changes to the current baseline in the future which are predicted to occur in the absence of the Project. Landscapes, and therefore views, change and evolve over time through both natural process and as a result of human influence through changes in land use, management or development and climate change.

7.5.12 The visual assessment will make predictions relating to potential change to the baseline, informed by known development pressures, local development plan allocations, local policy and observations in the field. In addition, the future baseline will consider proposed and committed developments that would be complete before this Project commences, including renewable energy schemes and other National Grid infrastructure projects, that may influence visual amenity and views. The future baseline will seek to highlight potential changes in the baseline that may influence the assessment outcomes.

7.6 Design and Control Measures

Design Measures

7.6.1 The project has been carefully planned to avoid sensitive visual receptors as far as reasonably practicable through an initial siting and routeing process as described in **Chapter 3 Main Alternatives Considered** and **Chapter 4, Description of the Project**. This approach aligns with the principles outlined in the Holford Rules (Ref 7.5) and Horlock Rules (Ref 7.6). These principles will continue to guide the routeing, siting, and design processes in order to avoid or minimise potential adverse visual effects.

7.6.2 It is acknowledged within paragraphs 2.9.7 and 2.9.9 of National Policy Statement (NPS) EN-5 (Ref 7.19) that new overhead lines and new substations, sealing end

compounds, and other associated above-ground installations can result in adverse landscape and visual impacts.

7.6.3 The visual assessment will be an iterative process with progressive levels of survey and appraisal informing detailed siting and routeing, and refinement of the design of the Project. This will include evaluation of detailed alignment options and locations of individual overhead line towers, positioning and design of the substations, and the identification of appropriate mitigation measures to minimise potential residual effects.

Control and Management Measures

7.6.4 A range of standard measures for the Project will be adopted throughout the duration of the construction phase. An Initial Outline Code of Construction Practice (CoCP) is provided in **Appendix 4A.** Measures relevant to the control and management of impacts that could affect visual receptors (refer to **Appendix 4A** for the full description of each measure) are:

- GG09 – on reinstatement of land used temporarily;
- GG10 – on protection of retained sensitive features;
- GG12 – on siting of activity and equipment relative to residential properties;
- GG13 – on design of construction sites relative to residential properties;
- GG20 and AS01 – on earthworks and soil storage and protection;
- GG22 and LV04 – on design and position of construction lighting;
- GG26 – on fencing of working areas;
- LV01 – on retention and replacement of vegetation;
- LV02 – on tree protection measures; and
- LV03 – on aftercare and establishment period.

7.6.5 An Outline Landscape and Ecology Management Plan (LEMP) will be provided with the application for development consent and secured through the draft DCO. This will set out the details of proposed landscape and habitat reinstatement, mitigation and/or enhancement measures and associated maintenance, management and monitoring requirements.

7.7 Potential for Significant Effects

7.7.1 The visual assessment in the ES will consider the construction and operation of the Project. A description of each of these stages is set out in **Chapter 4 Description of the Project**. The potential for significant effects and inclusion (Scoped in) and exclusion (Scoped out) of matters in the scope of the visual ES assessment is set out below and has been determined using the approach described in **Chapter 5 EIA Approach and Methodology.**

7.7.2 The anticipated embedded design, and control and management measures described in Section 7.7.6 have been taken into account when determining the potential for the Project to result in significant effects.

Potential sources of impacts

Sources of construction impacts

7.7.3 Potential sources of temporary visual impacts associated with construction of the Project, including the installation of new substations and new overhead line, are likely to include:

- temporary clearance of vegetation and alteration of landform;
- introduction of temporary structures, fencing, lighting and/or other features such as at construction compounds, material storage and laydown areas, and introduction of temporary access tracks and car parks; and
- movement and lights associated with construction traffic, plant and machinery.

Sources of operation and maintenance impacts

7.7.4 Potential sources of visual impacts associated with operation and maintenance of the Project are likely to include:

- change to composition of views resulting from loss or alteration of vegetation and/or topography;
- introduction of a new 400 kV overhead line and substation structures and associated access tracks, fencing and lighting into views; and
- views of maintenance activities including movement and lights associated with maintenance traffic, plant and machinery.

Potential impacts

7.7.5 There is potential for views and visual impacts of construction, operation and maintenance of the Project to be experienced by a range of receptor types and locations.

7.7.6 Construction compounds, access tracks, scaffolds and construction activities will introduce new features and increased movement into views from nearby receptor locations. It is anticipated that construction compounds will be carefully sited away from residential properties and where possible, use will be made of existing vegetation and/or topography for screening to help minimise potential impacts.

7.7.7 The proposed new substations and new overhead line have the potential to alter the composition of views and associated visual amenity through removal of existing features and/or introduction of new structures. Careful siting and routeing will help to reduce potential impacts, with additional mitigation measures identified where required. However, the potential remains for significant effects on visual amenity to occur as a result of the construction and/ or operation of the new substations and new overhead line and therefore these aspects have been **scoped in** to the ES.

7.7.8 In relation to reconductoring of the existing ZA overhead line, potential impacts will be temporary in nature and of a short duration, and experienced in the context of the existing overhead line and movement of existing traffic on the well-developed road network. All areas disturbed by construction will be reinstated, with very little or no discernible change anticipated to views and visual amenity upon completion. At operation and maintenance, the reconductored towers will appear visually the same

as the existing overhead line, with no horizontal, and limited vertical realignment proposed. Reconductoring would represent minimal change relative to the existing baseline and is unlikely to result in significant effects on visual receptors and as such is proposed to be **scoped out** of the ES.

7.7.9 **Table 7.2** describes the sources of potential impacts on visual receptors identified in initial Study Area. Where an impact could give rise to potentially significant effects these are then scoped into the assessment. Impact pathways that are unlikely to give rise to significant effects are proposed to be scoped out of the ES.

7.7.10 A precautionary approach has been taken to the identification of potential for significant effects and where there is uncertainty the receptor is proposed to be included in the assessment at this stage. A further review of those receptors scoped in will be undertaken as part of the assessment process to ensure a targeted and proportional approach is taken, focused on potential significant effects.

7.7.11 As highlighted in Section 7.4, the Study Area will be refined as part of the assessment phase to be based on an offset from the Order Limits, rather than the Scoping Boundary. All visual receptors which fall outside of the final Study Area and/or the extent of the ZTV (once ground-truthed by field work) will be **scoped out** of the ES due to no potential for significant effects as a result of the offset distance and/or lack of visibility.

Table 7.2 Impacts, receptors and the potential for significant effect

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
Construction	Introduction of temporary structures, access tracks, activity and lights associated with construction of the new overhead line and substations.	Temporary change to the composition of views including introduction of new features and/or the temporary removal of vegetation or other features.	Residential receptors and users of outdoor recreational facilities, including PRoW, in and around settlement areas within the assessment Study Area (3 km from Order Limits) and with potential visibility of construction.	**Yes** – potential for temporary alteration to views and visual amenity, particularly for receptors in close proximity to construction activity.	**Scoped In**
			Users of nationally or regionally promoted long distance recreational routes and users of recreational watercraft within the assessment Study Area and with potential visibility of construction.	**Yes** - potential for temporary alteration to views and visual amenity, including at night, particularly from sections of routes in close proximity to construction activity.	**Scoped In**

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
			Users travelling on roads and railway lines.	No – road and rail users generally travelling at speed, largely limiting visibility to glimpsed views of temporary activity, with significant effects unlikely.	Scoped out
			All potential visual receptors outside the assessment Study Area and/or with no potential visibility of construction.	No – While there is potential for localised views of aspects of construction, the separation distance is such that effects will not be significant.	Scoped out
Construction	Introduction of temporary structures, access tracks, activity and lights associated with reconductoring of the existing ZA overhead line.	Temporary change to the composition of views including introduction of new features and/or the temporary removal of vegetation or other features.	All potential visual receptors.	No - reconductoring works will occur along an existing overhead line and will be temporary and of short duration with limited and localised influence on views and visual amenity. Application of measures set out in the Initial Outline CoCP (refer to **Appendix 4A Initial Outline (CoCP**) will help ensure change is minimised.	Scoped out
Operation	The introduction of a new 400 kV overhead line and/or new	Alteration to the composition of views through introduction of overhead line towers and/or substation	Residential receptors and users of outdoor recreational facilities, including	**Yes** – potential for alteration to views and visual amenity, particularly where new structures are visible in the	**Scoped in**

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
	substations and associated lighting into the view.	structures or through changes to existing elements such as topography or vegetation.	PRoW, in and around settlement areas within the 3 km assessment Study Area and with potential visibility of the Project.	foreground or across a wide extent.	
			Users of nationally or regionally promoted long distance recreational routes and users of recreational watercraft within the 3 km assessment Study Area and with potential visibility of the Project.	**Yes** - potential for alteration to views and visual amenity, particularly where new structures are visible in the foreground or running parallel to sections of the routes.	**Scoped in**
			Users travelling on roads and railway lines.	No – road and rail users generally of lower sensitivity and often travelling at speed limiting visibility to glimpsed views.	Scoped out
			All potential visual receptors outside the assessment Study Area and/or with no potential	No – No potential change for receptors with no visibility of the Project. While there is potential for localised views of the Project from beyond 3 km, the separation distance is such	Scoped out

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
			visibility of the Project.	that effects will not be significant.	
Operation	The introduction of a new 400 kV overhead line and/or new substation structures and associated lighting into close range views.	Alteration to residential visual amenity through introduction of overhead line towers and/or substation structures.	Residents in individual properties within 150m RVAA Study Area.	**Yes** – potential for alteration to residential visual amenity, particularly where new structures are visible in the foreground of principal views.	**Scoped in**
			Residents in individual properties outside 150m RVAA Study Area.	No – no potential for alteration to residential visual amenity due to offset distance. Visual effects from residential receptors covered above under settlement areas.	Scoped out
Operation	Reconductored existing ZA overhead line.	Generally little or no change to appearance of existing overhead line towers. Potential for very limited and localised change to views if vegetation removal required to facilitate access.	All potential visual receptors.	No – reconductored overhead line will appear largely the same as existing with very little or no change from the baseline.	Scoped out
Maintenance	Periodic maintenance of new overhead line, substations, and reconductored	Temporary localised change to the composition of views including introduction of new features and/or the temporary removal of	All potential visual receptors.	No – any change would be limited and localised and occur in context of overhead lines and substations and would be temporary and of a short duration.	Scoped out

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
	existing ZA overhead line.	vegetation or other features.			

7.8 Proposed Assessment Methodology

Proposed Data Sources

7.8.1 The guidance listed in Section 7.2 and data sources listed in Section 7.5, will be used to inform the visual assessment.

Proposed Assessment Methodology

7.8.2 The following section summarises the methodology proposed to be used for the visual assessment in the ES, which is based on the principles set out in GLVIA (Ref 7.1). Elements of the visual assessment methodology therefore differ from the general assessment methodology presented in **Chapter 5 EIA Approach and Methodology**. For example, visual sensitivity includes consideration of both the value of the view, identified as part of the baseline, and susceptibility, which is influenced by the specific nature of the Project. The visual assessment also refers to '*magnitude of effect*' rather than '*magnitude of impact*', in accordance with GLVIA.

7.8.3 The assessment is part of an iterative process where, as potentially significant effects are identified, these inform the siting, routeing and design of the Project alongside consideration of other constraints. The assessment will be carried out based on the following key steps:

- Establishment of the baseline conditions, including identification and evaluation of the existing nature of views and their value.
- Appreciation of the Project, including an understanding of the location, nature scale and maximum parameters of each element and any embedded mitigation measures.
- Assessment of effects on views and visual amenity, with a focus on potential for significant effects.

7.8.4 Each of the above steps will be informed by a combination of desk-based research, evaluation and site-based survey. Surveys will be undertaken both during winter months and in the summer to gain an appreciation of how the landscape and views change with the seasons.

7.8.5 GLVIA (Ref 7.1) places a strong emphasis on the importance of professional judgement in identifying and defining the significance of visual effects. The visual assessment will be undertaken by experienced Chartered Landscape Architects and professional judgement will be used in combination with structured methods and criteria to determine the significance of effect.

7.8.6 The detailed assessment will be based on an evaluation of the sensitivity to change and the magnitude of effect for each of the identified visual receptors with potential for significant effects.

7.8.7 The level and nature of effects can vary at different stages of the Project and can change over time, particularly where mitigation planting is proposed. The visual assessment will therefore include consideration of temporary effects associated with construction, and more permanent effects related to the operational phase. Where mitigation planting is proposed the assessment of operational stage effects will include consideration of impacts at Year 1 (after all construction activities are

completed), to indicate the potential worst case, and at Year 15, to indicate the influence of mitigation planting on longer term effects.

Sensitivity

7.8.8 Sensitivity of visual receptors will be defined through an appraisal of the viewing expectation, or value placed on the view (undertaken as part of the baseline study), and the susceptibility of the receptor to change.

Value

7.8.9 Value of the view is an appraisal of the value attached to views and is often informed by the appearance on Ordnance Survey or tourist maps and in guidebooks, literature and art, or identified in policy. Value can also be indicated by the provision of parking or services and signage and interpretation. The nature and composition of the view and its scenic quality is also an indicator. The value of the view will be determined through evaluation of the above factors and application of professional judgement and will be classified as very high, high, medium, low or very low. Explanation as to the basis of the judgements will be provided within the assessment.

Susceptibility

7.8.10 The susceptibility of visual receptors to change is a function of the occupation or activity of those people experiencing the view, and the extent to which their attention or interest is focused on the view and the visual amenity they experience. For example, residents in their homes or people engaged in outdoor recreation whose interest may tend to be focused on the landscape or a particular view, or visitors at an attraction where views are an important part of the experience, generally indicate a higher level of susceptibility. Conversely people engaged in outdoor sport where views are not important, people at their place of work, or users of roads and railways not recognised as scenic routes are generally considered less susceptible to change. Susceptibility will be determined by consideration of the above factors and application of professional judgement and will be classified as very high, high, medium, low or very low. Explanation as to the basis of the judgements will be provided within the assessment.

Overall Sensitivity

7.8.11 The overall sensitivity assessment of the visual receptor will be made by applying professional judgement to combine and analyse the identified value and susceptibility ratings. Overall visual sensitivity will be rated as **very high, high, medium, low** or **very low.**

7.8.12 **Table 7.3**, below, outlines indicators and typical descriptors for each level of sensitivity, drawing on factors related to both value of the view and susceptibility, and has been informed by good practice guidance, including GLVIA (Ref 7.1). The basis of the assessment will be made clear in the evaluation of each visual receptor.

Table 7.3 Sensitivity of receptors

Sensitivity	Typical Descriptors
Very High	Receptors experiencing an iconic or highly valued view with very high scenic qualities, and for which appreciation of the view is of primary

Sensitivity	Typical Descriptors
	importance (e.g. residents or people engaged in outdoor recreation whose attention is focused on the landscape). Locations where people might visit purely to experience the view (such as promoted viewpoints, protected by designation, or recorded on maps/guidebooks or with important cultural associations).
High	Receptors experiencing a highly valued and well composed view with high scenic qualities, and for which appreciation of the view is an important part of the experience (e.g. residents at home or people engaged in outdoor recreation whose attention is focused on the landscape). Locations where people may visit to experience a locally important view (e.g. designated or identified within a local development plan or neighbourhood plan) or where people might be passing through the landscape on defined scenic routes.
Medium	Receptors experiencing a view of local value and with some scenic qualities (e.g. typical agricultural landscape, potentially with some detracting features) and for which appreciation of the view is of general interest (e.g. residents at home or people engaged in outdoor recreation whose attention is not generally focused on the landscape).
Low	Receptors experiencing a view of limited value and with low scenic qualities (e.g. featureless or degraded agricultural landscape, poor quality urban fringe) and for which interest or appreciation of the view is secondary and/or the period of exposure to the view is limited (e.g. people engaged in outdoor activity that does not focus on the landscape, people at work, or motorists travelling through the area).
Very Low	Receptors experiencing a view of very low value and scenic qualities (e.g. industrial areas or derelict and degraded land) and for which the view is incidental or inconsequential (e.g. people at work).

Magnitude

7.8.13 Visual magnitude of effect refers to the extent to which the Project would alter the existing views and is an expression of the size or scale of change in the view, the geographical extent of the area influenced, and its duration and reversibility. Notes and Clarifications on Aspects of GLVIA3 (LITGN-2024-01) (Ref 7.2) sets out that the size/scale of change and degree of contrast are likely to be the most important factors, with the nature of the view, angle of the view and duration/reversibility considered as 'modifiers'. The variables involved are:

- The scale of change to the view (with respect to the loss or addition of features and alteration of its composition), including the proportion of the view occupied by the Project.
- The degree of contrast or integration of any new features or changes in the form, scale, composition and focal points of the view.
- The nature of the view of the Project in relation to the amount of time over which it will be experienced, and whether views of this will be visible fully, partially or glimpsed.

- The angle of view in relation to the main activity of the receptor, the distance from the Project and the extent of the area over which the changes would be visible.
- The duration of the change (i.e. short-term, medium-term, or long-term) and its reversibility (i.e. whether it is permanent, temporary, or partially reversible).

7.8.14 ZTV mapping will be produced to support the visual assessment and give an indication of the theoretical visibility of elements of the Project during operation (e.g. overhead line towers and substation structures). A 'bare earth' ZTV will be produced using Ordnance Survey Terrain 5 digital terrain data and/or Lidar data and based on the maximum parameters of the Project. Additional ZTVs indicating the influence of existing features such as buildings and vegetation on the extent of potential visibility will be prepared if suitable data is available. The ZTV will be used as a tool, alongside professional judgement, to identify areas of potential visibility for further targeted survey and assessment.

7.8.15 An overall assessment of the magnitude of visual effects resulting from the Project on the visual receptor will be made combining the above factors and with application of professional judgement. The levels of visual magnitude of effect will be described as being very high, high, medium, low, very low and none as outlined in **Table 7.4**, below, which has been informed by good practice guidance, including GLVIA (Ref 7.1).

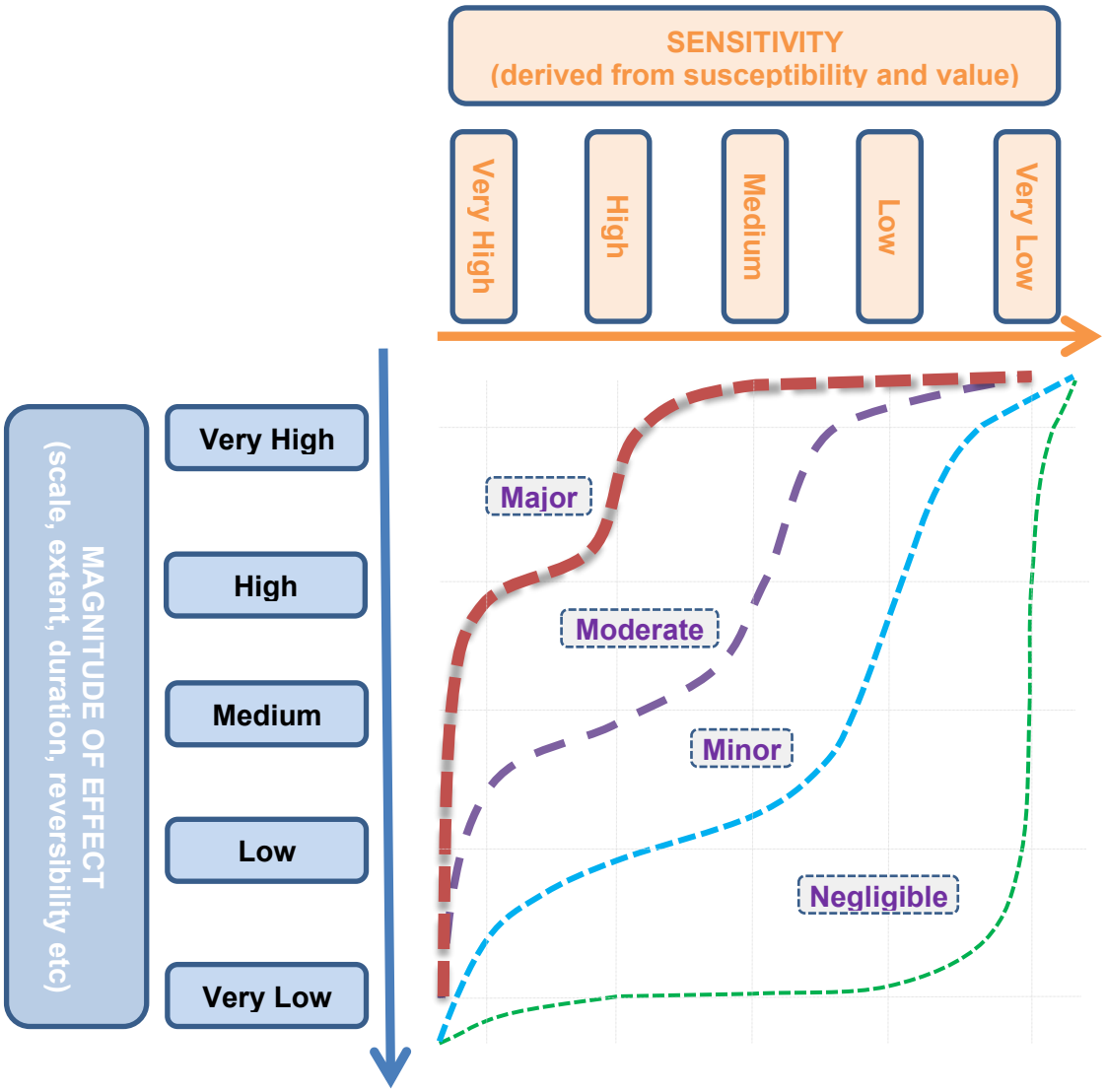
Table 7.4 Magnitude of effect

Magnitude	Typical Descriptors
Very High	A substantial change to the composition of the view or change that may be in the foreground or central to the main view. May be longer term, permanent or reversible.
High	A pronounced change to the composition of the view or change that may be in the foreground or central to the main view. May be longer term, permanent or reversible.
Medium	A notable change to the composition of the view or change that may be in the middle ground or not central to the main view. May be medium term, permanent or reversible.
Low	An unobtrusive change in the composition of the view or change that may be in the background or at an angle to the main view. May be short to medium term, permanent or reversible.
Very Low	A barely perceptible change in the composition of the view or change that may be in the background and/or side on or opposite to the main view. May be short-term, permanent or reversible.
None	No change to the view.

Significance of effects

7.8.16 Determination of the significance of visual effects will be undertaken by employing professional judgement and experience to combine and analyse the magnitude of effect against the identified sensitivity of visual receptors. **Image 7.1**, draws upon good practice guidance, including GLVIA (Ref 7.1) and illustrates how sensitivity and magnitude will be considered together to identify the significance of effect.

Image 7.1 Classification of Visual Effects



7.8.17 The visual assessment will take account of the likely changes to the visual composition, including the extent to which new features would distract or screen existing elements in the view or disrupt the scale, structure, or focus of the existing view.

7.8.18 The significance of visual effects will be described with reference to the criteria presented in **Table 7.5**, below which has been informed by good practice guidance, including GLVIA (Ref 7.1). For the purposes of the assessment, effects rated as being of **moderate** or **major** will be considered to be **significant**, and **negligible** and **minor** effects will be considered **not significant**.

Table 7.5 Significance of visual effects

Significance	Typical Descriptors
Major	Considerable change affecting a large extent of a very highly sensitive view and becoming a dominant feature.
Moderate	Notable change affecting an important part of a highly sensitive view or a wider extent of a medium sensitivity view, becoming prominent or detracting from the existing focus.

Significance	Typical Descriptors
Minor	Small change affecting a limited and/or unimportant part of a medium to highly sensitive view or an important part of a less sensitive view, unlikely to distract from the existing focus.
Negligible	Where there is no discernible improvement or deterioration in the existing view.
None	No change to the existing view.

Cumulative Effects

7.8.19 The ES will include consideration of potential cumulative effects of the Project in relation to other similar existing, consented and proposed developments. As outlined in **Chapter 5 EIA Approach and Methodology** and in line with Planning Inspectorate Advice (Ref 7.7), an initial evaluation process will be undertaken to first identify a long list followed by a refined short list of other developments to be considered within the cumulative assessment.

7.8.20 The assessment of cumulative effects will follow a similar process to that described above, first identifying and describing the cumulative baseline, followed by an assessment of the magnitude of effect and significance of effect.

7.8.21 The cumulative baseline will be based on a theoretical scenario in which other developments identified and shortlisted as described in **Chapter 5 EIA Approach and Methodology** are present or under construction in addition to existing schemes. The assessment of cumulative magnitude of effect and significance of effects involves consideration of the additional change resulting from the Project to the defined cumulative baseline scenario.

Residential Visual Amenity

7.8.22 Residential visual amenity relates to the overall nature, quality and experience of views experienced by occupants of residential properties. While related to visual impacts, residential visual amenity goes a step further to consider the potential of a development to be overbearing or overly intrusive such that it affects living conditions.

7.8.23 It is anticipated that potential impacts on residential visual amenity will largely be avoided through careful siting and routeing of the Project. However, if the visual assessment indicates the potential for residential visual amenity impacts, a targeted RVAA will be included in the ES.

7.8.24 If an RVAA is required, it will be undertaken in accordance with the principles set out in Landscape Institute Technical Guidance Note (TGN) 2/19: Residential Visual Amenity Assessment (Ref 7.4). This will involve the following four key steps:

- Define scope of RVAA, including identification of a suitable study area (as described in Section 7.4 above) and the properties to be considered. TGN 2/19 suggests a study area of 100 – 150 m from the finalised route when assessing effects of overhead lines.
- Evaluation of the baseline visual amenity and sensitivity, largely undertaken using the same approach to identifying visual sensitivity as set out above.

- Assessment of likely change to visual amenity, largely undertaken using the same approach as identification of magnitude and significance of visual effects, described above. Only those properties where the magnitude of effect is within the upper category (i.e. very high) are taken forward to the final step.
- Forming the RVAA judgement and conclusions, involving more detailed evaluation of anticipated visual effects to establish where the residential visual amenity threshold has been reached (i.e. the Project would be overbearing or overly intrusive such that it would affect living conditions).

7.8.25 The requirement for RVAA will be determined at the ES stage, once final details of the new overhead line alignment and position of substation structures is defined.

7.9 Assumptions and limitations

7.9.1 The visual assessment in the ES will be undertaken based on the data and updated design details available at that time. At this scoping stage, some details of the new overhead line routeing and substation layout and design remain uncertain or under development.

7.9.2 As highlighted above, the visual assessment will be supported by ZTV mapping. It is important to understand the limitations of ZTVs and how they are used in the assessment process. Key limitations include:

- ZTVs are limited by the detail of the digital terrain model data used and generally do not take account of localised topographic variations.
- Some areas of theoretical visibility may comprise woodland or other vegetation or may cover areas with no public access and the likelihood of views being experienced is consequently low.
- ZTV do not take account of the influence of distance, weather or light on the nature of visibility.
- Bare earth ZTVs do not take account of features such as buildings or vegetation which may provide screening. Where screening features are included, these are limited by the detail included within available datasets.
- ZTVs tend to overstate the extent of visibility and should therefore be considered as a tool to guide targeted survey and assessment and should not be used as a measure of effects.

7.9.3 Due to these limitations, ZTVs tend to overestimate the extent of the visibility, therefore, ZTVs should be used as a tool to identify areas of potential visibility, which are then verified and refined through targeted survey and further assessment.

7.9.4 Field surveys to inform establishment of the baseline, capture photography and inform the assessment of effects will be undertaken from publicly accessible locations, such as from the road network and PRoW, in line with standard practice for visual assessment.

7.10 Conclusion

7.10.1 This Scoping Report chapter has outlined the proposed scope for further assessment in relation to the visual impacts of the Project. The data sources that will be used to

define the current and future baselines have been presented, and the impact control and management measures that will be implemented highlighted. The potential for significant effects has been identified, as well as the associated source, impact and receptors in **Table 7.2**.

7.10.2 A summary of the proposed scope of the assessment is provided in **Chapter 20 Summary**.

References

Ref 7.1 Landscape Institute and Institute for Environmental Management and Assessment (2013). Guidelines for Landscape and Visual Impact Assessment – 3rd Edition.

Ref 7.2 Landscape Institute (2024). Notes and Clarifications on Aspects of the Guidelines for Landscape and Visual Impact Assessment Third edition (GLVIA3) Technical Guidance Note LITGN-2024-01.

Ref 7.3 Landscape Institute (2019). Visual Representation of Development Proposals, Technical Guidance Note 06/19.

Ref 7.4 Landscape Institute (2019). Residential Visual Amenity Assessment (RVAA), Technical Guidance Note 02/19.

Ref 7.5 National Grid. Holford Rules. [online] Available at https://www.nationalgrid.com/sites/default/files/documents/13795-The%20Holford%20Rules.pdf [Accessed 30 July 2025].

Ref 7.6 National Grid. Horlock Rules. [online] Available at https://www.nationalgrid.com/sites/default/files/documents/13796-The%20Horlock%20Rules.pdf [Accessed 30 July 2025].

Ref 7.7 Planning Inspectorate (published September 2024, updated March 2025). Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment.

Ref 7.8 Colsterworth & District Parish Council (2017). Colsterworth & District Neighbourhood Plan.

Ref 7.9 Corby Glen Parish Council (2024). Corby Glen Neighbourhood Plan 2023 – 2036, Made Version (February, 2024).

Ref 7.10 Rippingale Parish Council (2023). Rippingale Neighbourhood Plan 2023 – 2036.

Ref 7.11 Skillington Parish Council (2017). Skillington Neighbourhood Plan 2017 – 2031, as submitted to South Kesteven District Council (February 2017).

Ref 7.12 Ab Kettleby Parish Council (2018). Ab Kettleby Neighbourhood Plan 2018 - 2036.

Ref 7.13 Asfordby Parish Council (2023). Asfordby Parish Neighbourhood Plan 2011-2036.

Ref 7.14 Clawson, Hose & Harby Parish Council (2017). Clawson, Hose & Harby Neighbourhood Plan 2017 to 2036.

Ref 7.15 Broughton and Old Dalby Parish Council (2018). Broughton and Old Dalby Parish Neighbourhood Plan 2017 – 2036.

Ref 7.16 Scalford Parish Council (2021). Scalford Parish Neighbourhood Plan 2019 – 2036.

Ref 7.17 Waltham on the Wolds and Thorpe Arnold Parish Council (2018). Waltham on the Wolds and Thorpe Arnold Neighbourhood Plan 2017 - 2036.

Ref 7.18 Wymondham and Edmondthorpe Parish Council (2017). Wymondham and Edmondthorpe Neighbourhood Plan.

Ref 7.19 Department of Energy Security & Net Zero (January 2024). 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 30 July 2025].

8. Ecology and Biodiversity

nationalgrid

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8. Ecology and Biodiversity

8.1 Introduction

8.1.1 This chapter presents how the ecology and biodiversity assessment will consider the potential likely significant effects on ecological features that may arise from the construction, operation and maintenance of the Project (as described in **Chapter 4, Description of the Project**). It describes the methods and datasets to be used within the assessment, presents an overview of the baseline conditions, and identifies the potential significant effects to be considered within the assessment, and how the potential for significant effects will be assessed for the purpose of the Environmental Statement (ES). As detailed in **Chapter 4, Description of the Project**, the decommissioning of the Project has been scoped out of the environmental assessment.

8.1.2 The Scoping Boundary is illustrated on **Figure 1.2 Scoping Boundary**.

8.1.3 This chapter should be read in conjunction with the following chapters which provide the Project context and design, and approach to EIA:

- **Chapter 2 Regulatory and Planning Policy Context**;
- **Chapter 3 Main Alternatives Considered**;
- **Chapter 4 Description of the Project**; and
- **Chapter 5 EIA Approach and Methodology**.

8.1.4 There may be interrelationships with other disciplines. Therefore, this chapter should also be read in conjunction with the following chapters:

- **Chapter 6 Landscape** and **Chapter 7 Visual** provides detail of essential mitigation that includes habitat creation, such as woodland planting, that are also of benefit to ecological features.
- **Chapter 9 Cultural Heritage** provides details of the potential impacts, and mitigation required on cultural heritage receptors such as listed buildings and scheduled monuments or ancient woodland or trees that may provide suitable habitat for protected species such as bats.
- **Chapter 10 Water Environment** provides details of the location of sensitive surface water features, including Water Framework Directive (WFD) waterbodies, and the associated mitigation that will also be required to address potential impacts upon important ecological features, such as wetland Habitats of Principal Importance (HPI) and aquatic fauna.
- **Chapter 14 Air Quality** provides detail of the changes to air quality which would inform the assessment of impacts on sensitive ecological features presented in this chapter, such as designated sites and ancient woodland.
- **Chapter 15 Noise and Vibration** provides detail of the potential impacts of noise upon sensitive ecological features.

8.1.5 This chapter is supported by the following figures and appendices:

- **Figure 8.1 Statutory Internationally Designated Sites for Nature Conservation within 10 km and 30 km for sites designated for birds and bats.**
- **Figure 8.2 Statutory Nationally Designated Sites for Nature Conservation within 5 km.**
- **Figure 8.3 Non-Statutory Designated Sites for Nature Conservation within 2 km.**
- **Figure 8.4 Habitats of Principal Importance within the Scoping Boundary.**
- **Appendix 8A Ecology Survey Strategy.**

8.2 Legislation, Policy and Guidance

8.2.1 **Chapter 2 Regulatory and Planning Policy Context** describes the overall regulatory and planning policy context for the Project. Key legislation, policy, and planning guidance relevant to the assessment of potential effects on ecology and biodiversity associated with the construction, operation and maintenance of the Project is provided in **Chapter 2 Regulatory and Planning Policy Context. Appendix 2A Key Legislation, Appendix 2B National and Regional Planning Policy** and **Appendix 2C Local Policy.**

Biodiversity Net Gain

8.2.2 The Environment Act 2021 (Ref 8.1) includes provisions to make Biodiversity Net Gain (BNG) a mandatory requirement within the planning system in England requiring all relevant developments to achieve a minimum 10% net gain in biodiversity units relative to the site baseline biodiversity value. It is anticipated the secondary legislation mandating the need for 10% net gain for Nationally Significant Infrastructure Projects which require Development Consent Order (DCO) will be in place from May 2026.

8.2.3 As detailed in **Chapter 1 Introduction**, National Grid has voluntarily committed to 10 per cent net gain in environmental value including, as a minimum, 10% BNG across all its construction projects, in line with the Environment Act 2021 (Ref 8.1). This commitment is underpinned by the delivery of quantifiable enhancements for biodiversity measures from a baseline using the Department of Environment, Food and Rural Affairs (DEFRA) Statutory Biodiversity Metric (Ref 8.2) with actions formalised and secured by long term management arrangements with external organisations and partners. National Grid will update its commitment on BNG to acknowledge any new legislation when it is in force.

Guidance

8.2.4 This EIA Scoping chapter has been based on CIEEM guidance for Ecological Impact Assessment in the UK (Ref 8.21). Further technical guidance used in this chapter is listed in paragraph 8.9.2.

8.3 Consultation and Engagement

8.3.1 The ES will be informed by consultation and engagement with stakeholders, including local planning authorities, the Environment Agency, Natural England, Royal Society for the Protection of Birds (RSPB), Wildlife Trusts, Woodland Trust, National Trust (if appropriate), Protected Trust for Endangered Species (PTES) and local groups. In addition, engagement will be undertaken with non-statutory stakeholders as required to ensure that specialist local views and expertise can be considered as part of the ES.

8.3.2 In preparing this Scoping Report chapter, consideration has been given to stakeholder feedback received following Non-Statutory Consultation held between 11 June and 6 August 2025, as set out in **Table 8.1**.

Table 8.1 Engagement with Stakeholders

Stakeholder	Summary of response	Consideration in the Scoping Report
Forestry Commission	Emerging preferred corridor for the new overhead line indicates that several ancient woodlands may be affected.	There will be no loss of ancient woodland as a result of the Project and appropriate buffer zones (of at least 15 m) will be maintained.
The Environment Agency	It is unclear whether the Project will involve any of the following activities: • Culverting • Flow regulation activities • Channel widening/deepening/straightening/realignment • Impoundment • Bed/bank reinforcement • Sediment management • Construction of an/alterations to an existing embankment/set-back embankment • Construction of bypass channel • Reopening of historic channels • Bank reprofiling • Riparian vegetation/instream vegetation/woody debris management • Construction of a bridge/crossing	To be considered as the design progresses and once the Project route is finalised in the ES. The Environment Agency will be contacted to obtain data on fish, invertebrates and macrophytes. National Grid has voluntarily committed to 10% net gain in environmental value including, as a minimum, 10% BNG across all its construction projects, in line with the Environment Act 2021 (Ref 8.1).

Stakeholder	Summary of response	Consideration in the Scoping Report
	• Outfall into the main river If any of these activities are required, the Environment Agency should be consulted. The Environment Agency holds data of fish, invertebrates and macrophytes. It is advised that at least 10% BNG is achieved.	
Lincolnshire County Council and South Kesteven District Council	Concern over a reduction in biodiversity from migrating birds hitting electricity lines.	Bird scoping surveys have been undertaken to identify potential impacts on migration routes for any species of bird that may lead to mortality or population decline during construction and operation of the Project as stated in **paragraph 8.6.51.** Survey strategies for birds to inform the assessment are described in **Appendix 8A Ecological Survey Strategy.** The proposed methodology for the ES assessment of impacts on birds is described in **Section 8.9.**
South Kesteven District Council	South Kesteven District Council requests an assessment of impacts on local habitats, especially trees and hedgerows that may serve as nesting and foraging habitats and wildlife corridors that could be disrupted by development. They state there is a need to consider the impacts on protected species including bats, birds and badgers. South Kesteven District Council expects the project to deliver a mandatory minimum of 10% biodiversity net gain in line with national policy. Direct impacts on ancient woodland and veteran trees must be avoided. Woodlands that need to be considered for protection include:	Survey strategies for local habitats and protected species to inform the assessment are described in **Appendix 8A Ecology Survey Strategy.** The proposed methodology for the ES assessment of impacts on local habitats and protected species is described in **Section 8.9.** **Appendix 4A Code of Construction Practice** outlines a measure requiring pre-construction species surveys and compliance with relevant

Stakeholder	Summary of response	Consideration in the Scoping Report
	• Grimsthorpe Castle Woodland • Mickley Wood • Beaumont Wood • Eliott's Wood • Tortoiseshell Wood Registered Nature Reserve There is concern regarding the cumulative ecological impacts from related infrastructure such as substations and feeder routes. There is concern about pressure on land use from additional renewable energy and battery storage sites.	protected species licences. There will be no loss of ancient woodland as a result of the Project and appropriate buffer zones (of at least 15 m) will be maintained. Cumulative measures have been considered in this Scoping Report in **Chapter 5 EIA Approach and Methodology** which outlines how cumulative effects will be assessed in the ES.
South Holland District Council	There are Local Wildlife Sites that are noted as important for wildlife use (particularly birds) that could be affected by the proposed OHL including • River Wellend • River Glen • South Forty Food Drain The Wash SPA/SSSI which is an internationally wildfowl site is in near proximity to the Project. There is concern that waterfowl, including swans, use adjacent fields and may be affected by the overhead line. It is recommended that bird flight paths and collision risks be assessed and mitigated. It is suggested that markers are placed on overhead cables to reduce bird collisions. The cables may also influence migratory flight paths which needs investigation. It should be taken into consideration that the Project is in close proximity to Spalding Tree Preservation Order No.60 (2002) and the route may pass over Sites of Nature Conservation Interest. Policy 28 of the South East Lincolnshire Local Plan requires the protection,	Survey strategies for habitats and birds are described in **Appendix 8A Ecology Survey Strategy**. The proposed methodology for the ES assessment of impacts on ecological features is described in **Section 8.9**. Bird scoping surveys have been undertaken to identify potential impacts on migration routes for any species of bird that may lead to mortality or population decline during construction and operation of the Project as stated in **paragraph 8.6.51.** National Grid has voluntarily committed to 10% net gain in environmental value including, as a minimum, 10% BNG across all its construction projects, in line with the Environment Act 2021 (Ref 8.1).

Stakeholder	Summary of response	Consideration in the Scoping Report
	enhancement, and management of natural assets and overall net gain in biodiversity for all development proposals. Construction management plans are necessary to minimise the impacts on ecological receptors.	Impacts to ecological receptors from construction have been considered in this Scoping Report and initial measures to reduce and manage impacts are outlined in **Appendix 4A Code of Construction Practice.** This includes requirements for other management plans to be prepared,
Lincolnshire County Council	Lincolnshire County Council welcomes the best practice in environmental impact assessment and the recognition of the importance of protecting and enhancing the natural environment. The Council highlights the presence of important sites for breeding and wintering birds in the vicinity of the proposed development. There is a need for appropriate effort to understand and mitigate potential impacts on these sites and associated bird populations. Lincolnshire County Council encourages National Grid to - Engage with other developers and organisations in the area - Identify strategic opportunities to deliver environmental mitigation and enhancement - Go beyond the mandatory 10% BNG, given the scale of the proposal. Concern over how the project could impact areas of ecological importance including: • The East Atlantic Flyway • Greater Wash SPA • Gibraltar Point National Nature Reserve • Humber Estuary	Survey strategies for habitats and protected species, including birds, are described in **Appendix 8A Ecology Survey Strategy**. The proposed methodology for the ES assessment of impacts on designated sites, protected species and birds is described in **Section 8.9,** the receptors considered are described in **Section 8.6**. Bird scoping surveys have been undertaken to identify potential impacts on migration routes for any species of bird that may lead to mortality or population decline during construction and operation of the Project as stated in paragraph 8.6.51.

Stakeholder	Summary of response	Consideration in the Scoping Report
	These areas support internationally significant birds and rare species like the natterjack toad. Lincolnshire County Council stresses the need to consider impacts on: • Salt marshes • Sand dunes • Coastal grazing marshes • Breeding and migratory bird species Statutory wildlife designations must be considered.	

8.4 Study Area

8.4.1 For the purpose of this Scoping Report, the Study Area for the ecological assessment includes the land within the Scoping Boundary and appropriate buffer zones, as described in **Table 8.2** and illustrated in:

- **Figure 8.1 Statutory Internationally Designated Sites for Nature Conservation within 10 km and 30 km for International sites designated for birds and bats**;
- **Figure 8.2 Statutory Nationally Designated Sites for Nature Conservation within 5 km**;
- **Figure 8.3 Non-Statutory Designated Sites for Nature Conservation within 2 km**; and
- **Figure 8.4 Habitats of Principal Importance within the Scoping Boundary**.

8.4.2 The boundaries and zones for the ecological Study Area as set out in **Table 8.2** reflect standard industry good practice and the scoping distances that statutory consultees would typically expect to be considered for identification of features external to the Project that could be affected. These have been informed by published guidance and professional judgement. A “zone of potential influence” representing the areas within which effects could occur from the Project and associated activities, will be refined for the assessment. The Study Areas presented in **Table 8.2** below will be reviewed and refined as appropriate for the assessment presented in the ES, but it is anticipated that they will remain similar distances from the Order Limits once they are defined.

Table 8.2 Study Areas for Different Ecological Features

Study Area (distance from Scoping Boundary)	Feature
30 km	Special Areas of Conservation (SAC), Ramsar sites and Special Protection Areas (SPA) where (respectively) bat or bird species with large foraging ranges are noted as, or one of, the qualifying features. Proposed and potential SAC, SPA and Ramsar sites are also considered.
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 (extended to 10 km for SSSIs with ornithological qualifying features[1])	Statutory designated sites of national and local nature conservation importance e.g. Sites of Sites of Special Scientific Interest (SSSI) (also referencing Natural England Impact Risk Zones for SSSI on the Multi-Agency Geographic Information for the Countryside (MAGIC) website (Ref 8.3), National Nature Reserves (NNR) and Local Nature Reserves (LNR)).
2 km	Non-statutory designated sites of nature conservation value e.g. Local Wildlife Sites (LWS), Sites of Nature Conservation Importance (SNCI), Potential Wildlife Sites, Roadside Nature Reserves (RNR) and ancient woodlands. Records of protected and notable species received from Local Environmental Records Centres (LERC).[1]

Note 1: There is often spatial overlap between SSSI/SPA, Ramsar sites and qualifying ornithological features of SSSI in some cases might forage over relatively large distances outside of the designated site. Therefore, the Study Area for SSSI with ornithological qualifying features is extended to 10 km.

8.5 Data Sources

8.5.1 The known or predicted current and future baseline environment described in this section has been informed by the following data sources:

- the Natural England website (Ref 8.4) for information on statutory designated sites of nature conservation interest and to confirm reasons for designation and their condition;
- the MAGIC website (Ref 8.3) to identify the location (and details) of statutory designated sites, HPIs (including River HPIs) within the Study Areas defined in **Table 8.2**.
- granted European Protected Species[2] Mitigation Licence (EPSML) applications within the Scoping Boundary;

[1] Non-statutory designated sites such as LWS and protected and notable species data is not included in this Scoping Chapter, once the data has been obtained it will be reviewed prior to commencement of ecological survey work and will be included in the ES Chapter.

[2] European protected species (EPS) have full protection under The Conservation of Habitats and Species Regulations 2017. It's an offence to deliberately capture, injure or kill, or deliberately disturb EPS.

- the Joint Nature Conservation Committee (JNCC) website (Ref 8.5) for site information and designation details of SAC, SPA and Ramsar Sites; and
- aerial imagery of habitats and ecological features of interest (Ref 8.6).

8.6 Baseline Conditions

8.6.1 This section summarises the known or predicted ecological baseline conditions that have been established during the scoping stage. The section includes a summary of the designated sites present across the Study Area and a high-level description of the habitats present in each section within the Scoping Boundary.

Statutory Sites

Internationally Designated Sites

8.6.2 The locations of statutory internationally designated sites for nature conservation within the Study Area are presented in **Figure 8.1**. There are no internationally designated sites within the area of the Scoping Boundary where new overhead lines are proposed. However, the Upper Nene Valley Gravel Pits SPA and Ramsar site are within the Scoping Boundary where the reconductoring works are proposed.

8.6.3 There are no internationally designated nature conservation sites with bats listed as a qualifying feature located within the 30 km Study Area. There are four internationally designated nature conservation sites within the 30 km Study Area with birds that are listed as qualifying features. Rutland Water SPA and Ramsar site is just over 10 km away from the Scoping Boundary and Nene Washes SPA and Ramsar site is located 26.5 km from the Scoping Boundary. The Study Area applied covers the area that may be used by long-flying bird species and has been considered in both the potential for significant effects in Section 8.7 and the design of field surveys detailed in Section 8.8.

8.6.4 The Project has been divided into Sections as described in **Chapter 4 Description of the Project** and shown in **Figure 1.2 Scoping Boundary**. The Sections are defined by the geographical alignment of the Scoping Boundary and the administrative boundaries of the local authorities. The baseline environment for designated sites is reported for the Scoping Boundary and relevant Zone of Influence below noting the nearest Section to each feature. Sensitive features within each Section are summarised in paragraphs 8.6.17 to 8.6.21.

8.6.5 There are six other statutory internationally designated sites within 10 km of the Scoping Boundary that are illustrated in **Figure 8.1 Statutory Internationally Designated Sites for Nature Conservation within 10 km and 30 km for sites designated for birds and bats** and summarised in **Table 8.3**. The Wash SPA and Ramsar site are hydrologically connected to the Scoping Boundary via the River Welland.

Table 8.3 Internationally Designated Nature Conservation Sites

Site name [site code] and size (ha)	Designation	Qualifying features	Distance and direction from the closest point of Scoping Boundary
Upper Nene Valley Gravel Pits [UK9020296] 1,358 ha	SPA	Annex I/II and/or wintering species: • Northern shoveler (*Anas clypeata*) • Wigeon (*Anas penelope)* • Mallard (*Anas platyrhynchos)* • Gadwall (*Anas strepera)* • Common pochard (*Aythya ferina*) • Tufted duck (*Aythya fuligula*) • Eurasian bittern *(Botaurus stellaris)* • Eurasian coot (*Fulica atra*) • Cormorant (*Phalacrocorax carbo*) • Golden plover (*Pluvialis apricaria)* • Great crested grebe (*Podiceps cristatus*) • Northern lapwing (*Vanellus vanellus)*	Within Section 5
Upper Nene Valley Gravel Pits [UK9020296] 1,358 ha	Ramsar	• Criterion 5: Regularly supports 20,000 or more waterbirds • Criterion 6: Regularly supports 1% of individuals in populations of following species in any season: – Mute swan (*Cygnus olor)* – Gadwall • Annex I and/or wintering species: – Eurasian bittern – Golden plover	Within Section 5

Site name [site code] and size (ha)	Designation	Qualifying features	Distance and direction from the closest point of Scoping Boundary
		– Wigeon – Northern shoveler – Pochard (Aythya ferina) – Tufted duck – Great crested grebe – Cormorant – Eurasian coot	
Grimsthorpe [UK0030043] 0.36 ha	SAC	Annex I habitat: • Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*) Annex II species: • Early gentian (*Gentianella anglica*)	2.40 km south of Section 2
The Wash [UK9008021] 62,044 ha	SPA	Annex I and/or migratory species: • Bewick's swan • (non-breeding) • Pink-footed goose (non-breeding) • Dark-bellied brent goose (*Branta bernicla*) (non-breeding) • Common shelduck (*Tadorna tadorna*) (non-breeding) • Eurasian wigeon (non-breeding) • Gadwall (non-breeding) • Northern pintail (*Anas acuta*) (non-breeding) • Black (common) scoter (*Melanitta nigra*) (non-breeding)	7.22 km east of Section 1

Site name [site code] and size (ha)	Designation	Qualifying features	Distance and direction from the closest point of Scoping Boundary
		• Common goldeneye (*Bucephala clangula*) (non-breeding) • Eurasian oystercatcher (*Haematopus ostralegus*) (non-breeding) • Grey plover (*Pluvialis squatarola*) (non-breeding) • Red knot (*Calidris canutus*) (non-breeding) • Sanderling (*Calidris alba*) (non-breeding) • Dunlin (*Calidris alpina*) (non-breeding) • Black-tailed godwit (*Limosa islandica*) (non-breeding) • Bar-tailed godwit (*Limosa lapponica*) (non-breeding) • Eurasian curlew (*Numenius Arquata*) (non-breeding) • Common redshank (*Tringa tetanus*) (non-breeding) • Ruddy turnstone (*Arenaria interpres*) (non-breeding) • Common tern (*Sterna hirundo*) (breeding) • Little tern (*Sterna albifrons*) (breeding) • Waterbird assemblage	
The Wash [UK9008021] 62,044 ha	Ramsar	• Criterion 1 – Extensive saltmarshes, major intertidal banks of sand and mud, shallow water and deep channels.	7.22 km east of Section 1

Site name [site code] and size (ha)	Designation	Qualifying features	Distance and direction from the closest point of Scoping Boundary
		• Criterion 3 – Interrelationship of component habitats • Criterion 5 – Waterfowl assemblage • Criterion 6 – Internationally important population of: • Pink-footed goose • Dark-bellied brent goose • Common shelduck • Northern pintail • Eurasian oystercatcher • Grey plover • Red knot • Sanderling • Dunlin • Bar-tailed godwit • Eurasian curlew • Common redshank • Ruddy turnstone	
Baston Fen [UK0030085] 2.12 ha	SAC	Annex II species: • Spined loach (*Cobitis taenia*)	7.32 km south of Section 2
Rutland Water [UK9008051] 1,555 ha	SPA	Annex II and/or wintering species: • Northern shoveler • Common teal (*Anas crecca)* • Wigeon • Gadwall • Tufted duck • Goldeneye • Mute swan • Eurasian coot • Goosander (*Mergus merganser*) • Great crested grebe	10.20 km south of Section 2

Site name [site code] and size (ha)	Designation	Qualifying features	Distance and direction from the closest point of Scoping Boundary
		Internationally important assemblage of wintering birds	
Rutland Water [UK9008051] 1,555 ha	Ramsar	• Criterion 5: International assemblage of wintering waterfowl • Criterion 6: International important population of: – Gadwall – Northern shoveler	10.20 km south of Sections 2 and 3
Nene Washes [UK9008031] 1,520 ha	SPA	Annex II / wintering species: • Northern pintail • Northern shoveler • Common teal • Wigeon • Garganey (*Anas querquedula)* • Gadwall • Bewick's swan • Black-tailed godwit	26.5 km south of Section 1
Nene Washes [UK11046] 1,517 ha	Ramsar	• Criterion 6: International important population of: – Bewick's swan	26.5 km south of Section 1

Nationally Designated Sites

8.6.6 Nationally designated sites include SSSI, NNR and LNR, those identified in the Study Area are listed in **Table 8.4**. There are 33 ecologically designated SSSI within or up to 5 km from the Scoping Boundary. Of these, seven SSSI are within, or partially within the Scoping Boundary. Only the Upper Nene Gravel Pits SSSI overlaps with an internationally designated site, the Upper Nene Gravel Pit SPA and Ramsar site.

Table 8.4 National Designated Nature Conservation Sites

Site name and size	Designation	Description	Distance and direction from the closest point of Scoping Boundary
Frisby Marsh	SSSI	Some of the best remaining areas of marsh in Leicestershire. Contains a	Wholly within Section 3

Site name and size	Designation	Description	Distance and direction from the closest point of Scoping Boundary
		complex of wetland habitats, grassland and woodland.	
Great Bowden Borrowpit	SSSI	An unusual Leicestershire example of a tall fen plant community characteristic of base-poor soils. SSSI is a regular feeding ground for snipe (*Gallinago gallinago*).	Wholly within Section 4
Birch Spinney and Mawsley Marsh	SSSI	Unusual woodland type partly developed on peat with unimproved and botanically rich grasslands adjoined to one of the finest remaining Northamptonshire marshes. Mixed habitat types support invertebrates and birds, with the SSSI supporting one of the few farmland localities of breeding snipe in Northamptonshire.	Wholly within Section 5
Badsaddle, Withmale Park and Bush Walk Woods	SSSI	An important example of wet ash / maple type woodland with indications of ancient woodland ground flora. Woodland / rides support good numbers of typical birds and invertebrates.	Wholly within Section 5
Holwell Mouth	SSSI	Some of the best examples of neutral marsh in Leicestershire and is representative of marsh developed on somewhat base-poor clay soils in the English Midlands. The mix of habitats present provide suitable breeding areas for a range of birds and insects.	Partially within Section 3 on the northern boundary of the Scoping Boundary.
Leighfield Forest	SSSI	Some of the best remaining examples of ash-maple (*Fraxinus / Acer*) woodland in Leicestershire and is representative of ancient semi-natural woodland developed on heavy clays in eastern central England. Supports diverse breeding bird and moth / beetle communities.	Partially within Section 4
Upper Nene Valley Gravel Pits	SSSI	Nationally important site for breeding bird assemblage of lowland open waters and their margins, wintering waterbird species and an assemblage	Partially within and to the east, and 4.55 km west of Section 5

Site name and size	Designation	Description	Distance and direction from the closest point of Scoping Boundary
		of over 2,000 waterbirds in the non-breeding season. SSSI includes a rare example wet floodplain woodland.	
Tortoiseshell Wood	SSSI	A good representation example of oak-ash-maple (*Quercus / Fraxinus / Acer*) woodland developed on a plateau of poorly drained boulder clay overlying Eastern Jurassic limestone. The SSSI is also important for number of breeding bird species.	0.02 km south of Section 2
The Hermitage	SSSI	An example of rare and threatened grassland types including calcareous clay and loam pasture and base-rich marsh developed on underlying alluvium and glacial boulder clay.	0.03 km north of Section 2
Dunsby Wood	SSSI	One of a group of ancient semi-natural woodland lying on Kesteven Plateau. The SSSI is an example of wet ash-maple (woodland with over 120 species of fungi recorded.	0.05 km north of Section 2
Swinstead Valley	SSSI	A fine example of calcareous grassland developed on soils derived from Eastern Jurassic Limestone.	0.18 km south of Section 2
Porter's Lodge Meadows	SSSI	A fine example of a traditionally managed grassland, supporting plant communities typical of calcareous clay and loam soils.	0.2 km south of Section 2
Hardwick Lodge Meadow	SSSI	Extensive, species rich-agriculturally-unimproved permanent pasture supporting a fine example of crested dog's tail (*Cynosurus cristatus)* – common knapweed (*Centaurea nigra*) community. Mosaic structure of tussocks and shorter grass support diverse invertebrate populations.	0.35 km west of Section 5
Cribbs Lodge Meadows	SSSI	The SSSI includes some of the best examples of species-rich neutral grassland in Leicestershire and is representative of grassland on clay soils in the English Midlands.	0.5 km south of Section 3

Site name and size	Designation	Description	Distance and direction from the closest point of Scoping Boundary
Surfleet Lows	SSSI	One of the few remaining wet alluvial meadows in Lincolnshire that have not be agriculturally improved. Habitats include wet alluvial meadows, wet fen woodland, pools and tall fen vegetation. Over 50 species of birds have been recorded using the SSSI.	0.62 km north of Section 1
Launde Big Wood	SSSI	Some of the best remaining examples of ash-maple and ash-elm woodland in Leicestershire and is representative of ancient semi-natural woodland developed on heavy clay soils in eastern central England.	1.5 km east of Section 4
Bozeat Meadow	SSSI	Area of species-rich and agriculturally unimproved neutral grassland lying over well-drained calcareous clay and loam soils.	1.78 km east of Section 5
Stoke & Bowd Lane Woods	SSSI	The SSSI supports a complex of ancient semi-natural broad-leaved woodland with underlying soils of calcareous clay nature and vegetation representative of wet ash-maple woodland.	1.85 km east of the Section 5
Southfield Farm Marsh	SSSI	SSSI supports the largest known area of long-established tall grass washland in Northamptonshire. Side includes base-rich and floristically diverse mire developed on silty peats and watered by calcareous spring-flows. SSSI supports specialised and uncommon invertebrate fauna.	2.2 km east of Section 5
River Eye	SSSI	An exceptional example of a semi-natural lowland river and is representative of clay streams in central and southern England.	2.30 km south of Section 3
Wymondham Rough	SSSI	Some of the best remaining examples of neutral clay grassland in Leicestershire and is representative of grassland developed on clay and alluvial soils in English Midlands.	2.36 km south of Section 3.
Grimsthorpe Park	SSSI	Likely the best remaining example of ancient parkland in Lincolnshire.	2.38 km south of Section 2

Site name and size	Designation	Description	Distance and direction from the closest point of Scoping Boundary
		Ancient and mature trees support more than 250 species of beetles including a nationally rare species. Hollow trees provide roost for a number of species of bat.	
Owston Woods	SSSI	Largest continuous area of semi-natural woodland in Leicestershire containing an unusually high diversity of woodland types representative of ancient woods on clay soils in central eastern Europe. Diverse invertebrate, breeding bird and small-mammal communities.	2.5 km east of Section 4
Yardley Chase	SSSI	SSSI supports a variety of semi-natural habitats including woodland, unimproved neutral grassland and biologically rich pools. SSSI supports a range of invertebrate species, breeding birds and breeding great crested newt (*Triturus cristatus*).	3.42 km south west of Sectino 5
Chater Valley	SSSI	Some of the best remaining examples of neutral grassland and spring-fed marsh in Leicestershire. Diverse plant communities support varied breed bird and invertebrate populations.	3.52 km east of Section 4
Pitsford Reservoir	SSSI	One of the major reservoirs for passage and wintering waterfowl in East Midlands and largest waterbody in Northamptonshire. Site has previously held nationally important numbers of several wildfowl species. SSSI also supports small colony of locally uncommon Essex skipper butterfly (*Thymelicus lineola*).	3.63 km west of Section 5
Twenty Acre Piece	SSSI	Some of the best remaining examples of acidic clay grassland in Leicestershire and is representative of such habitats in the English Midlands. Mixed habitat types support a diverse breeding population of birds and invertebrates.	3.8 km west of Section 3

Site name and size	Designation	Description	Distance and direction from the closest point of Scoping Boundary
Dungee Corner Meadow	SSSI	A traditionally managed hay meadow on well-drained calcareous boulder clay. SSSI supports a strong population of county rarity green-winged orchid (*Orchis morio).*	3.83 km east of Section 5
Greetham Meadows	SSSI	One of the best remaining "ridge and furrow" hay meadows in region. Only known locality for the frog orchid (*Coeloglossum viride*) in Leicestershire.	4.06 km south of Section 2.
Kilby-Foxton Canal	SSSI	Excellent example of fauna and flora communities characteristically associated with slow-flowing lowland rivers in easter and central England. Supports a long-established colony of Daubenton's (*Myotis daubentonii*) bat and diverse communities of aquatic and terrestrial invertebrates.	4.47 km west of Section 4
Pipewell Woods	SSSI	Several small contiguous woodlands which comprise one of the largest remaining remnants of the ancient Royal Forest of Rockingham. Woods are a good example of wet ash-maple woodland in both a typical and nationally rare form. Rides / open grassland areas provide habitats for plants, invertebrates and birds.	4.5 km east of Section 5
Alder Wood and Meadow	SSSI	Site supports an unusual combination of ancient semi-natural broadleaved woodland and unimproved hay meadow. Juxtaposition of habitat types support diverse fauna and flora populations.	4.83 km east Section 5
Clipsham Old Quarry and Pickworth Great Wood	SSSI	Clipsham Old Quarry contains some of the best areas of species-rich limestone grassland in the County. It is one of the few sites in Leicestershire where slow worm (*Anguis fragilis*) breed with scrub habitats suitable for breeding birds. Pickworth Great Wood is one of the largest remaining blocks of deciduous woodland in Leicestershire and	4.9 km south of Section 2

Site name and size	Designation	Description	Distance and direction from the closest point of Scoping Boundary
		contains stands of ancient, semi natural woodland on clay soils. The wood has a rich invertebrate fauna with over 150 species of moths and supports a diverse breeding bird community.	

8.6.7 There are no SSSIs within the Scoping Boundary in Section 1 Area. The nearest is Surfleet Lows SSSI, which is 0.62 km north.

8.6.8 There are no SSSIs within the Scoping Boundary in Section 2, but several are adjacent to the Scoping Boundary.

8.6.9 There are two SSSIs, Frisby Marsh and Holwell Mouth within the Scoping Boundary in Section 3 and several adjacent to or within 5 km.

8.6.10 There are two SSSIs, Great Bowden Borrow Pit and Leighfield Forest wholly and partially within the Scoping Boundary in Section 4 and several others within 5 km of this section.

8.6.11 There are two SSSIs wholly within the Scoping Boundary in Section 5, Birch Spinney and Mawsley Marsh and Badsaddle, Withmale Park and Bush Walk Woods. The Upper Nene Valley Gravel Pits SSSI is also designated as Upper Nene Valley Gravel Pits SPA and Ramsar site and is situated partially within the Scoping Boundary.

8.6.12 There are no NNR within the Scoping Boundary, however Cribbs Meadow NNR is located 0.55 km south of Section 3. There is one LNR, Summer Leys, that falls partially within the Scoping Boundary in Section 5. Five others fall within 5 km of the Scoping Boundary.

Habitats

Habitats of Principal Importance

8.6.13 A review of the MAGIC website (Ref 8.3) indicates that the following HPI under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (Ref 8.7) are present, or likely to be present (meaning determination by further botanical survey is required), on land within the Scoping Boundary. These are shown on **Figure 8.4 Habitats of Principal Importance within the Scoping Boundary**:

- Deciduous woodland;
- Traditional orchard;
- Ponds;
- Reedbeds;
- Lowland fens;
- Lowland heathland;

- Purple moor grass and rush pastures;
- Lowland meadows;
- Lowland calcareous grassland;
- Coastal and floodplain grazing marsh; and
- Mudflats.

Ancient Woodland and Veteran Trees

8.6.14 There are 31 sites of ancient woodland present within the Scoping Boundary identified on the Ancient Woodland Inventory (29 are named and two are unnamed). A further 23 ancient woodland sites are noted as within 2 km of the Scoping boundary. These may be Ancient Semi-Natural Woodland (ASNW) or sites of Plantations on Ancient Woodland Sites (PAWS), or a combination of both. These are:

Section 2 – within Scoping Boundary

- Battlebourn Head (ASNW);
- Beaumont Wood (PAWS);
- Bitchneaves Wood (PAWS);
- Breaches Wood (PAWS);
- Callans Lane Woods (ASNW/ PAWS);
- Catbury Wood (PAWS);
- Dodsey Wood (ASNW);
- Elliotts Wood (ASNW);
- Herricho Wood (ASNW);
- Mickley Wood (ASNW);
- Norwood / West Woods (ASNW/ PAWS); and
- South Wood (ASNW);

Section 2 – within 2 km of Scoping Boundary

- Bourne/ Fox/ Pillow Woods (ASNW)
- Bulby Hall Wood (ASNW/PAWS);
- Cabbagehill Wood (PAWS);
- Colley Wood (ASNW/ PAWS);
- Dunsby Wood (ASNW/ PAWS);
- Easton Wood (ASNW/ PAWS);
- Great Osgrove Wood (ASNW/ PAWS);
- High Wood (ASNW);
- Little Osgrove Wood (ASNW);

- Lownd Wood (ASNW/ PAWS);
- Nab Wood (PAWS);
- Sleights Wood (ASNW/ PAWS);
- Spring Wood (PAWS);
- Temple Wood (ASNW/ PAWS);
- Thorny Wood (PAWS);
- Tortoiseshell Wood (ASNW);
- Twyford Forest (ASNW/ PAWS);
- Old Park Wood (ASNW);
- Osgodby Coppice (ASNW);
- Unnamed woodland, (TF 00840 27547) (ASNW/ PAWS); and
- West/ East Morkery Wood (ASNW).

Section 3 – within Scoping Boundary

- Freeby Wood (ASNW);
- Stonepit Spinney (ASNW);and
- Old Dalby Wood (ASNW).

Section 4 – within Scoping Boundary

- Brook Spinney (ASNW);
- Browns / Hoothill Woods (ASNW);
- Crow Wood / Priest Hill (ASNW);
- Glooston Wood (ASNW);
- Hardwick Wood (ASNW);
- Loddington Reddish (ASNW);
- Norseley Wood (ASNW) (Section 4);
- Rolleston Wood (ASNW) (Section 4);
- Skeffington / Tilton Woods (ASNW/ PAWS);
- Stonton Wood (ASNW); and
- Unnamed woodland, (SP 76081 98531) (ASNW).

Section 4 – within 2 km of Scoping Boundary

- Hallaton Wood (ASNW);
- Launde Big Wood (ASNW);
- Shangton Holt (ASNW); and

- Unnamed woodland (SK 76051 02978) (ASNW).

Section 5 – within Scoping Boundary

- Badsaddle Wood (ASNW);
- Brampton/ Stoke Wood (PAWS);
- Cransley Wood (ASNW/ PAWS);
- Faxton Corner (PAWS) (Section 5);
- Withmale Park Wood (ASNW/ PAWS); and
- Unnamed woodland, (SP 79851 76345) (ASNW).

Section 5 – within 2km of Scoping Boundary

- Cold Oak Copse (ASNW/ PAWS);
- Blue Covert (ASNW);
- Hardwick Wood (ASNW/ PAWS);
- Sywell Wood (ASNW/ PAWS);
- Unnamed woodland, (SP 78912 85891) (ASNW)
- Unnamed woodland, (SP 78477 85779) (ASNW); and
- Unnamed woodland, (SP 77409 76223) (ASNW).

8.6.15 There are 16 veteran trees and one ancient tree identified within the Scoping Boundary according to the Woodland Trust Ancient Tree inventory. Further veteran or ancient trees may be identified during further arboricultural surveys which will be undertaken to inform the ES assessment.

8.6.16 The following sections provide a high-level description of the habitats located in the separate Sections and associated Study Area.

Section 1

8.6.17 Section 1 is the most eastern extent of the Scoping Boundary falling entirely within the County of Lincolnshire. This area is characterised by low lying ground that is managed intensively as arable agriculture, with straight hedgerows and largely man-made ditches forming field boundaries. There is very little woodland within this section with approximately five parcels, three of which are HPIs: deciduous woodland, but these are not well connected to the rest of the landscape. There are three other parcels of Habitat of Principal Importance within this area. Two are listed as coastal floodplain grazing marsh, one of which is located at the eastern extent of the Scoping Boundary between the River Welland and Vernatt's drain. Another parcel is listed with no defined habitat.

8.6.18 In addition to the many ditches providing aquatic habitat, there are two statutory main rivers, the River Glen and the River Welland. There are no statutory designated sites or ancient woodlands/veteran trees mapped within this section.

Section 2

8.6.19 Section 2 covers a larger area of the Scoping Boundary also within the County of Lincolnshire. The eastern extent is a continuation of the habitats and land management present within Section 2, comprising flat agricultural land with field drains and hedgerows, with only three small areas of HPI: deciduous woodland and one small area of coastal floodplain grazing marsh. West of Haconby, the habitats and topography become more varied. It is still largely arable agriculture but with fewer field drains and the fields and boundary hedgerows with standard trees are more irregular in shape and therefore likely to be older. There are eleven large areas of ancient woodland within this section and many other woodland areas that whilst not ancient, are deciduous woodland. There are many areas of woodland listed on the National Forest Inventory which may be deciduous or coniferous and may in some cases overlap with the deciduous woodland. Other Priority Habitats within this section are coastal floodplain grazing marsh, traditional orchard and lowland meadow.

8.6.20 There are six main rivers within this section, namely the South Forty Foot Drain, the Rippingdale Running Dike, the Car Dyke, the East Glen River, West Glen River and the River Witham.

Section 3

8.6.21 Section 3 is located in Leicestershire and is largely arable farmland or pastures with hedgerows and standard trees. There are only two small parcels of ancient semi-natural woodland in this section, but many small areas of Habitat of Principal Importance deciduous woodland and National Forest Inventory woodland scattered throughout Section 3. Other Habitat of Principal Importance present are small areas of, lowland meadow, coastal floodplain grazing marsh, purple moor grass and rush pasture with lowland fen. Lowland Fen is also considered an irreplaceable habitat.

8.6.22 There are two main rivers within Section 3, the River Wreake and the Gaddesby Brook.

Section 4

8.6.23 Similarly to the above, Section 4 comprises arable farmland and pasture with hedgerows and standard trees throughout. There are eleven distinct areas of ancient semi-natural or replanted woodland within Section 4 and many smaller areas of HPI deciduous woodland habitat which, may also be part of the National Forest Inventory. There are six small and fragmented areas of HPI; lowland heathland, two areas of lowland meadow and one small area of lowland fen.

8.6.24 An unnamed main river flows north to south through much of Section 4, as well as the Langton Brook, the River Welland and River Jordon which bisect this section towards the south.

Section 5

8.6.25 Section 5 is the southernmost area of the Scoping Boundary and is also largely arable and pastureland. There are five small blocks of ancient semi-natural or replanted woodland and many other parcels of HPI deciduous woodland. There are many areas of woodland listed on the National Forest Inventory which may be deciduous or coniferous and may in some cases overlap with the woodland (HPI). Other HPI present within this section are large areas of coastal floodplain grazing

marsh as part of the Upper Nene Valley Gravel Pits SSSI, and two small areas of lowland fen habitat.

8.6.26 River Welland, River Jordon, River Isle, Slade Brook, Swanspool Brook, River Nene and four un-named tributaries fall within this section as well as a large complex of lakes south of the River Nene that comprise the Upper Nene Valley Gravel Pits SSSI.

Species

8.6.27 Protected and notable species comprise those listed under Schedule 1, 5 and 8 of the Wildlife and Countryside Act 1981 (as amended) (Ref 8.8); Schedule 2, 4 and 5 of the Habitats Regulations (Ref 8.9); and species and Habitat of Principal Importance for nature conservation in England listed pursuant to Section 41 of the (NERC) Act 2006 (as amended) (Ref 8.7). Records of other species have been considered e.g. those included in national, regional or local Red Data Books and Lists but not protected by legislation.

8.6.28 Invasive non-native species (INNS) include those which are listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) (Ref 8.8) and the Invasive Alien Species (Enforcement and Permitting) Order 2019 (as amended) (Ref 8.10).

8.6.29 A high-level appraisal of habitat suitability and records from the relevant record centres, from the last 10 years is summarised below.

Amphibians

8.6.30 Great crested newt are known to be present in waterbodies within the Scoping Boundary.

8.6.31 There are 46 granted great crested newt Natural England EPSMLs within the 2 km Study Area, of which 22 fall within the Scoping Boundary.

8.6.32 There are also records of priority species including common toad (*Bufo Bufo*) within the 2 km Study Area.

Badger

8.6.33 Arable and woodland habitat within the Study Area provides excellent habitat for badgers (foraging and sett building), and it is expected that they are present within the Scoping Boundary.

Bats

8.6.34 Habitats within the Scoping Boundary include mature trees, woodland and buildings that likely provide suitable roosting habitat for bats. Woodland, hedgerows, fields and watercourses provide excellent commuting and foraging habitat for a wide range of bat species.

8.6.35 There are 42 granted Natural England European Protected Species Mitigation Licences (EPSML) for bats within the 2 km Study Area, of which 18 fall within the Scoping Boundary and cover the following species; common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), brown long-eared bat (*Plecotus auritus)* and barbastelle (*Barbastella barbastellus)*.

Beaver

8.6.36 Beaver (*Castor fiber*) have been reintroduced into Lincolnshire within 30 km of the Scoping Boundary to the north and at the Nene Washes within the Scoping Boundary to the south. These populations are likely within enclosures but there are also reports of wild beaver within Northamptonshire.

Birds

8.6.37 Habitats within the Scoping Boundary comprising large areas of arable land, woodlands, hedgerows and watercourses provide excellent habitat for breeding and wintering birds and provide functionally linked land for birds associated with internationally designated sites.

Hazel Dormouse

8.6.38 Hazel dormice were considered to be extinct in Lincolnshire and a population was reintroduced into the county by the Protected Trust for Endangered Species (PTES) in 2002 to Chambers Farm in Lincolnshire. Since then dormice have dispersed into the landscape with further reintroductions taking place or planned.

8.6.39 Further consultation is required with PTES to ascertain whether it is likely that dormice are present within the Scoping Boundary.

8.6.40 There are no previous granted Natural England EPSML for hazel dormice within the Scoping Boundary or the 2 km Study Area.

Invertebrates (Terrestrial and Aquatic)

8.6.41 Terrestrial habitats and aquatic habitat within the Scoping Boundary provide suitable habitat for a wide range of invertebrates.

Otter

8.6.42 Otter (*Lutra lutra)* records are located across the Scoping Boundary in association with watercourses present in the Study Area.

8.6.43 There are no previous granted Natural England EPSML for otter within the Scoping Boundary or 2 km Study Area.

Reptiles

8.6.44 The habitats within the Scoping Boundary such as field margins, hedgerows, rough grassland provide suitable habitat for common reptile species; slow worm, common lizard, grass snake and adder for foraging, breeding and hibernation.

Water Vole

8.6.45 Water vole (*Arvicola amphibius)* are expected to be present throughout the Scoping Boundary due to the number of watercourses present which provide suitable habitat.

Fish

8.6.46 There are several main rivers and other watercourses within the Scoping Boundary and 2 km Study Area that may provide suitable habitat for fish.

Invasive and Non-Native Species

8.6.47 Invasive and non-native species (INNS) are expected to be present throughout the Scoping Boundary. These include species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) (Ref 8.8).

Other Notable Mammals

8.6.48 Other notable mammals such as hedgehog and brown hare are expected to be present throughout the Scoping Boundary.

Scoping Surveys for Birds

8.6.49 Bird scoping surveys have been undertaken within the proposed new overhead line part of the Scoping Boundary in April and May 2025 to identify Vantage Point (VP) survey locations, so that wintering bird surveys can commence in 2025. An initial 58 locations were identified through the use of desk study resources and aerial photography, identifying areas of Functionally Linked Land (FLL) for species that are identified within the SPA and Ramsar sites listings in **Table 8.3** above. FLL refers to areas of land outside a statutory site that are important to the conservation objectives of the statutory site, especially for those species for which the statutory site is designated.

8.6.50 From the initial 58 locations visited, these have been narrowed down to 16 suitable VP locations with suitable viewsheds[3] and access requirements to undertake VP surveys. Each VP viewshed will be observed for a minimum of 6 hours per month over a minimum of a single year survey period (October to September) using a team of two surveyors (to ensure no lone working and to optimise recording efficiency), ensuring minimum survey effort of 72 hours for a full year at all VPs. This method is recommended in the NatureScot guidance on the assessment of the impacts of powerlines on birds (Ref 8.11), adapted from the recommended bird survey methods to inform impact assessment of onshore windfarms (Ref 8.12).

8.6.51 The surveys have been designed to cover a much wider range of potential impacts on designated sites over a wider area, plus more general ornithological constraints and potential impacts across the Scoping Boundary. These include:

- Indirect impacts on The Wash Ramsar site, SPA and SSSI and Rutland Water Ramsar site, SPA and SSSI through potential effects on habitat that is outside of the designated sites but that nevertheless provides a supporting function to the designations (FLL) by providing habitat that is regularly used by qualifying bird species in some capacity.
- Potential impacts on key sites or habitats that are notable for their capacity to support notable bird populations regardless of any designation (for instance as a significant habitat resource for breeding birds; or as a significant feeding and roosting area regularly used by non-breeding birds).
- Potential impacts on key flyways or migration routes for any species of bird which may lead to mortality or population decline during construction and operation of the Project.

[3] Viewshed is the visible area from the Vantage Point location.

- Potential impacts of collision with transmission overhead lines by bird species that are known to be vulnerable.

8.6.52 The requirement for breeding bird surveys, passage bird surveys and more targeted surveys for birds is still being reviewed but will comprise breeding bird transect surveys following the Bird Survey and Assessment Steering Group guidelines (Ref 8.13), and birds listed on Schedule 1 of the Wildlife and Countryside Act (1981) (Ref 8.8).

Future Baseline

8.6.53 Relevant to the current baseline, the value of ecological features present is not expected to change significantly by the end of the construction period. Management of the habitats is similarly unlikely to change significantly over this period, and consequently no significant degradation or improvement of habitat condition is expected. 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. Large parts of land within the Scoping Boundary are located on agricultural land and current agricultural practices are likely to be maintained.

8.7 Design and Control Measures

Design Measures

8.7.1 The emerging preferred route corridor on which the Scoping Boundary is based has been routed to avoid designated sites and sensitive features as far as reasonably practicable. This is in accordance with the Planning Inspectorate's Advice: Nationally Significant Infrastructure Projects- Advice on Habitats Regulations Assessment (Ref 8.14) the Habitats Regulations 2017 (Ref 8.9), the Holford Rules (Ref 8.15) and relevant legislation and policies outlined in **Appendices 2A** to **2C.**

8.7.2 **Chapter 3 Main Alternatives Considered** and the Corridor and Preliminary Routing and Siting Study (CPRSS) (Ref 8.16) detail the evolution of the Project to avoid some of the known major constraints, including proximity to the statutory internationally designated sites, areas of ancient woodland and areas of HPI such as deciduous woodland and watercourses that lie within the Scoping Boundary. The design development will progress with a view to avoid these areas as far as reasonably practicable as the route corridor and Order Limits are defined.

8.7.3 Further design measures will be developed as the Project design evolves, such as micro-siting of individual towers, substation locations and access routes to avoid direct and indirect impacts on features including designated sites, protected habitats and species where possible. Other measures may include applying appropriate buffers to designated sites and HPI and also ancient woodland, ancient and veteran trees to avoid direct effects, combined with standard best practice control measures to avoid indirect effects on such sites and habitats.

8.7.4 At sensitive crossing locations (e.g. watercourses), existing access routes would be used as far as possible and the width of any required working area reduced as far as practicable. If access upgrades are required, temporary bridges will be used in preference to culverts. Where culverts are unavoidable, these will either be arch culverts, leaving the natural bed undisturbed, or they would be installed with the

invert set below the natural bed level for a semi-natural bed to establish within the culvert.

8.7.5 Micro-siting of towers would take into account the swing of the overhead line to avoid or minimise loss from notable habitats, including woodland and trees.

8.7.6 Vegetation would be retained where possible. In order to avoid destruction of active bird nests, vegetation clearance works would be undertaken outside the core breeding bird season, taken to be 1 March to 31 August, unless clear reasons to take an alternative approach have been identified. Such reasons may be where there are risks to sensitive or ecologically important roosting or feeding birds during the non-breeding season at locations where breeding birds are unlikely to occur. Where avoidance of the breeding bird season is not possible, vegetation removal would be undertaken following a check for active nests by an appropriately experienced ecologist not more than 24 hours prior to the works commencing. The clearance will be undertaken in the presence of an ecological watching brief and appropriately managed to remove the risk of damaging or destroying active nests, young birds, chicks or eggs or disturbing nests of birds listed on Schedule 1 of the Wildlife and Countryside Act (1981)(Ref 8.8). Suitable methods would also be used to ensure vegetation with potential to support other legally protected species (for e.g. reptiles) is removed sensitively and in compliance with legal requirements.

8.7.7 A BNG equivalent to a minimum 10 per cent uplift above the current baseline situation will be built into the Project through the design process, which may include offsite solutions if it is not possible to deliver onsite, in line with the Environment Act 2021 (Ref 8.1).

8.7.8 Areas of temporary habitat loss would be reinstated, wherever practicable, following the completion of construction in each section. Wherever possible, reinstatement would be back to the type of habitat affected or improved/enhanced. Areas of permanent habitat loss would be considered during the siting of environmental gain from BNG, as described above.

Control and Management Measures

8.7.9 A range of standard measures for the Project will be adopted throughout the duration of the construction phase. An Initial Outline Code of Construction Practice (OCoCP) is provided in **Appendix 4A Initial Outline Code of Construction Practice**.

8.7.10 Measures relevant to the control and management of impacts that could affect the ecology and biodiversity assessment are summarised below (refer to **Appendix 4A** for the full description of each measure):

- GG03 - on the development of a final CoCP secured through a Requirement of the DCO.
- GG04 - on the appointment of Environmental Managers and Environmental Clerks of Works to monitor implementation of requirements and ensure good practice is employed.
- GG05 - on environmental training of construction workers.
- GG07 - requiring a Construction Environmental Management Plan (CEMP) and a Landscape and Ecological Management Plan (LEMP) prior to construction.
- GG09 - on reinstatement of land, hedgerows, fences, and walls.

- GG10 - on retention and protection of sensitive features such as ancient woodland and protected habitats.
- GG12 - on the location of activities that may cause nuisance away from sensitive features such as ecological sites where practicable.
- GG16 - on the storage of hazardous materials away from sensitive water receptors.
- GG17 - on the control of surface water run-off.
- GG18 - on the wash down of vehicles and equipment.
- GG20 - on avoiding dust from earthworks and stockpiled soil.
- GG22 and LV04 - on construction lighting.
- B01 - requiring pre-construction species surveys and compliance with relevant protected species licences.
- B02 - on the protection of breeding birds and seasonal requirements.
- B03 - on reducing risk of animal entrapment in works.
- B04 - on control of the spread of invasive weeds.
- B05 – on staged vegetation clearance and protection of reptiles.
- B06 – on provision of alternative bat roost structures (bat boxes).
- B07 - on provision of alternative barn owl breeding sites (barn owl boxes).
- B08 - on requirements when crossing or removing hedgerows.
- B09 - on habitat or species translocation (if required).

8.7.11 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.
- Reasonable avoidance measures, including appropriate buffers around identified active badger setts (if present), or trees with bat roost suitability where possible throughout the area.
- Timing of works such as daytime works only where practicable where there are sensitive nocturnal features, taken to be 30 minutes before dusk and 30 minutes after sunrise. Seasonal restrictions may also apply in some areas.

8.8 Potential for Significant Effects

8.8.1 The ecology and biodiversity assessment will consider the construction, operation and maintenance of the Project. A description of each of these stages is set out in **Chapter 4 Description of the Project**. The potential for significant effects and inclusion (Scoped in) and exclusion (Scoped out) of matters in the scope of the ecology and biodiversity ES assessment is set out below and has been determined using the approach described in **Chapter 5 EIA Approach and Methodology.**

8.8.2 The potential for the Project to result in the likely significant effects identified below takes into account the embedded design, and control and management measures described in Section 8.7.

8.8.3 The CIEEM guidelines (Ref 8.21) make clear that there is no need to "*carry out detailed assessment of ecological features that are sufficiently widespread, unthreatened and resilient to project impacts and will remain viable and sustainable*". Therefore, it is not necessary for the assessment to address all habitats and species with potential to occur in the relevant Study Area and instead the focus is on those that are "relevant" i.e. ecological features that are considered to be important and potentially affected by the Project. This does not mean that efforts will not be made to safeguard wider biodiversity.

8.8.4 **Table 8.5** identifies the sources of potential impacts on ecological features identified in the baseline that could result in a significant effect and will be considered in the ES. Where an impact could give rise to potentially significant effects on ecological features identified in the Study Area, these are then scoped into the ES. Impact pathways that are unlikely to give risk to significant effects on features identified in the Study Area are proposed to be scoped out of the ES.

8.8.5 The potential sources of impact that have been considered in this scoping exercise are as follows:

- Habitat loss (permanent and temporary);
- Habitat deterioration through alterations in air quality, hydrology and pollution;
- Habitat fragmentation through severing of ecological connections;
- Disturbance of ecological features through increased noise, dust, vibration, light, pollution, electromotive force and increased human presence; and
- Mortality and injury of species during construction phases or due to collision into overhead line during operation.

8.8.6 Operational impacts relate to the new overhead line section of the Project, with limited operational impacts associated with the substations. The operational phase of the reconductoring section will be the same as the current baseline and therefore no significant effects are expected.

8.8.7 A precautionary approach has been taken and where there is no strong evidence base, insufficient baseline or the significance is uncertain at this stage the impact has been scoped into the ES. Where there is a clear evidence base that the effect from the impact will not be significant, either alone or cumulatively with other developments, the impact is proposed to be scoped out of the ES.

Table 8.5 Impacts, features and the potential for significant effect

Project phase	Source	Impact	Feature	Potential for significant effect	Proposed to be scoped in/out
Construction (new overhead line, reconductoring and substations)	Site clearance. Construction activities (increased human presence, dust, noise, lighting, water pollution).	Permanent habitat loss. Temporary habitat loss, disturbance, degradation and fragmentation. Indirect impacts (increased human presence, dust, noise, lighting, water pollution).	Statutory and non-statutory designated sites (without mobile qualifying criteria) located greater than 2 km from Scoping Boundary.	**Yes** - during construction, there is a risk of habitat degradation resulting from water pollution for sites that are hydrologically connected to the Project. There will be no direct loss of habitat from statutory and non-statutory sites greater than 2 km away and there is no risk of the other identified impacts leading to significant effects, given the separation distance.	**Scoped in** (habitat degradation from water pollution only) during construction.
Maintenance (new overhead line and substations)	Maintenance activities (site clearance, increased noise, lighting, pollution).	Temporary habitat loss, disturbance, degradation and fragmentation. Indirect impacts (increased human presence, dust,	Statutory and non-statutory designated sites (without mobile qualifying criteria) located greater than 2 km from Scoping Boundary.	No – during maintenance, any impacts would be limited and localised, temporary and of a short duration. There is no risk of significant effects, given the separation distance. No permanent habitat loss or fragmentation is anticipated during maintenance works.	Scoped out (all impacts) during maintenance.

Project phase	Source	Impact	Feature	Potential for significant effect	Proposed to be scoped in/out
		noise, lighting, pollution).			
Construction (new overhead line, reconductoring and substations)	Site clearance. Construction activities (increased human presence, noise, dust, lighting, airborne and aquatic pollution).	Permanent habitat loss. Temporary habitat loss, disturbance and fragmentation or degradation.	Statutory designated sites within 10 km and up to 30 km from Scoping Boundary for those sites used by birds or bats associated with Internationally designated sites.	**Yes** – there will be no direct loss of habitat from statutory designated sites. However, it is possible that habitats utilised by birds or other species associated with nearby designated sites (i.e. FLL) could be lost. Surveys will investigate use of these habitats by such species and inform any requirement for mitigation or necessity for design adjustments. In addition, sites that are designated for habitats sensitive to pollution will be assessed.	**Scoped in** (all impacts) during construction.
Maintenance (new overhead line and substations)	Maintenance activities (site clearance, increased noise and lighting).	Temporary habitat loss, disturbance and fragmentation or degradation.	Statutory designated sites within 10 km and up to 30 km from Scoping Boundary for those sites used by birds or bats associated with	**Yes –** there will be no direct loss of habitat from statutory designated sites. However, it is possible that habitats utilised by birds or other species associated with nearby designated sites (i.e. FLL) could be lost. Surveys will investigate use of these habitats by such	**Scoped in** (all impacts) during maintenance.

Project phase	Source	Impact	Feature	Potential for significant effect	Proposed to be scoped in/out
			Internationally designated sites.	species and inform any requirement for mitigation or necessity for design adjustments. No permanent habitat loss or fragmentation is anticipated during maintenance works.	
Construction (new overhead line, reconductoring and substations)	Site clearance. Construction activities (increased human presence, noise, lighting and pollution).	Permanent habitat loss. Temporary habitat loss, disturbance and fragmentation.	Non-statutory designated sites up to 2 km from Scoping Boundary.	**Yes** – the construction of overhead line infrastructure, supporting structures, and associated tracks have the potential for direct habitat loss within non-statutory designated sites. Until the route corridor and working methods are confirmed this impact pathway will be included on a precautionary basis. Permanent habitat loss of a non- statutory designated site could occur as a result of the construction of the overhead line infrastructure such as the siting of a tower, or the required clearance below the overhead line/conductors.	**Scoped in** (all impacts) during construction.

Project phase	Source	Impact	Feature	Potential for significant effect	Proposed to be scoped in/out
Maintenance (new overhead line and substations)	Maintenance activities (site clearance, increased noise and lighting).	Temporary habitat loss, disturbance and fragmentation.	Non-statutory designated sites up to 2 km from Scoping Boundary.	**Yes** - in view of the proximity of the non-statutory designated sites to the Scoping Boundary, there is potential for temporary habitat loss, disturbance and fragmentation during necessary maintenance works. No permanent habitat loss or fragmentation is anticipated during maintenance works.	**Scoped in** (all impacts) during maintenance.
Construction (new overhead line, reconductoring and substations)	Site clearance. Construction activities (increased human presence, noise, lighting and pollution).	Permanent habitat loss. Temporary habitat loss disturbance and fragmentation.	Priority and notable habitats within Scoping Boundary. Ancient woodland and ancient and veteran trees up to 2 km from Scoping Boundary.	**Yes** – semi-natural woodland (if present), hedgerows, lowland meadow, coastal and floodplain grazing marsh, arable field margins, and other notable habitats could be impacted by tower locations, supporting structures and access routes. Permanent habitat loss of notable habitats could occur as a result of the construction of overhead line infrastructure such as the siting of a tower, or the required clearance below the overhead line/conductors. However, a combination of	**Scoped in** (all impacts) during construction.

Project phase	Source	Impact	Feature	Potential for significant effect	Proposed to be scoped in/out
				routeing, micro-siting, and habitat re-instatement and replacement will be employed as mitigation and reduce these impacts, where possible..	
Maintenance (new overhead line and substations)	Maintenance activities (site clearance, increased noise and lighting).	Temporary habitat loss disturbance and fragmentation.	Priority and notable habitats within Scoping Boundary. Ancient woodland and ancient and veteran trees up to 2 km from Scoping Boundary.	**Yes** - there is potential for temporary habitat loss, disturbance and fragmentation during necessary maintenance works to impact on these features. No permanent habitat loss or fragmentation is anticipated during maintenance works.	**Scoped in** (all impacts) during maintenance
Construction (new overhead line, reconductoring and substations)	Site clearance	Permanent habitat loss. Temporary habitat loss, disturbance and fragmentation or degradation.	Protected and notable species (all listed within Section 8.6) up to 2 km from Scoping Boundary.	**Yes** - habitats with potential to support protected and notable species to be potentially impacted by overhead line infrastructure, supporting structures, and associated access tracks. Permanent habitat losses may reduce the extent of habitat available to protected or notable species. Mitigation measures will include habitat	**Scoped in** (all impacts) during construction

Project phase	Source	Impact	Feature	Potential for significant effect	Proposed to be scoped in/out
				avoidance, reinstatement and compensation. Habitat connectivity may be impacted in the short term but will be minimised where possible to avoid key habitats. Where unavoidable fragmentation or habitat degradation is unavoidable this will be a temporary effect until habitat re-instatement is established.	
Maintenance (new overhead line and substations)	Maintenance activities (site clearance, increased noise and lighting).	Temporary habitat loss, disturbance and fragmentation or degradation.	Protected and notable species (all listed within Section 8.6) up to 2 km from Scoping Boundary.	**Yes** – habitats with potential to support protected and notable species to be potentially impacted by maintenance activities. Habitat connectivity may be impacted in the short term but will be minimised where possible to avoid key habitats. Where unavoidable fragmentation or habitat degradation is unavoidable this will be a temporary effect until habitat re-instatement is established.	**Scoped in** (all impacts) during maintenance

Project phase	Source	Impact	Feature	Potential for significant effect	Proposed to be scoped in/out
				No permanent habitat loss or fragmentation is anticipated during maintenance works.	
Construction (new overhead line, reconductoring and substations)	Site clearance	Incidental mortality of protected or notable species.	Great crested newt, Non-breeding birds, Breeding birds, Bats, Badger, Hazel dormouse, Terrestrial invertebrates, Reptiles, and Other mammals (including only brown hare, hedgehog, polecat) up to 2 km from Scoping Boundary.	**Yes** - potential exists for works to impact protected and notable species which may be relatively isolated along the route corridor depending on the access routes (haul road) and result in direct mortalities. If the route corridor cannot avoid suitable habitat, mitigation options include a works Ecological Method Statement and or Natural England mitigation licence to avoid direct mortalities.	**Scoped in** (all impacts) during construction
Maintenance (new overhead line and substations)	Maintenance activities (any site clearance works)	Incidental mortality of protected or notable species.	Great crested newt, Non-breeding birds, Breeding birds, Bats,	**Yes** - potential exists for works to impact protected and notable species which may be relatively isolated along the route corridor depending on the access routes (haul road) and result	**Scoped in** (all impacts) during maintenance.

Project phase	Source	Impact	Feature	Potential for significant effect	Proposed to be scoped in/out
			Badger, Hazel dormouse, Terrestrial invertebrates, Reptiles, and Other mammals (including only brown hare, hedgehog, polecat) up to 2 km from Scoping Boundary.	in direct mortalities. If the route corridor cannot avoid suitable habitat, mitigation options include a works Ecological Method Statement and or Natural England mitigation licence to avoid direct mortalities.	
Construction (new overhead line, reconductoring and substations). Maintenance (new overhead line and substations).	Site clearance Maintenance activities (any clearance works)	Incidental mortality of protected or notable species.	Riparian mammals (otter, beaver and water vole) and other aquatic species. Aquatic invertebrates up to 2 km from Scoping Boundary.	**Yes** - increased levels of incidental mortality may undermine the conservation status of protected or notable species. It is expected that direct impacts on watercourses (and therefore water vole, otter and other aquatic species) can be avoided through appropriate design and routing of access requirements. However, until routing and design can be confirmed, there is a potential requirement for mitigation and/or licensing and these features are scoped in.	**Scoped in** (all impacts) during construction and maintenance

Project phase	Source	Impact	Feature	Potential for significant effect	Proposed to be scoped in/out
Construction (new overhead line, reconductoring and substations). Maintenance (new overhead line and substations).	Construction activities (increased human presence, noise, lighting, pollution). Maintenance activities (increased noise and lighting).	Disturbance to protected or notable species (noise/ vibration, visual, lighting).	Great crested newt, Non-breeding birds (intertidal), Non-breeding birds (terrestrial), Breeding birds, Bats, Badger, Otter, Beaver, Water vole, Hazel dormouse, Terrestrial and aquatic invertebrates, and Reptiles. Other mammals (including only brown hare, hedgehog, polecat) up to 2 km from Scoping Boundary.	**Yes** - trees, hedgerows and other habitats within the Scoping Boundary may be suitable for protected or notable species. Disturbance above a tolerable threshold may affect the extent of habitat that is available to protected or notable species. If the route corridor cannot avoid disturbance impacts, then mitigation (i.e. works under an Ecological Method Statement or Natural England EPSML/development licence) could be required.	**Scoped in** (all impacts) during construction and maintenance.
Construction (new overhead line,	Construction activities (altered traffic and	Changes in air quality, negatively	Designated sites and notable habitats (ancient	**Yes** – should screening of construction traffic flows show vehicle trips exceed	**Scoped in** (all impacts) during construction.

Project phase	Source	Impact	Feature	Potential for significant effect	Proposed to be scoped in/out
reconductoring and substations). Maintenance (new overhead line and substations).	associated changes in air quality). Maintenance activities (changes in air quality) .	impacting protected or otherwise notable habitats or designated sites within 200 m of the affected road network.	woodland and ancient and veteran trees) within 200 m of roads that may be affected by the Project.	the Institute of Air Quality Management (IAQM) criteria then habitat degradation can occur. Changes in air quality during maintenance are not predicted to lead to significant effects upon ecological features (for the reasons presented in **Chapter 14 Air Quality, Table 14.5,** where it is proposed to scope this matter out.)	Scoped out (all impacts) during maintenance.
Construction (new overhead line, reconductoring and substations). Maintenance (new overhead line and substations).	Construction and maintenance activities (pollution).	Pollution impacts (dust deposition, water).	Designated sites up to 10 km and protected and notable habitats and species up to 2 km from Scoping Boundary.	**Yes** - potential for pollution or other indirect impacts during construction resulting in degradation of habitats, including those used by protected and notable species. This will be mitigated though implementation of the CEMP. Changes in water quality (**Chapter 10 Water Environment**) and dust (**Chapter 14 Air Quality**) during maintenance are not predicted to lead to significant effects upon	**Scoped in** (all impacts) during construction. Scoped out (all impacts) during maintenance.

Project phase	Source	Impact	Feature	Potential for significant effect	Proposed to be scoped in/out
				ecological features due to the reasons presented within **Chapter 10 Water Environment**) and (**Chapter 14 Air Quality** and therefore are scoped out.	
Construction (new overhead line, reconductoring and substations). Maintenance (new overhead line and substations).	Site clearance Construction and maintenance activities (increased human presence).	Introduction of invasive non-native species leading to degradation of existing habitat quality and reduction in native species due to being outcompeted.	Designated sites up to 10 km and protected and notable habitats and species up to 2 km from Scoping Boundary.	**Yes** – potential for spread of invasive non-native species during works and movement around the site. Introduction of INNS can be detrimental to native habitats and species present.	**Scoped in** (all impacts) during construction and maintenance.
Construction (new overhead line, reconductoring and substations). Maintenance (new overhead line and substations).	Construction and maintenance activities (altered water quantity and quality).	Loss/reduction in habitat quality for protected and notable species due to changes in ground water levels or altered water quality.	Statutory and non-statutory designated sites within 2 km and protected and notable habitats and species.	**Yes** - potential for degradation of existing habitat quality, which could impact designated or otherwise notable habitat and protected and notable species.	**Scoped in** (all impacts) during construction and maintenance.
Operation (new overhead line section)	Birds colliding with infrastructure.	Collison mortality due to permanent	Breeding and non-breeding birds.	**Yes** – there is potential for a bird to fly into the new overhead line and be killed	**Scoped in** for new overhead line

Project phase	Source	Impact	Feature	Potential for significant effect	Proposed to be scoped in/out
Operation (new overhead line section)		structures/barriers.		either from the impact with the line, from hitting the ground, or from injuries sustained in the process. Birds that perch or nest on towers can be electrocuted by causing a short circuit, either by touching two live wires, or a live and an earthed component.	section during operational phase.
	Placement of permanent infrastructure.	Habitat fragmentation through the development creating a barrier to species dispersal.	Protected and notable species.	**Yes** – the new overhead line infrastructure could result in a degree of habitat fragmentation to terrestrial and potentially aquatic habitat.	**Scoped in** for new overhead line section during operational phase.
	Creation of permanent infrastructure.	Habitat gains for nesting birds, created by proposed towers.	Nesting birds (kestrel, hobby and peregrine)	No – the new overhead line towers would be most likely to benefit nesting corvids and certain birds of prey (principally kestrel, hobby and peregrine) and may contribute to regional or local population gains for these species. While some beneficial effects may occur these would be localised and are unlikely to be significant.	Scoped out for new overhead line section (all impacts) during operational phase.

Project phase	Source	Impact	Feature	Potential for significant effect	Proposed to be scoped in/out
Operation (new overhead line section)	Creation of permanent infrastructure.	Increased predation of birds arising from potential increased population of predatory bird species nesting and roosting on proposed towers.	Statutory designated sites: Upper Nene Valley Gravel Pits SPA / Ramsar, The Wash SPA / Ramsar, Rutland Water SPA / Ramsar, and Nene Washes SPA / Ramsar. Non-breeding birds[4]	**Yes** - where this occurs due to the new overhead line, there may be local depletions of prey species, particularly other birds. Any local or regional population decreases arising from this impact might adversely affect the conservation objectives of sites designated for qualifying ornithological interest features, although impacts on bird populations more generally are unlikely to be significant. Where this occurs near designated sites, there may be an impact on the populations of qualifying features, adversely affecting the integrity and function of the site.	**Scoped in** for new overhead line section during operational phase (for designated sites only).
	Increased electromagnetic fields (EMFs)	Impacts to navigation, behaviour and	Breeding and non-breeding birds.	**Yes –** effects of EMF on wildlife (especially birds, bats and insects) from new	**Scoped in** for new overhead line

[4] This potential for effect is listed for “non-breeding” birds, because the duration and timing of breeding seasons varies for each species. Therefore, the breeding season of one species might overlap the non-breeding period of another.

Project phase	Source	Impact	Feature	Potential for significant effect	Proposed to be scoped in/out
		reproductive success.		overhead lines can lead to negative impacts relating to navigation and migration, reduced reproduction and survival rates and behavioural changes such as altered foraging habits. .	section during operation.
Operation and maintenance (reconductoring)	All potential sources	All potential impacts	All identified features	No - scoped out for reconductoring as the operational and maintenance phase for the reconductoring section will be the same as the current baseline and therefore, no significant effects are anticipated.	Scoped out (all impacts) during operation and maintenance.
Operation (substations)	Artificial lighting permanent infrastructure.	Light pollution spilling onto surrounding habitats, resulting in disturbance impacts to protected or notable species.	Protected and notable species.	**Yes -** there is potential for operational lighting at the substation locations to result in the accidental disturbance of protected or notable species. This potential impact is therefore scoped in until further details on lighting requirements for the substations are known.	**Scoped in** (all impacts) during operation.

8.9 Proposed Assessment Methodology

Proposed Data Sources

8.9.1 In addition to the data sources listed in Section 8.4, the following data sources will be used to inform the ecology and biodiversity assessment:

- Local Environmental Records Centre (LERC) to gain information on pre-existing ecological data (i.e. locations of non-statutory sites designated for nature conservation, existing records of protected, notable and invasive non-native species (INNS) within 2 km of the Scoping Boundary. The following LERC will be contacted:
  - Leicestershire and Rutland Environmental Records Centre (LRERC);
  - Greater Lincolnshire Nature Partnership (GLNP);
  - Northamptonshire Biodiversity Records Centre (NBRC); and
  - Nottinghamshire Biological and Geological Record Centre (NBGRC).
- Woodland Trust Ancient Tree Inventory (Ref 8.18) for records of veteran and ancient trees.
- Environment Agency Ecology and Fish Data for species records of fish, macroinvertebrate and macrophyte species (Ref 8.19).
- Environment Agency Catchment Data Explorer for data on WFD water bodies and water catchments (Ref 8.20).
- Data held by the relevant councils, and local groups and organisations, where not already accessed through the LERCs for example existing bat species records from local bat groups.
- The British Trust for Ornithology (BTO) Wetland Birds Survey (WeBS).
- The BTO data report (all species).
- Consultation is required with PTES to ascertain whether it is likely that dormice are present within the draft Order Limits when defined
- Avifauna and bird reports at a regional, county or local level, collected by regional volunteer wildlife conservation and recording groups.
- Data held by the RSPB.
- Data held by adjoining or overlapping National Grid Schemes such as Grimsby to Walpole.

Technical Guidance

8.9.2 The ecology and biodiversity assessment in the ES will be undertaken in accordance with the following good practice and guidance documents. Please refer to chapters such as **Chapter 7 Landscape** and **Chapter 7 Visual**, **Chapter 9 Cultural Heritage**, **Chapter 10 Water Environment**, **Chapter 14 Air Quality** and **Chapter 15 Noise and Vibration** for relevant guidance that thischapter may use to inform the ecology and biodiversity assessment:

- Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland Terrestrial, Freshwater, Coastal and Marine (Ref 8.21);
- Natural England and Department for Environment, Food and Rural Affairs (Defra) Standing Advice (protected species) Ref 8.22);
- Birds of Conservation Concern (BoCC) Ref 8.23);
- The International Union for Conservation of Nature (IUCN) Red List of Threatened Species (Ref 8.24);
- The Statutory Biodiversity Metric including Calculation Tool, User Guide, and Technical Annex 1: Condition Assessment Sheets and Methodology (Ref 8.2);
- Biodiversity Net Gain: Good Practice Principles for Development, A Practical Guide Ref 8.25);
- The UK Habitat Classification System (Ref 8.27);
- The Modular River Survey (MoRPh) Technical Reference Manual (2022) (Ref 8.28);
- Bat Surveys for Professional Ecologists: Good Practice Guidelines (Ref 8.29);
- Evaluating the suitability of habitat for the great crested newt (*Triturus cristatus*) (Ref 8.30);
- The Great Crested Newt Mitigation Guidelines (Ref 8.31);
- Reptile Survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation (Ref 8.32);
- The Mammal Society Surveying Badgers (Ref 8.33);
- The Water Vole Mitigation Handbook (Ref 8.34);
- The Water Vole Conservation Handbook (Ref 8.35);
- Ecology of the European Otter (Ref 8.36) and Monitoring the Otter *Lutra lutra* (Ref 8.37);
- British Standards Institution (2006) BS EN 149622006, BS 6068-5.402006: Water quality – Guidance and selection of fish sampling methods. London BSI. (Ref 8.38);
- Freshwater macro-invertebrate analysis of riverine samples (Ref 8.38);
- Freshwater macro-invertebrate sampling in rivers (Ref 8.40);
- UKTAG River Assessment Method Macrophytes and Phytobenthos: Macrophytes (River LEAFPACS2) (Ref 8.41);
- Bird Survey and Assessment Steering Group. (2022). Bird Survey Guidelines for assessing ecological impacts (Ref 8.13);
- RSPB Bird Monitoring Methods (1998) (Ref 8.43);
- BTO Common Birds Census Instructions (1983) (Ref 8.44);

- BTO WeBS methods[5] (Ref 8.45);
- Species – specific methods for raptors (Hardey *et al.*, 2013) (Ref 8.46) and barn owl (Shawyer, 2012) (Ref 8.47);
- JNCC NVC Users' Handbook (Ref 8.48);
- Hazel Dormouse Mitigation Handbook (2025) (Ref 8.49);
- White clawed-crayfish Standing Advice (Ref 8.50);
- Beavers, Advice for making planning decisions (Ref 8.51);
- Terrestrial Invertebrates – Surveying Terrestrial and freshwater invertebrates for conservation evaluation (Ref 8.52); and
- Bibby, C.J., Hill, D.A., Burgess, N.D. and Mustoe, S. (2000) Bird Census Techniques. 2nd Edition. Academic Press: London (Ref 8.53).

Expected Survey Requirements

8.9.3 Review of the baseline detailed in Section 8.5 identified the requirements for the following surveys and assessments to support the ecology and biodiversity assessment where they are appropriate. Survey methods and timings are given in more detail in **Appendix 8A Survey Strategy**:

- Preliminary Ecological Walkover to further inform scope of UKHab (Ref 8.27) and protected species surveys (from PRoW only);
- UKHab habitat survey of Order Limits and 50 m buffer including habitat condition surveys to inform BNG;
- aquatic features/habitats – MoRPh River or Lake Naturalness surveys required to inform BNG;
- detailed habitat/vegetation surveys where required as determined following UKHab survey; National Vegetation Classification (NVC) surveys and hedgerow surveys within the Order Limits;
- arboriculture surveys including presence of Ancient, Veteran and Notable trees (this would be undertaken by an arboricultural surveyor);
- amphibian - great crested newt Habitat Suitability Index (HSI) surveys up to 250 m from Order Limits;
- amphibian - great crested newt environmental DNA (eDNA) surveys up to 250 m from Order Limits;
- badger surveys within and up to 30 m from the Order Limits;
- preliminary bat roost appraisal surveys of trees and woodland, which identify requirements for bat emergence and/or detailed aerial inspection within and up to 50 m from the Order Limits;
- bat activity surveys at selected locations along the route;

[5] Published on the BTO WeBS webpage: https://www.bto.org/our-science/projects/wetland-bird-survey/taking-part/counter-resources

- birds – breeding bird surveys– vantage point and transect surveys;
- birds – wintering bird surveys – vantage point surveys;
- birds – Schedule 1 of Wildlife and Countryside Act (1981) (Ref 8.8), species (e.g. barn owl);
- invertebrate surveys (terrestrial and aquatic, including white-clawed crayfish) within the Order Limits;
- riparian mammal surveys:
  - otter targeted survey of watercourses/ditches and associated areas of terrestrial habitat up to 500 m from the point of impact;
  - water vole - targeted survey would be undertaken of sections of watercourses/ditches that cross the Order Limits and up to 500 m adjacent
  - beaver - targeted survey would be undertaken of sections of watercourses/ditches that cross the Order Limits and up to 500 m adjacent
- reptile presence/absence surveys within the Order Limits; and
- invasive non-native plant species (INNPS) within the Order Limits.

8.9.4 The surveys will be undertaken to inform any protected species mitigation licences (where required) prepared in draft for advisory comment from Natural England, or mitigation strategies for non-licensed protected species such as reptiles, all of which will form part of the application for development consent.

8.9.5 A habitat condition assessment will also be undertaken on affected land within the Order Limits, where required, to inform the BNG assessment. The baseline information gathered from this, and other surveys, will be used to develop an appropriate habitat mitigation strategy.

8.9.6 All ecological surveys will be targeted to be undertaken within the appropriate seasons, where possible, and will follow best-practice methods. Any limitations to this will be documented accordingly. Due to the variability of species, the distance at which the Project could affect each species can be different. Therefore the Study Areas used for specific ecological surveys will differ dependent on the species and these will be assessed and updated using appropriate guidelines. Further details are presented within **Appendix 8A Ecology Survey Strategy**.

Proposed Assessment Methodology

8.9.7 The impact assessment will be undertaken in accordance with best practice guidance for Ecological Impact Assessment (EcIA), issued by CIEEM entitled “Guidelines for Ecological Impact Assessment in the UK and Ireland Terrestrial, Freshwater, Coastal Marine” (Ref 8.21) as summarised below.

8.9.8 The principal steps involved in the CIEEM approach can be summarised as:

- Ecological features that are both present and might be affected by the Project are identified (both those likely to be present at the time works begin and those predicted to be present at a set time in the future) through a combination of targeted desk-based study and field survey work to determine the relevant baseline conditions;

- The importance of the identified ecological features is evaluated, placing their relative biodiversity and nature conservation value into geographic context, which is then used to define the relevant ecological features that need to be considered further;
- The changes or perturbations predicted to result as a consequence of the Project (i.e. the potential impacts) and which could potentially affect relevant ecological features are identified and their nature described. Established best-practice, legislative requirements or other incorporated design measures to minimise or avoid impacts are also described and are taken into account;
- The likely significant effects (beneficial or adverse) on relevant ecological features are then assessed, and where possible quantified;
- Measures to avoid or reduce any likely significant effects, if possible, are then developed in conjunction with other elements of the design (including mitigation for other environmental disciplines) and if necessary, measures to compensate for likely significant effects on features of nature conservation importance are also included;
- The residual effects of the Project are reported; and
- Scope for ecological enhancement is considered.

Sensitivity / nature conservation value of ecological features

8.9.9 To support a focussed assessment, as designed in section 8.8, there is a need to determine the scale of importance of the relevant ecological features identified through the desk studies and field surveys undertaken for the Project. The importance of each relevant ecological feature has been defined with reference to the geographical level at which it matters.

8.9.10 The frames of reference that will be used for the assessment, based on Section 4.7 of the CIEEM guidelines (Ref 8.21) are shown below in **Table 8.6.**

Table 8.6 Importance of features

Importance	Description
International	Ramsar Sites, SACs and SPAs (normally within the geographic area of Europe)
UK or National	Great Britain, but considering the potential for certain ecological features to be more notable (of higher value) in England, with context relative to Great Britain as a whole)
Regional	East Midlands and East Anglia
County	Lincolnshire, Leicestershire, West and North Northamptonshire and Nottinghamshire
District	Town or parish area e.g. South Holland, South Kesteven, Melton, Harborough

Importance	Description
Local	Ecological features that do not meet the criteria for valuation at a District or higher level, but that have sufficient value to merit retention or mitigation
Negligible	Common and widespread ecological features of low priority such that they do not require retention or mitigation at the relevant location to otherwise maintain a favourable nature conservation status

8.9.11 The importance of species populations is determined on the basis of their size, recognised status (such as recognised through published lists of species of conservation concern and designation of local Biodiversity Action Plan (BAP) status or within Local Nature Recovery Strategies (LRNS) and legal protection. For example, bird populations exceeding 1 per cent of published information on biogeographic populations are considered to be of international importance, those exceeding 1 per cent of published data for national populations are considered to be of national importance.

8.9.12 In assigning importance to species populations, while the status of the species in terms of any legal protection is considered, it is also important to consider other factors such as its distribution, rarity, population trends and the size of the population which would be affected. For example, whilst great crested newt are afforded protection under the relevant legislation and therefore conservation of the species is of significance at the international level, this does not mean that every great crested newt population is internationally important. It is important to consider the particular population in its context. The assessments of importance rely on the professional opinion and judgment of suitably experienced ecologists.

8.9.13 Plant communities will be assessed both in terms of their intrinsic importance and for their importance as a resource for protected species whose habitat is also specifically protected. Also, species of nature conservation concern which may be associated with a particular habitat will be considered.

8.9.14 Due regard will also be given to the legal protection afforded to species during the development of mitigation and compensation measures to be implemented for the Project. For European Protected Species there is a requirement that the Project should not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

8.9.15 Assessing the value of features will include consideration of both existing and future predicted baseline conditions. Therefore, the description and valuation of ecological features will take account of any likely changes, such as trends in the population size or distribution of species, likely changes to the extent of habitats and the effects of other proposed developments or land use changes.

8.9.16 All ecological 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 and will be the “relevant ecological features” for the purposes of assessment.

Characterisation of Impact

8.9.17 In line with Section 1.21 of the CIEEM guidelines (Ref 8.21) the terminology used within the EcIA draws a clear distinction between the terms “impact” and “effect”. For the purposes of this EcIA these terms are defined as follows:

- Impact – actions resulting in changes to an ecological feature. For example, construction activities of a development removing a tree or hedgerow; and
- Effect – outcome resulting from impact acting upon the conservation status or structure and function of an ecological feature, e.g. the effects on a population of bats as a result of the loss of a bat roost.

8.9.18 When characterising potential impacts (and where relevant the resultant effects), consideration is given to the following characteristics likely to influence this as shown in **Table 8.7**.

Table 8.7 Characterisation of impact

Character of Impact	Description
Beneficial (positive) /Adverse (negative)	The change is likely to be in accordance with the nature conservation objectives and policy and is that change: • Positive (beneficial) - change that improves the quality of the environment or halts of slows an existing decline in quality e.g. increasing extent of a habitat or conservation value; or • Negative (adverse) – a change that reduces the quality of the environment e.g. destruction of habitat.
Spatial extent	The spatial or geographical area or distance over which the impact or effect may occur under a suitably representative range of conditions.
Magnitude	The ‘size’, ‘amount’ or ‘intensity’ and ‘volume’ of an impact – this is described on a quantitative basis where possible.
Duration	The time over which an impact is expected to last prior to recovery or replacement of the resource or feature. Consideration has been given to how this duration relates to relevant ecological characteristics such as a species’ lifecycle. However, it is not always appropriate to report the duration of impacts in these terms. The duration of an effect may be longer than the duration of an activity or impact.
Timing and frequency	Consideration of the point at which the impact occurs in relation to critical life-stages or seasons.
Reversibility	Whether the impact is temporary or permanent. A temporary impact is one from which recovery is possible or for which effective mitigation is both possible and enforceable. A permanent impact is one from which recovery is either not possible or cannot be achieved within a reasonable timescale (in the context of the feature being assessed).

8.9.19 Cumulative effects result from the combined impacts of multiple developments on a feature, as well as intra-project cumulative impacts and effects (for example, where a single receptor is affected by more than one source of impact from the Project such as combined noise and lighting impacts on the same sensitive feature).

Significance of effects

8.9.20 For each ecological feature only those characteristics relevant to understanding the ecological effect of the Project and determining the significance are described. The determination of the significance of effects will be made based on the predicted effect on the structure and function, or conservation status, of relevant ecological features, as follows:

- Not significant – no effect on structure and function, or conservation status; and
- Significant – structure and function, or conservation status is affected.

8.9.21 Sections 5.24 to 5.28 of the CIEEM guidelines (Ref 8.21) state that effects should be determined as being significant when "*an effect either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national / local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local. A significant effect is an effect that is sufficiently important to require assessment and reporting so that the decision maker is* adequately informed of the environmental consequences of permitting a project. *In broad terms, significant effects encompass impacts on structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution)*".

8.9.22 Using this information and judgment, it is determined whether the effects will be significant or not on the structure and integrity (of site or ecosystems) or conservation status (of habitats and or species) of each important ecological feature and the effect significance is determined at the appropriate geographical scale.

8.9.23 The general approach proposed to be used in the ES for evaluating the significance of effects considering the sensitivity of the feature and the characterisation of impacts is outlined in **Table 8.8**.

8.9.24 There are a number of approaches for determining the significance of effects on ecological features. Whilst the CIEEM guidelines (Ref 8.21) recommends the avoidance of the use of the matrix approach for categorisation (major, moderate and minor), in order to provide consistency of terminology within the ES, as presented in **Chapter 5 EIA Approach and Methodology**, the CIEEM assessment will be translated into the classification of effects scale, as outlined in **Table 8.8**, but still remain consistent with the CIEEM guidelines. As a rule, major and moderate effects are considered to be significant, whilst minor and neutral/negligible effects are considered to be not significant. However, professional judgement will also be applied when concluding whether an effect is significant or not, including taking account of whether the effect is permanent or temporary, its duration and frequency, whether it is reversible, and/or its likelihood of occurrence.

Table 8.8 Relating CIEEM assessment terms to those used in Chapter 5 EIA Approach and Methodology

Effect classification terminology used in Chapter 5 EIA Approach and Methodology	Equivalent CIEEM Assessment
Major beneficial	Beneficial effect on structure/function or conservation status at regional, national or international level.
Moderate beneficial	Beneficial effect on structure/function or conservation status at county and district level.
Minor beneficial	Beneficial effect on structure/function or conservation status at local level.
Neutral/negligible	No effect on structure/function or conservation status.
Minor adverse	Adverse effect on structure/function or conservation status at a local level.
Moderate adverse	Adverse effect on structure/function or conservation status at a county and district level.
Major adverse	Adverse effect on structure/function or conservation status at a regional, national or international level.

8.10 Supporting Assessments

8.10.1 The Ecology and Biodiversity Chapter of the ES will be supported by the following assessments, the scope of which will be consulted on with relevant stakeholders to seek agreement.

Habitats Regulations Assessment (HRA)

8.10.2 A HRA, commencing with a Stage 1: Test of Likely Significant Effects and including, if required, a Stage 2: Statement to Inform Appropriate Assessment will also be produced in line with Planning Inspectorate Advice (Ref 8.14). An Evidence Plan will be produced, if required, to document the evidence requirements for the Appropriate Assessment.

Biodiversity Net Gain (BNG)

8.10.3 A BNG assessment will be undertaken using the Statutory Biodiversity Metric (Ref 8.25) in accordance with the accompanying guidance and best practice principles. The UKHab classification (Ref 8.27) and habitat condition scoring, including the results of watercourse condition surveys, will inform the assessment of the BNG baseline within the Metric.

8.11 Assumptions and Limitations

8.11.1 Assumptions and limitations used and acknowledged in defining the scope for further assessment at this early stage of the Project are listed below.

8.11.2 In the absence of protected species and non-statutory site desk study and survey data at this stage, a precautionary approach has been taken and professional judgement, based on experience of similar linear schemes, has been used where required to inform the scope of the assessment.

8.11.3 Where possible, nationally recognised standard survey methodologies will be used to reduce limitations for ecological evaluation and impact assessment.

8.11.4 Land access for baseline surveys may be limited, in which case a precautionary approach will be taken to predicting the most likely habitats to be present and any protected/notable species they support, on the basis of existing desk study data and aerial imagery. Specific limitations for each survey type will be detailed in the relevant baseline report.

8.11.5 Bird scoping surveys currently concentrate only on Section 1, 2 and part of Section 3 as these areas are subject to new overhead line and substations. Works Section 4, 5 and part of Section 3 include reconductoring existing towers and therefore no additional operational impact is anticipated., however surveys will still be undertaken and the extent and survey methods are currently being developed.

8.11.6 An assumption has been made that the following habitats will be retained with appropriate buffers as part of the Project where possible:

- designated sites;
- ancient woodland and ancient or veteran trees;
- woodlands;
- buildings and structures;
- aquatic environments such as ponds, watercourses (assuming watercourses are not lost as a whole and that overhead line will cross over watercourses); and
- hedgerows (assuming hedgerows are not lost as a whole, but some individual hedgerows could require either a temporary or permanent gap through to facilitate the haul road, which would be minimised to smallest necessary).

8.11.7 It is currently assumed that should there be the requirement for the potential mitigation of ecological features, suitable on-site areas will be made available to deliver the required outcomes as a preference over off-site solutions.

8.12 Conclusion

8.12.1 This Scoping Report chapter has outlined relevant legislation, policy and guidance in relation to the ecology and biodiversity assessment for the Project. The data sources that will be used to define the current and future baselines have been presented, and the best practice impact control and management measures that will be implemented. The potential for significant effects has been identified, as well as the associated source, impact and features in **Table 8.5**.

8.12.2 A summary of the proposed scope of the assessment is provided in **Chapter 20 Summary**.

8.13 References

Ref 8.1 H.M. Government (2021) Environment Act 2021 [online]. Available at: https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted [Accessed 27 July 2025]

Ref 8.2 Department for the Environment, Food and Rural Affairs (February 2024). Statutory Biodiversity Metric tools and guides [online]. Available at: https://www.gov.uk/government/publications/statutory-biodiversity-metric-tools-and-guides [Accessed 24 July 2025]

Ref 8.3 Multi-Agency Geographic Information for the Countryside (MAGIC) website [online]. Available at: https://magic.defra.gov.uk/ [Accessed 24 July 2025]

Ref 8.4 Natural England Designated Sites View [online]. Available at: https://designatedsites.naturalengland.org.uk/ [Accessed July 2025].

Ref 8.5 Joint Nature Conservation Committee (JNCC) website [online]. Available at: https://jncc.gov.uk/ [Accessed July 2025].

Ref 8.6 Google Maps: Map data ©2025 [online] Available at: https://www.google.com [Accessed 1st August 2025]

Ref 8.7 H.M. Government (2006). Natural Environment and Rural Communities Act 2006. HMSO, London [online]. Available at: https://www.legislation.gov.uk/ukpga/2006/16/contents [Accessed 31st July 2025].

Ref 8.8 H.M. Government (1981). Wildlife & Countryside Act 1981. HMSO, London [online] Available at: https://www.legislation.gov.uk/ukpga/1981/69 [Accessed 31st July 2025].

Ref 8.9 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 31st July 2025].

Ref 8.10 H.M. Government (2019) The Invasive Alien Species (Enforcement and Permitting) Order 2019 [online]. Available at: https://www.legislation.gov.uk/uksi/2019/527/article/1/made [Accessed 31st July 2025].

Ref 8.11 NatureScot, (2025). Publications and Documents [online] Available at: https://www.nature.scot/doc/guidance-assessment-and-mitigation-impacts-power-lines-and-guyed-meteorological-masts-birds [Accessed 1st August 2025].

Ref 8.12 NatureScot, (2025). Publications and Documents [online] Available at: https://www.nature.scot/doc/recommended-bird-survey-methods-inform-impact-assessment-onshore-windfarms [Accessed 1st August 2025].

Ref 8.13 Bird Survey & Assessment Steering Group. (2025). Bird Survey Guidelines for assessing ecological impacts, https://birdsurveyguidelines.org [1st August 2025]

Ref 8.14 H.M Government (2024) Nationally Significant Infrastructure Projects: Advice on Habitats Regulations Assessments (Online) Available at: https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-advice-on-habitats-regulations-assessments [Accessed 31st July 2025]

Ref 8.15 National Grid; Holford Rules [online]. Available at: https://www.nationalgrid.com/sites/default/files/documents/13795-The%20Holford%20Rules.pdf [Accessed 31st July 2025].

Ref 8.16 National Grid (2025) The Great Grid Upgrade. Western Marsh to East Leicestershire. Corridor Preliminary Routing and Siting Study. Available online at Website: https://www.nationalgrid.com/document/561431/download [Accessed August 2025]

Ref 8.17 H.M. Government (1990) Environmental Protection Act 1990 [online]. Available at: https://www.legislation.gov.uk/ukpga/1990/43/contents [Accessed 31st July 2025].

Ref 8.18 Woodland Trust Ancient Tree Inventory [online]. Available at: https://ati.woodlandtrust.org.uk/ [Accessed 31st July 2025].

Ref 8.19 Environment Agency Ecology and Fish Data online]. Available at: https://environment.data.gov.uk/ecology/explorer/ [Accessed 31st July 2025].

Ref 8.20 Environment Agency Catchment Data Explorer for data [online]. Available at: https://environment.data.gov.uk/catchment-planning/ [Accessed 21st July 2025].

Ref 8.21 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 8.22 Natural England and Department for Environment, Food & Rural Affairs (2022). Protected species and development: advice for local planning authorities [online]. Available at: https://www.gov.uk/guidance/protected-species-how-to-review-planningapplications [Accessed 31st July 2025].

Ref 8.23 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 8.24 IUCN. 2022. The IUCN Red List of Threatened Species. Version 2022-2 [online]. Available at: https://www.iucnredlist.org [Accessed 3 June 2024].

Ref 8.25 H.M. Government (2025) Statutory biodiversity metric tools and guides [online]. Available at: https://www.gov.uk/government/publications/statutory-biodiversity-metric-tools-and-guides [Accessed 31st July 2025].

Ref 8.26 CIEEM, IEMA & CIRIA (2019). Biodiversity Net Gain: Good Practice Principles for Development, A Practical Guide [online]. Available at: https://cieem.net/wpcontent/uploads/2019/02/C776a-Biodiversity-net-gain.-Good-practice-principles-for development.-A-practical-guide-web.pdf [Accessed 3 June 2024].

Ref 8.27 UKHab (2018.2022). The UK Habitat Classification System [online]. Available at: https://ukhab.org/ [Accessed 31st July 2025].

Ref 8.28 Modular River Survey (2018) The MoRPH Survey [online]. Available at https://modularriversurvey.org/wp-content/uploads/MoRPh-Manual-ver-14_Oct22.pdf

Ref 8.29 Collins (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines. FourthEdition. London: The Bat Conservation Trust.

Ref 8.30 Oldham, R.S., Keeble, J., Swan, M.J.S. & Jeffcote, M, (2000) Evaluating the suitability of habitat for the great crested newt (Triturus cristatus). Herpetological Journal 10 (4), 143-155 The Great Crested Newt Mitigation Guidelines.

Ref 8.31 English Nature (2001) Great Crested Newt Mitigation Guidelines. English Nature.

Ref 8.32 Froglife (1999). Reptile Survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice Sheet 10. Froglife, Halesworth.

Ref 8.33 Harris. S., Cresswell,P. & Jefferies,D. (1989) Surveying Badgers. The Mammal Society.

Ref 8.34 Dean,M., Strachan, R.Gow, D.., Andrews,R., (2024) The Water Vole Migitation Handbook. Mammal Society Mitigation Guidance Series. Mammal Society.

Ref 8.35 Dean, M. (2021) Water Vole Field Signs and Habitat Assessment. A Practical Guide to Water Vole Surverys. Pelagic Publishing.

Ref 8.36 Ecology of European Otter, Conserving Natura 2000 Rivers Ecology Series No.10 English Nature.

Ref 8.37 Chanin, P. (2003). Monitoring the Otter Lutra lutra. Conserving Natura 2000 Rivers Monitoring Series No. 10, English Nature, Peterborough.

Ref 8.38 British Standards Institution (2006) BS EN 149622006, BS 6068-5.402006: Water quality - Guidance on the scope and selection of fish sampling methods, London BSI.

Ref 8.39 Environment Agency (2014). Freshwater macro-invertebrate analysis of riverine samples Operational Instruction 024_08. Environment Agency, Bristol, UK.

Ref 8.40 Environment Agency (2017). Freshwater macro-invertebrate sampling in rivers Operational Instruction 018_08. Environment Agency, Bristol, UK.

Ref 8.41 WFD-UKTAG (Water Framework Directive – United Kingdom Advisory Group) (2014). UKTAG River Assessment Method Macrophytes and Phytobenthos: Macrophytes (River LEAFPACS2).

Ref 8.42 NatureScot (2017) Recommended bird survey methods to inform impact assessment of onshore windfarms. Version 2.

Ref 8.43 Gilbert, G., Gibbons D.W., and Evans, J. (1998). Bird Monitoring Methods. RSPB, Sandy.

Ref 8.44 Marchant, J.H. (1983). Common Birds Census Instructions. British trust for Ornithology, Tring.

Ref 8.45 British Trust for Ornithology (2018). Wetland Bird Survey Counter Resources [online]. Available at: https://www.bto.org/our-science/projects/wetland-bird-survey/takingpart/ counter-resources [Accessed 31st July 2025].

Ref 8.46 Hardey, J., Crick, H., Wenham, C., Riley, H., Etheridge, B. & Thompson, D. (2013). Raptors: a field guide to survey and monitoring (3rd Edition). The Stationery Office, Edinburgh.

Ref 8.47 Shawyer, C. R. (2011). Barn Owl Tyto alba Survey Methodology and Techniques for use in Ecological Assessment: Developing Best Practice in Survey and Reporting. IEEM, Winchester.

Ref 8.48 Rodwell, J.S. (2006) NVC Users' Handbook, JNCC, Peterborough

Ref 8.49 Wells, D., Chanin, P. & Gubert, L. (2025) Hazel Dormouse Mitigation Handbook. The Mammal Society

Ref 8.50 Peay S (2003). Monitoring the White-clawed Crayfish Austropotamobius pallipes. Conserving Natura 2000 Rivers Monitoring Series No. 1, English Nature, Peterborough.

Ref 8.51 H.M. Government (2025) Guidance, Beavers Advice for making planning decisions (online) Available at: https://www.gov.uk/guidance/beavers-advice-for-making-planning-decisions [Accessed 31st July 2025].

Ref 8.52 Drake.C.M., Lott. D.A., Alexander.K., Web.J. (2007) Surveying terrestrial and freshwater invertebrates for conservation evaluation. Natural England Research Report NERR005.

Ref 8.53 And Bibby, C.J., Hill, D.A., Burgess, N.D. and Mustoe, S. (2000) Bird Census Techniques. 2nd Edition. Academic Press: London.

9. Cultural Heritage

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9. Cultural Heritage

9.1 Introduction

9.1.1 This chapter presents how the cultural heritage assessment will consider the potential likely significant effects on cultural heritage receptors that may arise from the construction, operation and maintenance of the Project (as described in **Chapter 4, Description of the Project**). It describes the methodology and datasets to be used within the assessment, presents an overview of the baseline conditions, and identifies the potential likely significant effects to be considered within the assessment, and how these will be assessed in the Environmental Statement (ES). As detailed in **Chapter 4, Description of the Project**, the decommissioning of the Project has been scoped out of the environmental assessment.

9.1.2 The Scoping Boundary is illustrated on **Figure 1.2 Scoping Boundary**.

9.1.3 This chapter should be read in conjunction with the following chapters which provide the Project context and approach to EIA:

- **Chapter 2 Regulatory and Planning Policy Context**;
- **Chapter 3 Main Alternatives Considered**;
- **Chapter 4 Description of the Project**; and
- **Chapter 5 EIA Approach and Methodology**.

9.1.4 There may be interrelationships with other disciplines. Therefore, this chapter should also be read in conjunction with the following chapters:

- **Chapter 6 Landscape** – changes to the landscape resulting in adverse effects from the Project changing the setting and value of heritage assets.
- **Chapter 7 Visual** – the visual imposition and visibility of the Project within the landscape may result in changes to the setting and value of heritage assets resulting in significant effects.
- **Chapter 8 Ecology and Biodiversity** – loss or creation of habitats related to the Project may result in changes to the setting and value of heritage assets and/ or the historic landscape, resulting in significant effects.
- **Chapter 11 Geology and Hydrogeology** – changes in hydrogeology can affect the survival of organic archaeological remains, such as wooden artefacts, textiles and plant remains, particularly in areas with historically high-water tables such as the Fens, this can result in significant effects.
- **Chapter 15 Noise and Vibration** – noise and vibration impacts arising from the Project may result in changes to the setting and value of heritage assets resulting in significant effects.

9.1.5 This chapter is supported by the following figures and appendices:

- **Figure 9.1 Designated Heritage Assets;**

- **Appendix 9A Designated Heritage Assets;** and
- **Appendix 9B Cultural Heritage Survey Strategy**.

9.2 Legislation, Policy and Guidance

9.2.1 **Chapter 2 Regulatory and Planning Policy Context** describes the overall regulatory and planning policy context for the Project. Key legislation, policy, and planning guidance relevant to the assessment of potential effects on the cultural heritage associated with the construction, operation, and maintenance of the Project is provided in **Chapter 2 Regulatory and Planning Policy Context. Appendix 2A Key Legislation, Appendix 2B National and Regional Planning Policy** and **Appendix 2C Local Policy**.

9.2.2 The principle relevant guidance and standards that have informed the scoping process are listed below and will also be taken into account as part of the ES assessment, along with other relevant material:

- National Planning Practice Guidance: Historic Environment (Ref 9.1).
- Historic Environment Good Practice Advice in Planning Note 2. Managing Decision Taking in the Historic Environment (Ref 9.2).
- Historic Environment Good Practice Advice in Planning Note 3. The Setting of Heritage Assets (Ref 9.3).
- Historic Environment Statements of Heritage Significance: Analysing Significance in Heritage Assets. Historic England Advice Note 12 (Ref 9.4).
- Chartered Institute for Archaeologists (CIfA) Standard and guidance for historic environment desk-based assessment (Ref 9.5).
- CIfA Code of conduct: professional ethics in archaeology (Ref 9.6).
- Institute of Sustainability and Environmental Professionals (ISEP), the Institute of Historic Building Conservation (IHBC) and CIfA Principles of Cultural Heritage Impact Assessment in the UK (Ref 9.7).

9.3 Consultation and Engagement

9.3.1 The ES will be informed by consultation and engagement with stakeholders, including Historic England, historic environment officers from Lincolnshire and Leicestershire County Councils, and West Northamptonshire and North Northamptonshire Councils, and local authority conservation officers. In addition, engagement will be undertaken with non-statutory stakeholders as required to ensure that local views and specialist expertise can be considered as part of the ES.

9.3.2 In preparing this Scoping Report chapter, consideration has been given to stakeholder feedback received following Non-Statutory Consultation held between 11 June and 6 August 2025, as set out in **Table 9.1** below.

Table 9.1 Engagement with Stakeholders

Stakeholder	Summary of response	Consideration in the Scoping Report
Historic England	The Applicant should consult the local authority archaeological advisors to identify potential non-designated heritage assets which could be substantial constraints. A geoarchaeological desk-based assessment should be undertaken before the geophysical survey strategy is agreed so alternatives to magnetometry can be used if needed (specifically in the fens). Are construction impacts being considered for the reconductoring – noted that, on another scheme, a haul road has followed the entire length of the overhead line.	Detailed baseline assessment is being undertaken to inform option development and assessment, which will draw on the local authority Historic Environment Records (HER) and engagement with the archaeological officers will be undertaken as part of this. Geoarchaeological assessment will be included as part of the baseline prepared to support the ES and will also inform the development of geophysical survey methods. Construction impacts are scoped in for assessment which will include reconductoring.
Lincolnshire County Council	In summary, in relation to built heritage and historic landscape: 1. All heritage receptors should remain in scope until tower positions and substation envelopes are fixed. Premature scoping-out of potentially affected assets should be avoided. 2. Produce detailed ZTV and ZoI studies for all designated heritage assets (listed buildings, RPGs, scheduled monuments and conservation areas). 3. Apply the Holford Rules – including avoiding wirescape in flat fenland areas and	1. The heritage receptors proposed for assessment are included in this chapter and **Appendix 9A Designated Heritage Assets**. 2. A Zone of Theoretical Visibility (ZTV) will be prepared and used to inform the assessment reported in the ES, as described in **Section 9.8**. 3. The routing and siting of the Project has been informed by the Horlock Rules and Holford Rules as described in **Chapter 3 Main Alternatives Considered**. 4. and 6. A summary of the options identification and

Stakeholder	Summary of response	Consideration in the Scoping Report
	using natural landform and vegetation to reduce setting impacts. 4. Share draft route refinement and design iterations at each stage. Early, iterative engagement will help streamline the process at later stages. 5. Provide a draft outline heritage mitigation strategy (including historic landscape restoration and design measures) at the statutory consultation stage. 6. Provide a summary of the design evolution, setting out how mitigation and route adjustments have been used to avoid or reduce harm to sensitive heritage sites. In summary in relation to archaeology: 1. The EIA will require the full suite of comprehensive desk-based research, non-intrusive surveys, and intrusive field evaluation for the full extent of proposed impact. 2. sufficient baseline information should be provided to identify and assess the impact on known and potential heritage assets.	selection, and development of the graduated swathe and Scoping Boundary is included in **Chapter 3 Main Alternatives Considered**. Further engagement with statutory consultees will be undertaken during the pre-application stage of the Project. 5. Where significant impacts to heritage assets are determined through the assessment, mitigation will be explored. This will be available for review at statutory consultation. 1. & 2. The Cultural Heritage assessment will be undertaken as described **Section 9.8** of this report and the findings reported in the ES.
CPRE Rutland and Lincolnshire	CPRE expressed concerns regarding the setting of the Scheduled motte and bailey at New Hall Grange and requested relocating infrastructure away to a less sensitive area. They considered that a heritage centred mitigation strategy should be proposed if relocation is not feasible.	Impacts from the Project on the moated site of Newhall Grange scheduled monument (NHLE 1009981) will be considered within the assessment and the findings reported in the ES. This will be undertaken using the methodology described in **Section 9.8**, including consideration of the setting of heritage assets.

Stakeholder	Summary of response	Consideration in the Scoping Report
	CPRE also noted that neither a heritage-setting impact assessment nor an alternatives assessment had been undertaken in line with NPS EN-5.	**Chapter 3 Main Alternatives Considered** summarises the consideration of alternatives to date, further consideration will be reported in the ES.

9.4 Study Area

9.4.1 The Study Area is the geographical extent within which heritage assets may experience effects as a result of the Project. Effects to heritage assets may arise during construction or operation. Effects to heritage assets may arise as a result of physical impacts to their fabric or through changes to their setting.

9.4.2 For the purpose of this Scoping Report, the Study Area includes the land within the Scoping Boundary and a buffer of 1 km from the Scoping Boundary for all designated heritage assets. For higher graded assets (i.e. World Heritage Sites, scheduled monuments, grade I and II* listed buildings, grade I and II* registered parks and gardens (RPG) and registered battlefields) the Study Area has been extended to 3 km from the Scoping Boundary, in recognition that high value assets may have a greater potential for their setting to positively contribute to their significance, as well as for the influence of that setting to extend over a larger area. It should be noted that only World Heritage Sites designated under the 'cultural criteria' are considered as heritage assets. Natural sites, if applicable, would be considered as part of **Chapter 8 Ecology and Biodiversity** and/or **Chapter 11 Geology and Hydrogeology.**

9.4.3 For the ES, which requires a more granular study area to adequately assess all potential impacts, the Study Area will be defined according to the significance of the asset and the potential impacts of the Project, following further assessment and design work to identify a proposed alignment. Effort will be made to agree the study area with relevant consultation bodies. The Study Area for the ES is set out in Section 9.8 and will be refined as necessary based on the final Order Limits.

9.4.4 Specific non-designated heritage assets have not been identified as part of this scoping exercise. They will be identified and assessed in the ES using the methodology defined in this Scoping Report and appended Survey Strategy (**Appendix 9B Cultural Heritage Survey Strategy**). An overarching assumption has been made that there will be extensive non-designated heritage assets present across the Study Area, so the inclusion of specific assets would not alter the proposed methodology or scope at this stage. A buffer of 1km from the Order Limits will be used to identify non-designated heritage assets for the ES.

9.5 Baseline Conditions

Data Sources

9.5.1 The known or predicted current and future baseline environment described in this section has been informed by the following data sources:

- Historic England's National Heritage List for England (NHLE) (Ref 9.8);
- British Geological Survey geology viewer (Ref 9.9);
- Natural England's National Character Area (NCA) Profiles (Ref 9.10); and
- other readily available online sources.

Baseline

Overview

9.5.2 The locations of heritage assets within the Scoping Boundary and surrounding Study Areas are shown in **Figure 9.1 Designated Heritage Assets**.

9.5.3 The designated heritage assets discussed within this chapter are identified by their unique identification number assigned by the NHLE (e.g. NHLE 1003669).

9.5.4 Full lists of the designated heritage assets are provided in the gazetteers in **Appendix 9A Designated Heritage Assets**, with key heritage assets highlighted in the Section summaries below.

9.5.5 The Project has been divided into five Sections as described in **Chapter 4, Description of the Project** and shown in **Figure 1.2 Scoping Boundary**. The Sections are defined by the geographical alignment of the Scoping Boundary and the administrative boundaries of the local authorities. The baseline environment is reported for the Sections along the Scoping Boundary in the respective text below.

9.5.6 Across the whole of the Scoping Boundary there will be a wide range of non-designated heritage assets, including historic buildings, earthworks and below ground archaeological remains. A combination of baseline desk-based assessment and archaeological surveys will be undertaken to inform the ES as described in Section 9.8 of this report and **Appendix 9B Cultural Heritage Survey Strategy**.

Section 1

9.5.7 There are three designated assets within Section 1. Two of these relate to the same heritage asset, and comprise one scheduled monument (Pinchbeck engine, NHLE 1004966) and one grade II listed building (Pinchbeck Engine Draining Pump, NHLE 1146782). The third heritage asset is a Grade II listed building: 41 Church Street Pinchbeck (NHLE 1064472).

9.5.8 A total of three scheduled monuments, two grade I listed buildings and 32 grade II listed buildings are located within 1 km of Section 1. Of these, three scheduled monuments and two listed buildings are less than 100 m from Section 1. This includes the scheduled monuments of:

- Moated site of monastic grange with adjacent earthworks at Rigbolt House (NHLE 1009979);
- Moated site of Newhall Grange (NHLE 1009981);
- Churchyard Cross, St Mary's Churchyard NHLE 1013529); and
- Wykeham Chapel: a moated monastic grange and retreat house (NHLE 1019096).

9.5.9 Beyond 1 km, but within 3 km of Section 1, there is one additional scheduled monument, two grade I listed buildings, and nine grade II* listed buildings.

9.5.10 There are no World Heritage Sites (Cultural), RPGs, registered battlefields, or protected wrecks within Section 1 or within 3 km of it.

9.5.11 Section 1 is within the Fens NCA, an expansive and low-lying wetland landscape, mostly now drained and turned over to intensive arable farming (Ref 9.11). Non-designated heritage assets within the Scoping Boundary will include archaeological remains and paleoenvironmental deposits, some of which may be waterlogged which would potentially have allowed the preservation of organic remains, particularly within peaty soils. Evidence of settlement and agriculture is likely to be predominantly found on islands of higher ground or along the edges of historic fens. Historic but undesignated buildings may also be non-designated heritage assets.

Section 2

9.5.12 There are eight designated assets within Section 2. These comprise one scheduled monument (Corby moated mound, NHLE 1005001), six grade II listed buildings, and one conservation area (Corby Glen), which is almost entirely excluded from Section 2.

9.5.13 A total of 10 scheduled monuments, one grade I RPG (Grimsthorpe Castle: 1000978), 13 grade I listed buildings, five grade II* listed buildings, 195 grade II listed buildings, and six conservation areas are located within 1 km of Section 2. Of these, three scheduled monuments, three Grade I listed buildings, three Grade II* listed buildings, 47 Grade II listed buildings, and Grimsthorpe Castle's grade I RPG are less than 100 m from Section 2. This includes the scheduled monuments of:

- Settlement between Rippingale Running Dike and Long Drove (NHLE 1004976);
- Remains of Knights Templar preceptory, watermill and fishponds (NHLE 1007688); and
- The Hermitage moated site, 400m north east of Corby Pasture Farm (NHLE 1016969).

9.5.14 Beyond 1 km, but within 3 km of Section 2, there are another five scheduled monuments, 10 grade I listed buildings, and six grade II* listed buildings.

9.5.15 There are no World Heritage Sites (Cultural), registered battlefields, or protected wrecks within Section 2 or within 3 km of it.

9.5.16 The eastern part of Section 2 is within the Fens NCA but the majority of it is within the Kesteven Uplands NCA (Ref 9.12). This is an area of higher limestone hills which rise above the low-lying fenland fields. Many of the villages are built in the local limestone, giving them a distinctive character, and there are a number of historic estates. This landscape has archaeological remains of all periods.

Section 3

9.5.17 There are 109 designated assets within Section 3. These comprise:

- Six scheduled monuments: Kirby Bellars Priory (NHLE 1009285); Garden, moat and five fishponds at Kirby Bellars (NHLE 1010304); Moated site at Ab Kettleby (NHLE 1010705); Moated grange at Spinney Farm, Melton Mowbray (NHLE 101431); Stump Cross, approximately 700m south of Main Street, Frisby on the

Wreake (NHLE 1014513); and Village cross at the western end of Main Street (NHLE 1015209).

- Five Grade I listed buildings: Church of St Thomas of Canterbury (NHLE 1360878); Church of All Saints (NHLE 1360866); Church of St Andrews (NHLE 1307264); Church of St Peter (NHLE 1261717); and Church of St Mary (NHLE 1061267).
- Eight Grade II* listed buildings: Church of St James the Greater (NHLE 1295154); The Old Rectory (NHLE 1295102); Church of St John the Baptist (NHLE 1188442); Saxelby Manor House (NHLE 1188434); The Old Hall (NHLE 1178375); Church of St Michael (NHLE 1075141); Manor House (NHLE 1075107); and Church of St Peter (NHLE 1075032).
- 81 Grade II listed buildings.
- Nine conservation areas: Holwell; Ab Kettleby; Wartnaby; Grimston; Saxelbye; Ashfordby; Frisby on the Wreake; Ashby Folville; and Barsby.

9.5.18 A total of five scheduled monuments, four grade I listed buildings, seven grade II* listed buildings, 87 grade II listed buildings, and ten conservation areas are located within 1 km of Section 3. Of these, two grade I listed buildings, one grade II* listed building and 12 grade II listed buildings are less than 100 m from Section 3.

9.5.19 Beyond 1 km, but within 3 km of Section 3, there are another 13 scheduled monuments, nine grade I listed buildings, and 21 grade II* listed buildings.

9.5.20 There are no World Heritage Sites (Cultural), registered battlefields, or protected wrecks within Section 3 or within 3 km of it. There are no Grade I or II* RPGs within 3km or Grade II RPGs within 1 km.

9.5.21 Section 3 is within the Leicestershire and Nottinghamshire Wolds NCA (Ref 9.13), transitioning into the High Leicestershire NCA as it turns south (Ref 9.14). Both have a long history of rural settlement, supported by a mixture of arable and pastoral farming. Traces of the changing settlement pattern can be seen in deserted medieval villages and well-preserved ridge and furrow.

Section 4

9.5.22 There are 185 designated assets within Section 4. These comprise:

- 10 scheduled monuments: St Mary in Arden Church (NHLE: 1003607); Mound 220yds (200m) NNW of church (NHLE: 1005071); Cold Newton shrunken medieval village and moated site (NHLE: 1009197); North Marefield deserted medieval village and moated site (NHLE: 1010306); Moated site at Tilton (NHLE: 1010704); Lowesby deserted medieval village with three fishponds (NHLE: 1012438); Churchyard Cross, St Peter's churchyard (NHLE: 1014517); Churchyard cross in St John the Baptist's churchyard (NHLE: 1017493); Medieval village earthworks, fishponds and mill leat at Stonton Wyville (NHLE: 1017616); and Roman villa 200m south of Station Cottages (NHLE: 1018352).
- Three Grade I listed buildings: Church of St Peter and St Paul (NHLE: 1061277); Church of St Peter (NHLE: 1074839); and Noseley Chapel (NHLE: 1360652).
- 14 Grade II* listed buildings: The Old Rectory (NHLE: 1061278); Church of St Denis (NHLE: 1061650); Church of St Michael (NHLE: 1061695); The Old House (NHLE: 1074437); Skeffington Hall (NHLE: 1074875); Church of St John (NHLE:

1086988); Church of St Andrew (NHLE: 1104871); Church of St John the Baptist (NHLE: 1115490); Lowesby Hall (NHLE: 1178050); The Rectory (NHLE: 1216631); Church of All Saints (NHLE: 1295216); Church of St Thomas A Becket (NHLE: 1326673); Noseley Hall (NHLE: 1360651); and Church of St Thomas a Beckett (NHLE: 1360995).

- 150 Grade II listed buildings.
- One Grade II RPG: Lowesby Hall (NHLE: 1000962).
- Seven conservation areas: Great Bowden; Slawston; Tilton on the Hill; Tugby; Lowesby; Skeffington; and Rolleston including New Inn.

9.5.23 A total of three scheduled monuments, two grade I listed buildings, 13 grade II* listed buildings, 155 grade II listed buildings, and eight conservation areas are located within 1 km of Section 4. Of these, one scheduled monument (North Marefield deserted medieval village and moated site, NHLE 1010306) and 11 grade II listed buildings are less than 100 m from Section 4.

9.5.24 Beyond 1 km, but within 3 km of Section 4, there are another 16 scheduled monuments, three grade I listed buildings, and 13 grade II* listed buildings.

9.5.25 There are no World Heritage Sites (Cultural), registered battlefields, or protected wrecks within Section 4 or within 3 km of it.

9.5.26 Section 4 is mostly within the High Leicestershire NCA, an upland landscape with archaeological sites including Iron Age hillforts and many deserted medieval villages (Ref 9.14). It has a long history of mostly pastoral farming interspersed with ancient woodland and large post-medieval estate landscapes.

Section 5

9.5.27 There are 306 designated assets within the Section 5. These comprise:

- Seven scheduled monuments: Site of manor house (NHLE: 1003875); Braybrooke Bridge (NHLE: 1003891); Roman villa 200m W of Doddington Mill (NHLE: 1006637); Earls Barton motte castle (NHLE: 1009510); Place House moat and fishpond (NHLE: 1009513); Braybrooke Castle: the remains of a medieval moated manor and medieval settlement remains (NHLE: 1016318); and Medieval cross 170m south west of Hall Farm (NHLE: 1016320).
- One grade I RPG: Castle Ashby (NHLE: 1000385).
- One grade II* RPG: Harrington (NHLE: 1001034).
- Six grade I listed buildings: Church of St Mary the Virgin (NHLE: 1190018); Church of St Andrew (NHLE: 1213539); Church of All Saints (NHLE: 1288885); Flats 1,2,3, Porch House, Bell Tower, Cloisters, South Wing, Pediment, Corner House and Tower House at Dingley Hall (NHLE: 1294135); Church of All Saints (NHLE: 1294226); and The Old Vicarage (NHLE: 1371672).
- 27 grade II* listed buildings: Church of St Mary (NHLE 1040666); Orlingbury Hall and attached wall and outbuildings to north east (NHLE 1040668); Church of St Mary the Virgin (NHLE 1040680); Church of All Saints (NHLE 1040692); Mears Ashby Hall (NHLE 1040699); Grendon Hall (NHLE 1040746); Church of St Leonard (NHLE 1040750); Church of All Saints (NHLE: 1040771); Church of St Andrew (NHLE 1067030); The Menagerie (NHLE 1189885); Church of St Nicholas (NHLE 1189920); Gates, gatepiers and railings approximately 90 metres

west of Harrowden Hall (NHLE 1190526); Church of St Mary (NHLE 1190552); The Old Rectory (NHLE 1191565); Wilby House (NHLE 1192006); Church of St Peter and Paul (NHLE 1213602); Loddington Hall (NHLE 1213737); The Orton Trust Workshop (NHLE 1213823); Church of St Leonard (NHLE 1288918); Church of St Andrew (NHLE 1289054); Cransley Hall (NHLE 1289058); Church of All Saints (NHLE 1289123); Manor Farmhouse (NHLE 1293700); The Manor House (NHLE 1371674); Church of St Mary (NHLE 1371694); Gatepier approximately 45 metres north east of The Old Rectory (NHLE 1371724); and Church of all Saints (NHLE: 1372349).

- 250 grade II listed buildings.
- 14 conservation areas: Braybrooke; Cransley; Harrington; Loddington; Pytchley; Weston by Welland; Broughton; Castle Ashby; Hardwick; Earls Barton; Mears Ashby; Orlingbury; Grendon; and Great Doddington.

9.5.28 A total of two scheduled monuments, seven grade I listed buildings, six grade II* listed buildings, one grade II* RPG, 118 grade II listed buildings, and five conservation areas are located within 1 km of Section 5. Of these, one scheduled monument (Place House Moat and Fishpond, NHLE 1009513), one grade II* RPG (Great Harrowden Hall, NHLE 1000392), three grade I listed buildings, one grade II* listed building and 15 grade II listed buildings are less than 100 m from Section 5.

9.5.29 Beyond 1 km, but within 3 km of Section 5, there are another 14 scheduled monuments, 13 grade I listed buildings, 26 grade II* listed buildings, and two grade II* RPG).

9.5.30 There are no World Heritage Sites (Cultural), registered battlefields, or protected wrecks within Section 5 or within 3 km of it.

9.5.31 Section 5 is within the Northamptonshire Vales NCA, a more lowland landscape which includes the Welland and Nene valleys (Ref 9.15). It is an area which has seen considerable historic settlement and its archaeology reflects this with evidence of Iron Age settlement and agriculture, Roman towns and villas and medieval castles.

Future Baseline

9.5.32 The future baseline relates to known or anticipated changes to the current baseline in the future in the absence of the Project.

9.5.33 The cultural heritage chapter within the ES will include an outline of the likely evolution of the baseline environment without the implementation of the Project as far as natural changes from the baseline scenario can be assessed.

9.6 Design and Control Measures

Design Measures

9.6.1 The Project design will avoid physical impacts to designated assets. As this design develops further and is better refined, additional mitigation measures will endeavour to include further design intervention to avoid direct and indirect impacts on both designated and non-designated heritage assets, including archaeological remains.

9.6.2 Potentially significant impacts on the setting of assets brought about by the Project may be lessened or avoided through consideration of the detailed design and micro-siting of the individual towers.

Control and Management Measures

9.6.3 Where the Project will bring about physical impacts to non-designated heritage assets, these effects will be mitigated through measures to include (but not be limited to) detailed landscape/topographic survey, archaeological excavation and recording and archaeological monitoring/watching brief.

9.6.4 A range of standard measures for the Project will be adopted throughout the duration of the construction phase. An **Initial Outline Code of Construction Practice** (CoCP) is provided in **Appendix 4A.** Measures relevant to the control and management of impacts that could affect cultural heritage are (refer to **Appendix 4A** for the full description of each measure):

- GG04 – on the appointment of Environmental Managers and Environmental Clerks of Works during construction.
- GG05 – on environmental training provision for construction workers, including the location and protection of sensitive environmental sites and features.
- GG07 – on the Environmental Control Plans which will be prepared, including Construction Environmental Management Plan (CEMP), Landscape and Ecological Management Plan (LEMP), and Overarching Written Scheme of Investigation (WSI).
- GG09 – on reinstatement of land to pre-construction condition following temporary works, where practicable.
- GG010 – on appropriate protective areas to be established where retaining sensitive features such as ancient woodland within or immediately adjacent to the Order Limits. The protective areas will be shown on the Retention and Reinstatement Plans contained within the LEMP.
- GG25 – on the use of temporary work pads of suitable materials (stone, wooden, bog mats or similar) where heavy equipment is to be used.

9.6.5 In addition, measures that relate to cultural heritage either directly or through measures applied for landscape and visual, and noise and vibration include (refer to **Appendix 4A: Initial Outline Code of Construction Practice** for the full description of each measure):

- H01 - on the avoidance of known heritage assets and locations of known archaeological interest in the Project design and the implementation of mitigation where this is not possible. Areas of archaeological preservation or investigation will be identified on plans within the Outline WSI and CEMP.
- H02 – on the procedure if there is discovery of previously unknown or known heritage assets of greater significance than that anticipated at the time of the submission of the application for development consent.
- H03 – on the retention of historic landscape elements where practicable within the Project.
- B08 – on crossing and removing hedgerows.

- LV01 – on the requirement for pre-condition surveys and the retention of vegetation and the nature of replacement vegetation if it is required.
- LV04 - on construction lighting, which will be directional and minimised where possible.
- NV01 – on use of Best Practicable Means (BPM) to minimise noise (including vibration).

9.7 Potential for Significant Effects

9.7.1 The cultural heritage assessment will consider the construction, and operation and maintenance of the Project. A description of each of these stages is set out in **Chapter 4 Description of the Project**. The potential for significant effects and inclusion (Scoped in) and exclusion (Scoped out) of matters in the scope of the cultural heritage ES assessment is set out below and has been determined using the approach described in **Chapter 5 EIA Approach and Methodology**.

9.7.2 The potential for the Project to result in the likely significant effects identified below takes into account the embedded design, and control and management measures described in Section 9.6.

9.7.3 **Table 9.2** identifies the sources of potential impacts on receptors identified in the baseline that could result in a significant effect. Where an impact could give rise to potentially significant effects on receptors identified in the Study Area, these are then scoped into the ES. Impact pathways that are unlikely to give rise to significant effects on receptors identified in the Study Area are proposed to be scoped out of the ES.

9.7.4 A precautionary approach has been taken and where there is no strong evidence base, insufficient baseline or the significance is uncertain at this stage, the impact has been scoped into the ES. Where there is a clear evidence base that the effect from the impact will not be significant, either alone or in combination with other plans and projects, the impact has been scoped out of the ES.

Potential sources of impacts

Sources of construction impacts

- Activities relating to the construction of the Project (detailed in **Chapter 4 Description of the Project**), such as the installation of new substations and infrastructure, topsoil stripping and excavations for tower foundations and where required underground cable trenches, the establishment of construction compounds, spoil storage areas, access tracks, bell mouths and temporary drainage, resulting in damage and/or removal to heritage assets from compaction or truncation.
- The presence and use of temporary construction and satellite compounds, access tracks and fencing resulting in temporary changes to the setting of heritage assets.
- The presence of machinery and traffic as well as noise, dust, and light, resulting in temporary changes to the setting of heritage assets.

Sources of operational and maintenance impacts

- Presence of the new overhead line in the landscape resulting in permanent changes to the historic landscape and to the setting of heritage assets.
- Changes in the appearance of existing overhead line as a result of the reconductoring part of the Project. There would be no horizontal and only limited vertical realignment required meaning that the changes to the historic landscape and setting of heritage assets would be minimal.
- Presence of new infrastructure resulting in permanent changes to the viability of heritage assets.
- The presence of temporary maintenance compounds, access tracks and scaffolds resulting in temporary changes to the setting of heritage assets.
- The presence of machinery and traffic, as well as noise, dust, and light from maintenance activities, resulting in temporary changes to the setting of heritage assets.

Potential impacts

9.7.5 There will be no physical impacts on the designated heritage assets within the Scoping Boundary as these will be avoided by the construction works and maintenance works requiring temporary structures and access. There is, however, the potential for impacts to the value (heritage significance) of designated assets as a result of changes to their setting through construction, operation and maintenance of the Project.

9.7.6 There is the potential for physical impacts on non-designated heritage assets where they are within the limits of the area required to construct the Project, or within areas where temporary structures and access are required as part of the maintenance of the Project. This would result from the compaction, truncation or complete removal of non-designated heritage assets such as archaeological remains during site clearance and groundworks. There is also the potential for physical impacts resulting from changes in groundwater that could affect below ground preservation conditions.

9.7.7 There is the potential for physical impacts on the historic landscape where aspects of it are within the limits of the area required to construct the Project, or for temporary structures and access required for maintenance. This would result from the truncation or complete removal of attributes of the historic landscape such as field boundaries.

9.7.8 There is also the potential for the Project to give rise to significant effects on those non-designated assets that remain extant within the Scoping Boundary through change to their setting.

9.7.9 The presence of the Project in the landscape could also lead to significant effects through changes to the understanding and appreciation of the historic landscape.

Table 9.2 Impacts, receptors and the potential for significant effect

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
Construction	Intrusive construction activities	Physical impacts on heritage assets	Non-designated heritage assets Historic landscapes	**Yes** – the Project has the potential to result in a physical impact on heritage assets through their truncation, removal or alteration.	**Scoped In**
Construction	Intrusive construction activities	Physical impacts on heritage assets	Designated heritage assets	No – the project will be designed to avoid all direct impacts upon designated assets. On this basis, significant effects would not occur.	Scoped out
Construction	Presence of construction facilities within the landscape	Temporary impacts to heritage assets as a result of changes to their setting	Designated heritage assets Non-designated heritage assets Historic landscapes	**Yes** – the Project has the potential to result in significant effects on designated and non-designated heritage assets and historic landscapes.	**Scoped In**
Construction	Machinery, noise, vibration, dust, and light	Temporary impacts to heritage assets as a result of changes to their setting	Designated heritage assets Non-designated heritage assets	**Yes** – the Project has the potential to result in significant effects on designated and non-designated	**Scoped In**

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
			Historic landscapes	heritage assets and historic landscapes.	
Operation and maintenance	Presence of the Project in the landscape (new overhead line)	Impacts to heritage assets as a result of changes to their setting	Designated heritage assets Non-designated heritage assets Historic landscape	**Yes** – the Project has the potential to result in significant effects on designated, non-designated heritage assets and historic landscapes.	**Scoped In**
Operation and maintenance	Presence of the Project in the landscape (reconductoring of existing overhead line)	Impacts to heritage assets as a result of changes to their setting	Designated heritage assets Non-designated heritage assets Historic landscape	No – the change in the appearance of the existing overhead line would be minimal and would be unlikely to result in significant effects.	Scoped Out
Operation and maintenance	New infrastructure altering access and viable use	Impacts to the access of heritage assets	Designated heritage assets Non-designated heritage assets Historic landscapes	No – given the scale and size of the footprint of individual towers, significant effects arising from changes to/limitation of access and use of heritage assets are unlikely to occur.	Scoped Out
Operation and Maintenance	Presence of maintenance	Temporary impacts to heritage assets as	Designated heritage assets	**Yes** – the Project has the potential to result in significant effects	**Scoped In**

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
	structures within the landscape	a result of changes to their setting	Non-designated heritage assets Historic landscapes	on designated and non-designated heritage assets and historic landscapes.	
Operation and Maintenance	Vehicular traffic and maintenance activities	Physical impacts to heritage assets or impacts to heritage assets as a result of changes to their setting	Designated heritage assets Non-designated heritage assets Historic landscapes	No – maintenance visits required for the Project would not constitute an impact of sufficient magnitude to cause significant effects to either designated or non-designated heritage assets, or historic landscapes.	Scoped Out

9.8 Proposed Assessment Methodology

9.8.1 The assessment methodology presented below builds upon, and takes into account, the Cultural Heritage Survey Strategy prepared for the Project (**Appendix 9B Cultural Heritage Survey Strategy**), and the response to the strategy received from Historic England during pre-scoping engagement.

Study Area

9.8.2 The Historic Environment ES assessment will use a core Study Area extending 1 km from the Order Limits of the Project for non-designated heritage assets. This is considered sufficient to provide a contextual baseline of known heritage assets and to inform on the likelihood of encountering previously unknown archaeology within the Order limits. It also considers the likelihood of impacts to the setting of heritage assets, considering the character of the surrounding landscape and the asset types.

9.8.3 An extended Study Area of up to 3 km from the Order Limits will be used in the ES for designated heritage assets due to the greater potential for their setting to extend over a larger area and for which the wider landscape may form a key contributing factor to their significance. This will be used alongside a wider 5 km Study Area to identify any assets of the highest significance (scheduled monuments, grade I and II* listed buildings and grade I and II* RPG) where setting is a key factor in their significance and where this setting extends over a large area and there may be potentially significant visual effects identified by the visual impacts assessment. This would be done on a case by case basis based on professional judgement and stakeholder engagement.

9.8.4 The Study Area would be extended up to 5 km in locations where designated heritage assets may be affected by the Project as identified by the Zone of Theoretical Visibility (ZTV), which will be developed in conjunction with the assessments undertaken for **Chapter 6 Landscape** and **Chapter 7 Visual**. This ZTV will define the theoretical visibility of the Project and present a theoretical zone of visual influence. This may not reflect what is visible on the ground nor can it be used to define the extent of setting of heritage assets, as visibility is only one aspect of setting.

9.8.5 Designated heritage assets within the extended 3 km and 5 km Study Areas will be identified and assessed for their potential to be affected by the Project. Those assets that are identified to be potentially impacted will then be assessed further in the ES. Assessment will consider the significance of the asset, its setting and sensitivity to change. Through such an assessment, assets having a greater influence over the wider landscape may be taken through to assessment, whilst those having a lesser influence may be omitted. This staged approach is consistent with current Historic England guidance (Ref 9.3).

9.8.6 The core and extended Study Areas are proportionate to identify heritage assets that may be affected by the Project.

Proposed Data Sources

9.8.7 In addition to the data sources listed in Section 9.5, which include the NHLE, the following data sources are proposed to be used to inform the cultural heritage assessment:

- NHLE data held by Historic England, for designated assets.
- Historic Environment Record (HER) data held by the Lincolnshire, Leicestershire and Rutland, and Northamptonshire HERs.
- Local authority conservation area appraisal and management documents and their mapping.
- Historic landscape characterisation mapping undertaken by local planning authorities.
- Aerial photographs held by Historic England, local authorities and other appropriate repositories and other readily available remote sensing results such as LiDAR data.
- Geological mapping and borehole information as held by the British Geological Survey.
- Documentary, cartographic and other resources as deposited within local studies libraries, county libraries and archives, including historic OS maps, tithe, estate and other maps, and other relevant primary sources held at the Lincolnshire Archives, the Record Office for Leicestershire, Leicester and Rutland, and the Northamptonshire Archives, together with local studies library information.
- The results, where relevant and available, of heritage assessments and archaeological evaluations undertaken for other projects that cross or fall within the Scoping Boundary and surrounding Study Area.
- Published regional studies and character assessments e.g. Historic England's Fenland Survey, the Fenland Project published in East Anglian Archaeology, and the Nene Valley: Archaeological and Environmental Synthesis, published by Northamptonshire Archaeology and the University of Exeter.
- Historic OS maps held by the National Library of Scotland.

9.8.8 A walkover survey will also be undertaken to assess known heritage assets/sites and their setting and to determine the potential for previously unrecorded heritage assets. This survey will focus on the emerging draft Order Limits, including any associated compounds, laydown areas, and above ground infrastructure.

9.8.9 In addition to the desk-based assessment it is proposed that the cultural heritage ES chapter is also informed by the results of:

- an aerial photographic and LiDAR (Light Detection And Ranging) assessment;
- geophysical surveys;
- geoarchaeological deposit modelling and monitoring (during ground investigation or trial trenching); and
- where appropriate, trial trench evaluation.

Proposed Assessment Methodology

9.8.10 The following section summarises the methodology proposed to be used for the cultural heritage ES assessment. The methodology builds on the general assessment methodology presented in **Chapter 5 EIA Approach and Methodology**, adapted from the Standards for Highways Design Manual for Roads and Bridges (DMRB),

and incorporates DMRB LA 104 Environmental assessment and monitoring (Ref 9.19), DMRB LA 106 – Cultural heritage assessment (Ref 9.20), and the cultural heritage policy and guidance presented in Section 9.2.

Sensitivity

9.8.11 The value of a heritage asset (its heritage significance) is guided by its designated status but is derived also from its heritage interest which may be archaeological, architectural, artistic, or historic (Ref 9.16). Each identified heritage asset would be assigned a value in accordance with the criteria set out in **Table 9.3**.

9.8.12 Using professional judgement and the results of consultation, heritage assets will also be assessed on an individual basis, and regional variations and individual qualities will be considered where applicable.

Table 9.3 Criteria for assessing the value of heritage assets

Value/Sensitivity	Description
High	• World Heritage Sites (Cultural) • Scheduled monuments • Grade I and II* listed buildings • Registered battlefields • Grade I and II* RPG • Conservation areas of demonstrable high value • Non-designated heritage assets (archaeological sites, historic buildings, monuments, parks, gardens, or landscapes), or Grade II listed buildings, that can be shown to have demonstrable national or international importance • Well preserved historic landscape character areas, exhibiting considerable coherence, time-depth, or other critical factor(s)
Medium	• Grade II listed buildings • Grade II RPG • Conservation areas • Non-designated heritage assets (archaeological sites, historic buildings, monuments, park, gardens, or landscapes), or locally listed buildings, that can be shown to have demonstrable regional importance. • Averagely preserved historic landscape character areas, exhibiting reasonable coherence, time-depth, or other critical factor(s) • Historic townscapes with historic integrity in that the assets that constitute their make-up are clearly legible
Low	• Locally listed buildings • Non-designated heritage assets (archaeological sites, historic buildings, monuments, park, gardens,

Value/Sensitivity	Description
	or landscapes) that can be shown to have demonstrable local importance • Assets whose values are compromised by poor preservation or survival of contextual associations to justify inclusion into a higher grade • Historic landscape character areas whose value is limited by poor preservation and/or poor survival of contextual associations
Negligible	• Assets identified on national or regional databases, but which have no archaeological, architectural, artistic, or historic value • Assets whose values are compromised by poor preservation or survival of contextual associations to justify inclusion into a higher grade • Landscape with no or little significant historical merit

Magnitude

9.8.13 Having identified the value of the heritage asset, the next stage in the assessment is to identify the level and degree of impact to a heritage asset arising from the Project. Impacts may arise during construction, operation or maintenance and can be temporary or permanent. Impacts can affect the physical fabric of the asset or affect its setting.

9.8.14 The level and degree of impact (impact rating) is assigned with reference to a four-point scale as set out in **Table 9.4**. In respect of the historic environment an assessment of the level and degree of impact is made in consideration of any design mitigation (embedded mitigation). If no impact on value is identified, no impact rating is given and no resulting effect reported.

Table 9.4 Factors influencing the assessment of magnitude of impact

Magnitude	Description
Large	• Changes such that the heritage value of the asset is totally altered or destroyed • Comprehensive change to elements of setting that would result in harm to the asset and an individual's ability to understand and appreciate its heritage significance
Medium	• Change such that the heritage value of the asset is significantly altered or modified • Changes such that the setting of the asset is noticeably different, affecting significance and resulting in changes in our ability to understand and appreciate the heritage value of the asset
Small	• Changes such that the heritage value of the asset is slightly affected

Magnitude	Description
	• Changes to the setting that have a slight impact on significance resulting in changes in our ability to understand and appreciate the heritage value of the asset
Negligible	• Changes to the asset that hardly affect heritage value. • Changes to the setting of an asset that have little effect on significance and no real change in an individual's ability to understand and appreciate the heritage value of the asset

Significance of effects

9.8.15 The ES will report on the significance of effect in accordance with EIA methodology. An assessment to classify the effect, having taken into consideration any embedded mitigation, will be determined using the matrix at **Table 9.5**, which takes account of the value of the asset (**Table 9.3**) and the magnitude of impact (**Table 9.4**). Effects can be neutral, adverse, or beneficial. The matrix in **Table 9.5** is adapted from Environmental assessment and monitoring (Ref 9.19).

9.8.16 The general approach adopted for evaluating the significance of effects considering the sensitivity of the receptor and the magnitude of impacts is outlined in **Table 9.5.** Where two levels of significance are proposed (e.g. Major OR moderate), professional judgement will be used.

Table 9.5 Determination of significance matrix

		Magnitude of Impact			
		Large	**Medium**	**Small**	**Negligible**
Value/Sensitivity	**High**	Major /or moderate	Major	Moderate	Minor /or negligible
	Medium	Major	Moderate	Minor	Negligible
	Low	Moderate	Minor	Negligible	Negligible
	Negligible	Minor /or negligible	Negligible	Negligible	Negligible

9.8.17 Major and moderate effects are typically 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.

9.8.18 The National Planning Policy Framework (NPPF) (Ref 9.17) establishes the principle that impacts affecting the value of heritage assets are considered in terms of harm and there is a requirement for the decision maker to determine whether the level of harm amounts to 'substantial harm' or 'less than substantial harm'.

9.8.19 The Overarching NPS for Energy (EN-1) (Ref 9.16) maintains the concept of harm to the value of heritage assets within paragraph 5.9.28 directing the Secretary of State to give considerable importance and weight to the desirability of preserving all heritage assets. Any harm or loss of value (heritage significance) of a designated

heritage asset (including as a result of development within its setting) should require clear and convincing justification. Paragraph 5.9.36 states that, "*the Secretary of State should give appropriate weight to the desirability of preserving the setting of heritage assets and should treat favourably applications that preserve those elements of the setting that make a positive contribution to a heritage asset, or better reveal the significance of, the asset*". The Infrastructure Planning (Decisions) Regulations 2010 (Ref 9.18) Regulation 3 also states that the decision maker "*must have regard to the desirability of preserving*" listed buildings, conservation areas and scheduled monuments, including their setting.

9.8.20 Whether a proposal would result in harm, be it substantial harm or less than substantial harm, is determined by the decision maker who, in this case, is the Secretary of State. Although not specifically stated in the NPS, this approach is established in the Planning Practice Guidance, which accompanies the NPPF(Ref 9.1 paragraph: 018 Reference ID: 18a-018-20190723).

9.8.21 There is no direct correlation between the significance of effect in EIA terms as reported in the final ES, and the level of harm caused to heritage significance. A major (significant) effect on a heritage asset would, however, more often be the basis by which a decision maker would determine that the level of harm to the significance of the asset would be substantial. A moderate (significant) effect, or lower, is unlikely to meet the test of substantial harm and would therefore more often be the basis by which a decision maker would determine that the level of harm to the significance of the asset would be less than substantial.

9.8.22 NPS EN-1 provides the tests that substantial harm to heritage assets of the highest significance should require wholly exceptional justification (paragraph 5.9.30) and exceptional justification is needed for substantial harm to or loss of a grade II listed building or grade II RPG (paragraph 5.9.29). However, EN-1 (paragraph 4.2.17) also states that the Secretary of State will take as a starting point that schemes such as the Project, which are considered to be Critical National Priority (CNP) for low carbon infrastructure (see **Chapter 2 Regulatory and Planning Policy Context**), will meet the test of exceptional or wholly exceptional justification.

9.8.23 In all cases determining the level of harm to the significance of the asset arising from development impact is one of professional judgement.

9.9 Assumptions and limitations

9.9.1 This Scoping Report includes a high-level review of available data and presents a brief overview of the historic environment baseline. Given the scale of the Project, this chapter is only intended to identify potential pathways to significant effects, for the purpose of defining a scope for the historic environment assessment, as part of the ES. It does not present all known or previously unrecorded heritage receptors which will be presented in subsequent assessments.

9.9.2 Data supporting this report was obtained from third party sources and may include errors or omissions. All efforts were made to identify and rectify any such issues.

9.10 Conclusion

9.10.1 This Scoping Report chapter has outlined the proposed scope for further assessment in relation to cultural heritage for the Project. The data sources that will be used to

define the current and future baselines have been presented, assessment methodology, and the impact control and management measures that will be implemented have been described. The potential for significant effects has been identified, as well as the associated source, impact and receptors in **Table 9.2**.

9.10.2 A summary of the proposed scope of the assessment is provided in **Chapter 20 Summary**.

References

Ref 9.1 Ministry of Housing, Communities and Local Government (2019) *Planning Practice Guidance: Historic Environment* [online] https://www.gov.uk/guidance/conserving-and-enhancing-the-historic-environment Accessed 6 August 2025.

Ref 9.2 Historic England (2015) *Historic Environment Good Practice Advice in Planning Note 2. Managing Decision Taking in the Historic Environment. Historic England* [online] https://historicengland.org.uk/images-books/publications/gpa2-managing-significance-in-decision-taking/gpa2/ Accessed 6 August 2025.

Ref 9.3 Historic England (2017) *The Setting of Heritage Assets. Historic Environment Good Practice Advice Note in Planning Note 3* (Second Edition) [online] https://historicengland.org.uk/images-books/publications/gpa3-setting-of-heritage-assets/heag180-gpa3-setting-heritage-assets/ Accessed 21 July 2025.

Ref 9.4 Historic England (2019) *Historic Environment Statements of Heritage Significance: Analysing Significance in Heritage Assets. Historic England Advice Note 12* [online] https://historicengland.org.uk/images-books/publications/statements-heritage-significance-advice-note-12/heag279-statements-heritage-significance/ Accessed 6 August 2025.

Ref 9.5 CIfA (2020) *Standard and guidance for historic environment desk-based assessment* [online] https://archaeologists.net/sites/default/files/2023-11/CIfA-SandG-DBA-2020.pdf Accessed 6 August 2025.

Ref 9.6 CIfA (2022) *Code of conduct: professional ethics in archaeology* [online] https://archaeologists.net/sites/default/files/2023-11/CIfA-Code-of-Conduct-2022.pdf Accessed 6 August 2025.

Ref 9.7 ISEP, IHBC and CIfA (2021) *Principles of Cultural Heritage Impact Assessment in the UK* [online] https://www.ihbc.org.uk/brighton2021/resources/Principles-of-CHIA-V2%5B4%5D.pdf Accessed 6 August 2025.

Ref 9.8 Historic England (no date) *National Heritage List for England* [online] https://historicengland.org.uk/listing/the-list Accessed 6 August 2025.

Ref 9.9 British Geological Society (2025) *Geology Viewer* [online]. Available at: https://geologyviewer.bgs.ac.uk/?_ga=2.138898100.646682979.1753096666-2028227139.1753096666 Accessed 21 July 2025

Ref 9.10 Natural England (2025) *National Character Area Profiles* [online]. Available at: https://nationalcharacterareas.co.uk/ Accessed 21 July 2025.

Ref 9.11 Ledger, B. and Natural England (2025) *NCA 46 Fens* [online]. Available at: https://nationalcharacterareas.co.uk/the-fens/ Accessed 21 July 2025.

Ref 9.12 Banham, M. and Natural England (2025) *NCA 75 Kesteven Uplands* [online]. Available at: https://nationalcharacterareas.co.uk/kesteven-uplands/ Accessed 21 July 2025.

Ref 9.13 Jewell, K. and Natural England (2025) *NCA 74 Leicestershire and Nottinghamshire Wolds* [online]. Available at: https://nationalcharacterareas.co.uk/leicestershire-and-nottinghamshire-wolds/ Accessed 21 July 2025.

Ref 9.14 Banham, M. and Natural England (2025) *NCA 93 High Leicestershire* [online]. Available at: https://nationalcharacterareas.co.uk/high-leicestershire/ Accessed 21 July 2025.

Ref 9.15 Kwolek, A. and Natural England (2025) *NCA 89 Northamptonshire Vales* [online]. Available at: https://nationalcharacterareas.co.uk/northamptonshire-vales/ Accessed 21 July 2025.

Ref 9.16 Department for Energy Security and Net Zero (2024) *Overarching National Policy Statement for energy (EN-1)* [online]. Available at: https://assets.publishing.service.gov.uk/media/65bbfbdc709fe1000f637052/overarching-nps-for-energy-en1.pdf Accessed 21 July 2025.

Ref 9.17 Ministry of Housing, Communities and Local Government (2025) *National Planning Policy Framework* [online]. Available at: https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf Accessed 21 July 2025.

Ref 9.18 Her Majesty's Stationery Office (2010) *The Infrastructure Planning (Decisions) Regulations 2010* [online]. Available at: https://www.legislation.gov.uk/uksi/2010/305/contents/made Accessed 21 July 2025.

Ref 9.19 Standards for Highways (2020) Design Manual for Roads and Bridges: LA 104 Environmental assessment and monitoring [online]. Available at: https://www.standardsforhighways.co.uk/tses/attachments/by-attachment-id/c326ef05-0bda-4e02-9903-de8d02640cea?inline=true Accessed 9 October 2025

Ref 9.20 Standards for Highways (2020) Design Manual for Roads and Bridges: LA 106 Cultural heritage assessment [online]. Available at: https://https://www.standardsforhighways.co.uk/tses/attachments/by-attachment-id/deb532b0-86a4-4eea-b40c-6cf6638430f9?inline=true Accessed 9 October 2025

10. Water Environment

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10. Water Environment

10.1 Introduction

10.1.1 This chapter presents how the water environment assessment will consider the potential likely significant effects on water environment receptors that may arise from the construction, operation and maintenance of the Project (as described in **Chapter 4, Description of the Project**). It describes the methodology and datasets to be used within the assessment, presents an overview of the baseline conditions, and identifies the potential likely significant effects to be considered within the assessment, and how these will be assessed for the purpose of the Environmental Statement (ES). As detailed in **Chapter 4, Description of the Project**, the decommissioning of the Project has been scoped out of the environmental assessment.

10.1.2 The Scoping Boundary is illustrated on **Figure 1.2 Scoping Boundary**.

10.1.3 This chapter should be read in conjunction with the following chapters which provide the Project context and approach to EIA:

- **Chapter 2 Regulatory and Planning Policy Context**;
- **Chapter 3 Main Alternatives Considered**;
- **Chapter 4 Description of the Project**; and
- **Chapter 5 EIA Approach and Methodology**.

10.1.4 There are interrelationships with other disciplines. Therefore, this chapter should also be read in conjunction with the following chapters:

- **Chapter 8 Ecology and Biodiversity**, particularly aquatic ecology and assessment of ponds; and
- **Chapter 11 Geology and Hydrogeology.**

10.1.5 This chapter is supported by the following figures and appendices:

- **Figure 10.1 Surface water receptors and their attributes**;
- **Figure 10.2 Fluvial flood risk**;
- **Figure 10.3 Surface water flood risk**;
- **Figure 10.4 WFD[1] River Water Body Catchments**; and
- **Appendix 10A Water Framework Directive Screening and Scoping Assessment**.

10.1.6 In addition to the above, **Figure 11.2 Superficial Geology**, **Figure 11.3 Bedrock Geology**, and **Figure 11.4 Groundwater Features** that were prepared as part of the geology and hydrogeological scoping assessment are also relevant and are referred to where necessary in this chapter.

[1] Water Framework Directive

10.2 Legislation, Policy and Guidance

10.2.1 **Chapter 2 Regulatory and Planning Policy Context** describes the overall regulatory and planning policy context for the Project. A summary of relevant legislation, policy, and planning guidance relevant to the assessment of potential effects on the water environment associated with the construction, operation, and maintenance of the Project is provided in **Chapter 2 Regulatory and Planning Policy Context. Appendix 2A Key Legislation, Appendix 2B National and Regional Planning Policy** and **Appendix 2C Local Policy.**

Guidance

10.2.2 The National Planning Policy Guidance (NPPG) (Ref 10.2), updated in 2024, provides guidance for local planning authorities on assessing the significance of water environment effects of projects. The NPPG for Flood Risk advises on how to take account of and address the risks associated with flooding and coastal change in the planning process.

10.2.3 It outlines a number of main steps to be followed which are designed to ensure that if there are better sites in terms of flood risk, or if a project cannot be made safe, it should not be permitted. These steps include: assess flood risk; avoid flood risk; and manage and mitigate flood risk. The guidance states that developers and applicants need to consider flood risk to and from the development site and it is likely to be in their own best interests to do this as early as possible. In addition, the guidance provides detail on the application of the Sequential Test and the Exception Test.

10.2.4 The national guidance for the implementation of sustainable drainage measures (SuDS) was recently updated 'National Standards for SuDs Guidance' (Ref 10.1)

10.2.5 The Environment Agency provides their current guidance/ position statements on the approach to protection of groundwater (Ref 10.3). This includes:

- Regulatory Position Statement (RPS) A (Risk Based Approach);
- RPS B (Protection of Water Intended for Human Consumption);
- RPS G (Discharge of Liquid Effluents into the Ground); and
- RPS N (Groundwater Resources and Abstraction).

10.2.6 The Environment Agency provides their current guidance/position statements on environmental permits (Ref 10.4). This includes:

- RPS 261: Temporary dewatering from excavations to surface water.

10.3 Consultation and Engagement

10.3.1 The ES will be informed by consultation and engagement with stakeholders, including the Environment Agency, Anglian Water, Lead Local Flood Authorities (LLFA) and Internal Drainage Boards (IDB). In addition, engagement will be undertaken with non-statutory stakeholders as required to ensure that specialist local views and expertise can be considered as part of the ES.

10.3.2 In preparing this Scoping Report chapter, consideration has been given to stakeholder feedback received following Non-Statutory Consultation held between 11 June and 6 August 2025, as set out in **Table 10.1.**

Table 10.1 Engagement with stakeholders

Stakeholder	Summary of response	Consideration in the Scoping Report
South Holland Internal Drainage Board	The Board intends to widen most Board maintained watercourses over the next 50 years. This could impact your proposals for any infrastructure within 9 metres of any Board maintained watercourse.	To be covered once the Project route is finalised in the ES. Position of towers will take possible future widening of watercourses into account, where possible.
	The Board will require a strict minimum safety distance to be established between overhead cables (sails) and the brinks of watercourses. This will need to account for fully extended working machinery plus a worker's height, as well as the minimum recommended electrical arc safety buffer.	Refer to **Section 10.6 Design Measures – Overhead Line (Chapter 10: Water Environment)**. The Board will be consulted further as the assessment is progressed to fully understand their operational requirements.
	In line with best practice, the Board is unlikely to grant consent for any infilling or culverting of the watercourses within this area.	To be considered as the design progresses and once the Project route is finalised in the ES.
	Byelaw 3 (surface water) • All new surface water discharge (including temporary discharge during the construction phase) into a watercourse within the IDD requires consent from the Board under Byelaw 3. • We recommend that any discharge is in line with SuDS. Therefore the Board is unlikely to grant consent for discharges in excess of greenfield rate; however we assess each proposal on a case-by-case basis.	To be considered as the design progresses and once the Project route is finalised in the ES. A water quality risk assessment of surface water runoff from the proposed Weston Marsh substation infrastructure will need to be undertaken at a later stage and although SuDS may form part of the drainage system, proprietary measures may also be required to adequately address the pollution risk.
	Byelaw 10 • Consent is required for all works within 9 metres of the edge of drainage and flood risk management infrastructure. • Any temporary works within 9 metres of the flood risk management infrastructure will also require temporary Byelaw 10 consent. • If the flood risk management infrastructure is also owned by the Board, then an easement or wayleave may also be required.	Refer to **Section 10.6 Design Measures – Overhead Line (Chapter 10: Water Environment).**

Stakeholder	Summary of response	Consideration in the Scoping Report
	Section 23, Land Drainage Act and Byelaw 4 • If any works are proposed to alter a watercourse (culverting, infilling etc.), then consent would be required under Section 23 of the Land Drainage Act 1991 (and Byelaw 4). • Any temporary haul road, culverts or works during the construction phase of the project which may alter a watercourse will require temporary Section 23 (and Byelaw 4) consent.	To be considered as the design progresses and once the Project route is finalised in the ES.
Environment Agency	Parts of the proposals are located within Flood Zones 2 and 3. The project should take a sequential approach where it can, if there are any opportunities for development to be located outside of Flood Zones 2 and 3 and into Flood Zone 1, this should be prioritised. If required, essential infrastructure (such as power stations and substations etc) should evidence the Exception test. The applicant should scope in flood risk when reviewing operation to ensure the proposed development is functional in time of flood and remains safe. The FRA should comply with the NPPF.	To be considered as the design progresses and once the Project route is finalised in the ES stage. A FRA will be undertaken and flood risk scoped in to the ES.
	The Environment Agency recommend early engagement with review of any hydrological assessment or hydraulic model development so appropriate data and advice can be provided.	To be considered as the design progresses and once the Project route is finalised in the ES stage, and as part of the FRA.
	The updated Environment Agency guidance on climate change allowance must be used when assessing floodplain compensation.	To be considered as the design progresses and once the Project route is finalised in the ES stage, and as part of the FRA.
	The applicant should consider early on whether Environmental Permit(s) are required or the disapplication of these matters be considered as Protective Provisions under the DCO.	To be considered as the design progresses and once the Project route is finalised in the ES.
	Environment Agency to be consulted regarding impacts to relevant watercourses.	The Environment Agency will be consulted as the design and assessment progress.
	Environment Agency would highly recommend the applicant complete a WFD assessment, to	An initial **WFD Screening and Scoping** has been

Stakeholder	Summary of response	Consideration in the Scoping Report
	determine any impacts to the WFD status of the waterbodies.	prepared at this stage and is presented in **Appendix 10A.**
South Holland District Council	South Holland is in a designated Flood Zone 3 area. The dykes and pumping are essential to drain the land. Construction work and traffic compacting the land along with filling in dykes will increase the possibility of homes and businesses in the area being flooded.	A FRA will be carried out in compliance with relevant policy as described in Section 10.8. The **Appendix 4A Initial Outline Code of Construction Practice** sets out initial measures relevant to the control and management of flooding throughout the duration of the construction phase, and this will be updated during the assessment described in this report and submitted with the application for development consent. The implementation of measures will be required by the Development Consent Order.

10.4 Study Area

10.4.1 The core Study Area for the Water Environment Impact Assessment, WFD Assessment, and FRA is proposed to include all land within the Order Limits, and in addition, a buffer of 500 m from the Order Limits. The Study Area employed for this scoping exercise, as shown in **Figures 10.1 to 10.3**, is 500 m from the Scoping Boundary and has been used to identify water features that may be impacted by the Project. It is considered appropriate based on technical knowledge of similar projects and has been set following consideration of the distance over which likely significant effects can reasonably be expected to occur. However, as pollution risks can propagate downstream, it is important to also consider any additional attributes of a watercourse downstream of the Project, and sometimes beyond the Study Area, to ensure that the most appropriate and precautionary importance value has been awarded to it for the assessment of potential water quality impacts. Generally, a distance of a few kilometres is used for this purpose, and this will be defined as part of the ES. It should also be noted that the Study Area for the FRA may cover a wider area than 500m beyond the Order Limits, in order to also include reaches of the watercourse upstream/downstream of the Project that may impact or be impacted by the Project. This will be defined at later stages of assessment and within the ES.

10.5 Baseline Conditions

Data Sources

10.5.1 This Chapter has been prepared through a desk study undertaken during July and August 2025 based on readily available online data.

10.5.2 The known or predicted current and future baseline environment described in this section has been informed by the data sources as listed in **Table 10.2**. This also highlighted some sources of information that are not currently available but will be included in later stages of the assessment and the ES.

Table 10.2 Water environment – sources of information

Data Topic	Sources of Information
Climate	• Met Office UK Climate averages at Wittering (Ref 10.10).
Topography	• Ordnance Survey Mapping (Ref 10.11).
Geology	• British Geological Survey (BGS) GeoIndex Viewer (Ref 10.12).
Soils and land use	• Department for Environment, Food and Rural Affairs (DEFRA) 'Magic Map' online GIS portal (Ref 10.13); and • National Soil Research Institute Soilscapes map viewer (Ref 10.16).
Hydrology	• DEFRA Hydrology Data Explorer (Ref 10.17); • Environment Agency Statutory Main River Map for England (Ref 10.18); • Flood Estimation Handbook Web Service (Ref 10.19); and • National River Flow Archive (NRFA) (Ref 10.30).
Flood risk	• Environment Agency Flood Map for Planning (Ref 10.20); • Environment Agency Risk of Flooding from Surface Water (RoFSW) (Ref 10.21); • National Flood Risk Assessment (NAFRA) Dataset (Ref 10.22); • Environment Agency Risk of Flooding from Reservoirs (Ref 10.23); and • Environment Agency Flood Defence Asset database (Ref 10.24). In addition to the above data requests will be made to the Environment Agency, LLFAs and IDBs to provide information on the following to support the water environment assessment: • Baseline flood risk data, including available modelled flood data for main rivers, and local flood risk data from commissioned studies. • Data on consented discharges to surface waters and licensed and exempted (private) abstractions from surface waters. • Specific watercourse characteristics (e.g. flow, control measures, maintenance regimes, Environment Agency flood defence assets) will be requested from IDBs for their districts. • Information on local flood risk from LLFAs (e.g. specific watercourse characteristics, local flood history, Section 19 flood investigation reports, flow, control measures, maintenance regimes, Environment Agency flood defence assets).
Water quality and Water Framework Directive status	• Catchment Data Explorer database (Ref 10.25) River Basin Management Plan (RBMP) Cycle 3 WFD information. • Environment Agency Water Quality Archive (Ref 10.26).

Data Topic	Sources of Information
Water resources	• Data request to be made to the Environment Agency for all licenced abstractions within the Study Area – to be presented and mapped for the ES. • Data request to be made to the Environmental Health Departments of all local Councils for information on any known surface water PWS within the Study Area – to be presented and mapped for the ES. • Data request to be made to the Environment Agency for all consented and permanent discharges to Controlled Waters covered by an active Water Activity Permit within the Study Area – to be presented and mapped for the ES. • Data request to be made to the Environment Agency for all category 3 (minor) or worse water pollution incidents within the Study Area as recorded on the National Incident Recording Database within the past 5 years – to be presented and mapped for the ES.

Baseline

10.5.3 This section describes the baseline environment providing details of the data sources that have been used and any other data gathering methods. This section also explains the future baseline including how that has been predicted and how it will be taken into account within the ES.

10.5.4 The Project has been divided into Sections as described in **Chapter 4, Description of the Project** and shown in **Figure 1.2 Scoping Boundary**. The Sections are defined by the geographical alignment of the Scoping Boundary and the administrative boundaries of the local authorities. The baseline environment is reported below for the whole Scoping Boundary area for climate, topography and land use, and geology, which are contextual elements of the surface water environment baseline only. Surface water features and their attributes, as well as flood risk, are reported by Section in **Table 10.3** below.

Study Area Overview

Climate

10.5.5 The most recent available data for average annual rainfall estimates was taken from the Met Office website for the period 1991 to 2020 (Ref 10.10). This suggests that the average annual total rainfall in the locality of the Project is around 614 mm, based on the Wittering station record (National Grid Reference (NGR) TF044025) located approximately 19.5 km from the Scoping Boundary, south east of Melton Mowbray. This is lower than the Midlands regional average (1991-2020) of approximately 810 mm (Ref 10.10). The Wittering station is located centrally for the L-shaped Scoping Boundary and as such is the most appropriate for this report.

10.5.6 The distribution of rainfall throughout the year varied for the Study Area based on the Wittering 1991-2020 record. The highest monthly average precipitation is likely to occur during August (c. 60 mm) and October (c. 63 mm). The driest months are expected to be on average March (c. 39 mm) and February (c. 39 mm).

Topography and Land Use

10.5.7 Ordnance Survey Mapping (Ref 10.11) indicates that the topography in the north east of the Scoping Boundary, near Spalding is below 50 m above sea level. Travelling west along the Project the altitude increases to approximately 100 m above sea level just north of Melton Mowbray. The Project would cross the River Wreake at approximately 70 m above sea level to the west of Melton Mowbray. Topography within Sections 4 and 5 remains at approximately 100 m, with slight undulations between 90 to 145 m. The Project would cross the Eye Brook in Section 4 at approximately 150 m above sea level. The highest points are to the east of Leicester at approximately 190 m, near Skeffington.

10.5.8 The general land use is typical for lowland areas in England, consisting predominantly of arable farmland, pockets of pastureland, some urban areas, and clusters of small woodlands. Main towns and villages either within or near the Study Area include Pinchbeck, Melton Mowbray, Market Harborough, Wellingborough, Earl's Barton, Asfordby, and South Witham.

Geology

10.5.9 **Chapter 11 Geology and Hydrogeology** provides full details of the geology and hydrogeology baseline for the Study Area. The following is a brief overview to provide context for the surface water and flood risk baseline.

10.5.10 The Study Area mainly covers three rock formations, the Kellaways Formation and Oxford Clay Formation, the Great Oolite Group, and the Lias Group. The far west point of the Scoping Boundary near Melton Mowbray covers a small section of undifferentiated Triassic rocks. These four groups consist mainly of mudstone, siltstone, sandstone and limestone, with some argillaceous rock in the Great Oolite Group (Ref 10.12).

10.5.11 The Scoping Boundary covers Principal, Secondary A, Secondary B and Secondary (Undifferentiated) and Unproductive aquifers. The most prevalent designations within the Scoping Boundary are Secondary (Undifferentiated) and Unproductive. Principal aquifer status appears in small areas around South Witham, Harrington, south of Broughton and Wellingborough (Ref 10.13). Each type of aquifer is defined as follows:

- **Principal aquifers:** aquifers provide significant quantities of drinking water, and water for business needs. They may also support rivers, lakes and wetlands.
- **Secondary A Aquifers:** aquifers comprise permeable layers that can support local water supplies and may form an important source of base flow to rivers.
- **Secondary B Aquifers:** are mainly lower permeability layers that may store and yield limited amounts of groundwater through characteristics like thin cracks (called fissures) and openings or eroded layers.
- **Secondary Undifferentiated Aquifers:** are aquifers where it is not possible to apply either a Secondary A or B definition because of the variable characteristics of the rock type. These have only a minor value.
- **Unproductive:** negligible significance for water supply or baseflow to rivers, lakes and wetlands. They consist of bedrock or superficial deposits with low permeability that naturally offer protection to any aquifers that may be present beneath.

Surface Water Features

10.5.12 The Scoping Boundary is located within the Anglian and Humber River Basin Districts (RBDs) (Ref 10.5 and Ref 10.6) and within the Management Catchments of Welland, Witham, Nene, and Soar, with a very small area in the Trent Lower and Erewash Management Catchment and Anglian Transitional and Coastal (TraC) Management Catchment.

10.5.13 There are a large number of watercourses within the Study Area for which it is impractical to identify and name at this stage of the assessment. Therefore, at this scoping stage a catchment approach has been adopted based on WFD designated water bodies, within which there will be numerous smaller tributaries. During subsequent stages of the assessment , these tributaries will also be identified as discrete receptors noting that their importance may be less that the main stem watercourse for the WFD catchment. Ponds are not considered as surface water bodies, but as a specific habitat type and considered in **Chapter 8 Ecology and Biodiversity.**

10.5.14 **Table 10.3** lists and summarises pertinent information on the WFD surface water bodies present within the Study Area and any notable non-WFD designated watercourses or lakes, as shown in **Figure 10.1 Surface water receptors and their attributes**, **Figure 10.2 Fluvial flood risk**, **Figure 10.3 Surface water flood risk**, and **Figure 10.3 WFD River Water Body Catchments**. In addition to WFD status, whether a watercourse is designated as a Main River or as an Ordinary Watercourse is also included. Main Rivers are typically larger rivers and streams where the Environment Agency is responsible for maintenance, improvement or construction work to manage flood risk (Ref 10.14). All other watercourses are considered to be Ordinary Watercourses where the LLFA and IDBs carry out flood risk management work. This distinction has relevance for whom is responsible for granting certain secondary consents as may be required when there are works close to, in, over or under watercourses.

Table 10.3 Surface water features in the Study Area by each Section

Operational Catchment	Water Body	ID (Only for WFD Waterbodies)	Hydromorphological Designation (WFD)	Relevance	Main River or Ordinary Watercourse	Ecological Status or Potential (WFD)
Section 1						
Welland Lower	Whaplode River	GB205031055495	Artificial	Flows north approx. 3.7 km east of Study Area. Although the channel is not within the Study Area part of its catchment is and thus flow paths and drainage to this watercourse cannot be ruled out at this stage.	Ordinary	Moderate Ecological Potential
Welland Lower	Moulton River	GB205031050755	Artificial	Passes through Study Area flowing north.	Ordinary	Moderate Ecological Potential
Welland Lower	Vernatt's Drain	GB205031050705	Artificial	Passes through the Study Area flowing north	Ordinary	Moderate Ecological Potential
The Wash TRaC	Welland (estuary)	GB530503100400	Heavily modified	Passes through the Study Area flowing north	Main	Moderate Ecological Potential
Glens	Glen	GB105031050720	Artificial	Passes through the Study Area flowing north	Main	Moderate Ecological Potential
Section 2						
South Forty Foot Drain	Black Sluice IDB draining to the South Forty Foot Drain	GB205030051515	Heavily modified	Passes through the Study Area flowing north	Main	Poor Ecological Potential
South Forty Foot Drain	Old Beck	GB105030051540	Artificial	Passes through Study Area flowing east	Ordinary into Main	Moderate Ecological Potential
South Forty Foot Drain	Car Dyke	N/A	N/A	Passes through the Study Area flowing north	Main	N/A
Glens	East Glen River	GB105031055480	Not designated artificial or heavily modified	Passes through the Study Area flowing south	Main	Poor Ecological Status

Operational Catchment	Water Body	ID (Only for WFD Waterbodies)	Hydromorphological Designation (WFD)	Relevance	Main River or Ordinary Watercourse	Ecological Status or Potential (WFD)
Glens	West Glen - Upper	GB105031055510	Not designated artificial or heavily modified	Passes through the Study Area flowing south	Main	Poor Ecological Status
Glens	The Tham	GB105031050650	Not designated artificial or heavily modified	Passes through the Study Area flowing south east	Ordinary	Moderate Ecological Status
Witham Upper	Witham - headwaters to conf Cringle Bk	GB105030051570	Not designated artificial or heavily modified	Passes through the Study Area flowing east then north	Main	Poor Ecological Status
Section 3						
Witham Upper	Cringle Brook - Upper	GB105030051560	Not designated artificial or heavily modified	Flows north and does not interact with Study Area (approx. 2.4 m north). However, part of the catchment may be within the Study Area and flow paths to the channel cannot be ruled out at this stage.	Ordinary	Moderate Ecological Status
Wreake River	Wymondham Brook Catchment (trib of Langham Brook)	GB104028047540	Not designated artificial or heavily modified	Flows south and does not interact with Study Area (approx. 180 m south of Study Area). However, part of the catchment may be within the Study Area and flow paths to the channel cannot be ruled out at this stage.	Ordinary	Moderate Ecological Status
Wreake River	Eye from Source to Langham Brook	GB104028047610	Not designated artificial or heavily modified	Passes through the Study Area flowing south	Ordinary	Moderate Ecological Status
Wreake River	Freeby Brook Catchment (trib of Eye)	GB104028047580	Not designated artificial or heavily modified	Passes through the Study Area flowing south	Ordinary	Moderate Ecological Status
Wreake River	Eye / Wreake from Langham Brook to Soar	GB104028047550	Not designated artificial or heavily modified	Passes through the Study Area flowing west	Main	Poor Ecological Status

Operational Catchment	Water Body	ID (Only for WFD Waterbodies)	Hydromorphological Designation (WFD)	Relevance	Main River or Ordinary Watercourse	Ecological Status or Potential (WFD)
Wreake River	Thorpe Brook Catchment (trib of Eye)	GB104028047590	Not designated artificial or heavily modified	Passes through the Study Area flowing south	Ordinary	Moderate Ecological Status
Wreake River	Scalford Brook Catchment (trib of Wreake)	GB104028047600	Not designated artificial or heavily modified	Passes through the Study Area flowing south	Ordinary	Poor Ecological Status
Wreake River	Welby Brook Catchment (trib of Wreake)	GB104028047570	Not designated artificial or heavily modified	Passes through the Study Area flowing south west	Ordinary into Main	Poor Ecological Status
Nottinghamshire South B	Smite from Source to Dalby Brook	GB104028047240	Not designated artificial or heavily modified	Passes through the Study Area flowing north west	Ordinary	Poor Ecological Status
Nottinghamshire South B	Dalby Brook Catchment (trib of Smite)	GB104028047230	Not designated artificial or heavily modified	Flows north, does not interact with Study Area. Approx. 390 m west of Study Area.	Ordinary	Moderate Ecological Status
Wreake River	Austen Dyke Catchment (trib of Wreake)	GB104028047560	Not designated artificial or heavily modified	Passes through the Study Area flowing south	Ordinary	Moderate Ecological Status
Wreake River	Great Dalby Brook Catchment (trib of Wreake)	GB104028047510	Not designated artificial or heavily modified	Passes through the Study Area flowing north	Ordinary	Moderate Ecological Status
Wreake River	Queniborough Brook Catchment (trib of Wreake)	GB104028047450	Not designated artificial or heavily modified	Passes through Study Area flowing north west.	Main	Moderate Ecological Status
	Priory Water	N/A	N/A	In Study Area.	N/A	N/A
	Kirby Lake	N/A	N/A	In Study Area.	N/A	N/A
	Frisby Lakes	N/A	N/A	In Study Area.	N/A	N/A
Section 4						
Wreake River	Syston Brook Catchment (trib of Wreake)	GB104028047440	Not designated artificial or heavily modified	Flows north west, does not interact with Study Area. Approx. 320 m west of Study Area.	Ordinary	Moderate Ecological Status

Operational Catchment	Water Body	ID (Only for WFD Waterbodies)	Hydromorphological Designation (WFD)	Relevance	Main River or Ordinary Watercourse	Ecological Status or Potential (WFD)
Soar River	Sence from Source to Burton Brook	GB104028046650	Not designated artificial or heavily modified	Flows south west, does not interact with Study Area. Approx. 350 m west of Study Area.	Ordinary	Moderate Ecological Status
Welland Upper	Eye Brook	GB105031050550	Not designated artificial or heavily modified	Passes through Study Area, flows south east.	Ordinary	Poor Ecological Status
Welland Upper	Stonton Brook	GB105031050460	Not designated artificial or heavily modified	Passes through Study Area, flows south	Main	Bad Ecological Status
Welland Upper	Medbourne Brook	GB105031050520	Not designated artificial or heavily modified	Flows south, does not interact with Study Area. Approx. 900 m east of Study Area.	Main	Poor Ecological Status
Welland Upper	Welland - conf Langton Bk to conf Gwash	GB105031050580	Not designated artificial or heavily modified	Passes through Study Area, flows east	Main	Moderate Ecological Status
Welland Upper	Unnamed	N/A	N/A	Passes through Study Area flowing east. Tributary of Welland	Main	N/A
Welland Upper	Langton Brook	GB105031045620	Not designated artificial or heavily modified	Passes through Study Area, flows east.	Main	Moderate Ecological Status
Welland Upper	Welland - conf Jordan to conf Langton Bk	GB105031045610	Not designated artificial or heavily modified	Passes through Study Area, flows north east	Main	Moderate Ecological Status
Welland Upper	Welland - headwaters to conf Jordan	GB105031045630	Not designated artificial or heavily modified	Passes through Study Area, flows east	Main	Poor Ecological Status
Welland Upper	Stoke Albany Brook	GB105031045640	Not designated artificial or heavily modified	Flows north east, does not interact with Study Area. Approx. 2,100 m east of Study Area.	Ordinary	Poor Ecological Status
Welland Upper	Jordan (Welland)	GB105031045600	Not designated artificial or heavily modified	Passes through Study Area, flows north west	Main	Bad Ecological Status

Section 5

Operational Catchment	Water Body	ID (Only for WFD Waterbodies)	Hydromorphological Designation (WFD)	Relevance	Main River or Ordinary Watercourse	Ecological Status or Potential (WFD)
Ise	Ise - Upper	GB105032045200	Not designated artificial or heavily modified	Passes through Study Area, flows east	Main	Moderate Ecological Status
Brampton Branch	Brampton Branch - Upper	GB105032045540	Not designated artificial or heavily modified	Passes through Study Area, flows west	Ordinary	Bad Ecological Status
Ise	Slade Brook	GB105032045170	Not designated artificial or heavily modified	Passes through Study Area, flows east	Ordinary into Main	Moderate Ecological Status
Ise	Loddington Arms (Ise)	GB105032045150	Heavily modified	Passes through Study Area, flows east	Ordinary	Moderate Ecological Potential
Brampton Branch	Pitsford Arm of the Brampton Branch	GB105032045470	Heavily modified	Passes through Study Area, flows south west	Main	Good Ecological Potential
Ise	Pytchley Brook	GB105032045110	Not designated artificial or heavily modified	Passes through Study Area, flows north east	Ordinary	Moderate Ecological Status
Ise	Hardwick Brook	GB105032045100	Not designated artificial or heavily modified	Passes through Study Area, flows north east	Ordinary	Poor Ecological Status
Ise	Ise - Lower	GB105032045140	Not designated artificial or heavily modified	Flows south, does not interact with Study Area. Approx. 1,300 m east of Study Area.	Main	Poor Ecological Status
Ise	Harrowden Brook (Nene)	GB105032045080	Not designated artificial or heavily modified	Passes through Study Area, flows east	Ordinary into Main	Bad Ecological Status
Ise	Swanspool Brook	GB105032045070	Not designated artificial or heavily modified	Passes through Study Area, flows north east	Main	Moderate Ecological Status
Nene Middle	Sywell Brook	GB105032045430	Not designated artificial or heavily modified	Passes through Study Area, flows south	Main	Poor Ecological Status
Nene Middle	Nene - conf Brampton Branch to conf Ise	GB105032045050	Heavily modified	Passes through Study Area, flows north east	Main	Moderate Ecological Potential

Operational Catchment	Water Body	ID (Only for WFD Waterbodies)	Hydromorphological Designation (WFD)	Relevance	Main River or Ordinary Watercourse	Ecological Status or Potential (WFD)
Nene Middle	Grendon Brook	GB105032045330	Not designated artificial or heavily modified	Passes through Study Area, flows north east	Main	Moderate Ecological Status
Nene Middle	Castle Ashby Arm (Grendon Brook)	GB105032045030	Not designated artificial or heavily modified	Passes through Study Area, flows north east	Main	Poor Ecological Status
Nene Middle	Grendon Brook	GB105032045040	Not designated artificial or heavily modified	Passes through Study Area, flows north west	Main	Moderate Ecological Status
	Mary's Lake	N/A	N/A	In Study Area.	N/A	N/A
	Grendon Lakes	N/A	N/A	In Study Area.	N/A	N/A

10.5.15 There are two flow gauging stations within the Scoping Boundary, one in Section 2 and one in Section 4. There are a further three flow gauging stations within the Study Area, and a further eight in relatively close vicinity of the Scoping Boundary, mostly north of Section 2 and east of Section 5, that may provide useful information. **Table 10.4** summarises the 13 flow gauges upstream or downstream of watercourses in the Scoping Boundary. See also **Figure 10.1 Surface water receptors and their attributes**.

Table 10.4 Summary of river flows (Ref 10.30)

Gauge Ref, Name and NGR	Watercourse	Catchment Area (km^2)	Mean Flow (m^3/s)	Q10* (m^3/s)	Q95^ (m^3/s)	BFI+	Record Period
31013, East Glen at Irnham, TF038273	East Glen	71.5	0.13	0.339	0.002	0.32	1969-2023
31011, West Glen at Burton Coggles, SK986261	West Glen	31.6	0.116	0.329	0.00	0.28	1969-2023
31023, West Glen at Easton Wood, SK965258	West Glen	4.4	0.02	0.048	0.00	0.12	1972-2022
30015, Cringle Brook at Stoke Rochford, SK924296	Cringle Brook	50.5	0.28	0.577	0.061	0.89	1976-2023
30017, Witham at Colsterworth, SK928246	Witham	51.3	0.219	0.512	0.019	0.5	1978-2023
28024, Wreake at Syston Mill, SK615124	Wreake	413.8	2.823	6.964	0.296	0.4	1967-2023
28028, Soar at Wanlip, SK603109	Soar	480	2.705	6.158	0.296	0.35	1972-1981
31001, Eye Brook at Eye Brook Reservoir, SP853941	Eye Brook	60.1	0.231	0.605	0.035	0.41	1937-1999
31021, Welland at Ashley, SP818915	Welland	250.7	1.514	3.81	0.134	0.36	1970-2023
31022, Jordan at Market Harborough, SP740866	Jordan	20.8	0.091	0.271	0.003	0.35	1970-2023
32007, Nene/Brampton at St Andrews Total, SP749613	Nene/Brampton	232.8	1.147	2.373	0.224	0.57	1939-2023
32019, Slade Brook at Kettering, SP872763	Slade Brook	58.3	0.357	0.75	0.058	0.58	1970-2023

Gauge Ref, Name and NGR	Watercourse	Catchment Area (km^2)	Mean Flow (m^3/s)	Q10* (m^3/s)	Q95^ (m^3/s)	BFI+	Record Period
32004, Ise Brook at Harrowden, SP899712	Ise Brook	194	1.362	3.02	0.178	0.52	1943-2023

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

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

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

10.5.16 Based on the summary of the flow gauging stations in **Table 10.4**, noting that some of these are a distance upstream or downstream of the Scoping Boundary, the majority of the catchments are considered to have a relatively low baseflow index, meaning that baseflow is less important to sustaining flow indicating less permeable bedrock, superficial deposits and soils. These watercourses are more dependent on surface water runoff and are likely to be susceptible to periods of dry weather. The exception is Cringle Brook, located at Stoke Rochford to the north west of the Scoping Boundary, which has a much higher baseflow index. Nene/Brampton, Slade Brook and Ise Brook, which are all in the south of the Scoping Boundary between Kettering and Northampton have a moderate baseflow index.

10.5.17 The water features have several attributes that could be affected, including water quality and flow conveyance. They also support several services, including water supply, receipt and dilution of wastewater discharges, navigation and amenity.

Hydromorphology

10.5.18 Most of the WFD water bodies in the Study Area are not designated as artificial or as heavily modified water bodies. As identified in **Table 10.3**, there are multiple Main Rivers within the Study Area. Of these, the East Glen River, West Glen River, River Wreake and River Nene show high levels of sinuosity in aerial imagery potentially indicating high hydromorphological quality (which will be investigated further during site surveys during the EIA). It is likely that many of the Ordinary Watercourses in the Study Area, particularly those within IDB districts, also serve a land drainage function and have a relatively low hydromorphological diversity. Walkover surveys will be undertaken to inform subsequent stages of the assessment and the ES and will allow a more detailed classification of the physical form and function of watercourses that may be impacted by the Project.

Water Resources, Abstractions and Discharges

10.5.19 There is one Drinking Water Protected Areas (DrWPA) in the Study Area. DrWPA are locations identified by the WFD where raw water is abstracted for human consumption (Ref 10.31). The DrWPA is Welland - conf Langton Bk to conf Gwash (SWSGZ1005) and is at risk from pesticides, its location is shown in **Figure 10.1 Surface water receptors and their attributes**. Due to the nature of the Project, pesticide levels are unlikely to be affected.

10.5.20 There are four surface water Drinking Water safeguard Zones in the Study Area through which the Scoping Boundary passes, these are shown on **Figure 10.1 Surface water receptors and their attributes** and include:

- Cringle Brook (SWSGZ1003);
- River Welland upstream of Tinwell (SWSGZ1005);
- River Nene upstream of Wansford (SWSGZ1006); and
- Pitsford Natural Catchment (SWSGZ1008).

10.5.21 The main risk facing the four zones is from pesticides (Ref 10.28). Due to the nature of the Project, pesticide levels are unlikely to be affected.

10.5.22 Nearly the whole of the Study Area lies within a Nitrate Vulnerable Zone (NVZ), which are areas designated as being at risk from agricultural nitrate pollution.

10.5.23 There are 10 NVZs in total, which cover large spatial areas and often encroach within more than one Section of the Scoping Boundary. The NVZs are shown on **Figure 10.1 Surface water receptors and their attributes** and include:

- NVZ 824 Whaplode River;
- NVZ 378 Glen;
- NVZ 669 Black Sluice IDB draining to the South Forty Foot Drain;
- NVZ 69 Lincolnshire Limestone;
- NVZ 375 Lower Witham;
- NVZ 309 Soar R;
- NVZ 832 River Welland;
- NVZ 382 River Nene;
- NVZ 165 Northampton Sands; and
- NVZ 148 Thrapstone Lake Eutrophic Lake.

10.5.24 Due to the nature of the Project, it is unlikely to affect nitrate concentrations in local watercourses therefore no further consideration of NVZ is proposed.

10.5.25 Within the Study Area there are several Abstraction Licensing Strategies including the following:

- The Nene Catchment Abstraction Licensing Strategy (Ref 10.32) shows the water resource available at least 30% of the time;
- The Welland Catchment Abstraction Licensing Strategy (Ref 10.33) shows the water resource available at least 30% of the time;
- The Witham Abstraction Licensing Strategy (Ref 10.34) shows the water resource available at least 30% of the time; and
- The Soar Abstraction Licensing Strategy (Ref 10.35) shows the water resource available at least 95% of the time.

10.5.26 No information is available at this scoping stage regarding specific licensed abstractions and consented discharges to/from the surface water environment. However, this will be requested from the Environment Agency and included in the baseline for the ES.

Water Quality

10.5.27 Within the Study Area there are 38 water quality archive monitoring stations (Ref 10.26). **Table 10.5** summarises the locations of these stations, broken down by Sections of the Scoping Boundary. Relevant data will be used to inform the baseline at subsequent stages of assessment.

Table 10.5 Environment Agency water quality archive sites within the Study Area

Section	Number of Water Quality Monitoring Stations
Section 1	2
Section 2	7
Section 3	5
Section 4	12
Section 5	12
Total	38

Water Framework Directive

10.5.28 A full summary of WFD classifications for relevant water bodies in the Study Area is provided in **Appendix 10A WFD Screening Assessment**, with a short summary provided here.

10.5.29 Within the Humber and Anglian RBDs the Scoping Boundary passes through several management and operational catchments. Water bodies within these operational catchments are generally not heavily modified but tend to only be at Moderate Ecological Status, due to biological quality elements and physico-chemical quality not being at good status.

10.5.30 The reasons for not achieving good ecological status are shared by many of the water bodies and include the risk of pollution from rural areas and from wastewater discharges. All water bodies 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). However, these are chemical substances that are unlikely to be introduced by any phases of the Project.

Ecological Potential of Water Features

10.5.31 There are 23 statutory and non-statutory designated ecological sites in or within a few kilometres downstream of the Study Area, and the relevance of these to identified water features is summarised in **Table 10.6** (Ref 10.27). Those identified include Ramsar sites, Special Protection Areas (SPA), and Special Areas of Conservation (SAC), which are internationally designated, and Sites of Special Scientific Interest (SSSI) and National Nature Reserves (NNR), which are nationally designated.

10.5.32 Within or downstream of the Study Area there are no known chalk rivers (Ref 10.15).

Table 10.6 Summary of all statutory and non-statutory designated ecological sites in and downstream of the Study Area

Site Name, SSSI ID	Designation type	Approx. NGR and Location relative to Project	Main Habitat and/or Reason for Designation	Hydrological Importance or flow path between site and Scoping Boundary
Surfleet Lows, 1002976	SSSI	TF 251 286, within Study Area	Neutral grassland	No, as not considered to be dependent on the quality and flow of water in any watercourse.
Dunsby Wood, 1002945	SSSI	TF 087 259, within Study Area	Broadleaved, mixed and yew woodland	No, as not considered to be dependent on the quality and flow of water in any watercourse.
The Hermitage, 1002948	SSSI	TF 009 265, within Study Area	Neutral grassland	No, as not considered to be dependent on the quality and flow of water in any watercourse.
Swinstead Valley, 1002830	SSSI	TF 006 222, within Study Area	Calcareous grassland	No, although this SSSI is adjacent to the West Glen River is not considered to be dependent on flows and quality of water in the brook.
Tortoiseshell Wood, 1003142	SSSI	SK 962 199, within Study Area	Broadleaved, mixed and yew woodland	No, as not considered to be dependent on the quality and flow of water in any watercourse.
Porter's Lodge Meadows, 1002875	SSSI	SK 961 196, within Study Area	Neutral grassland	No, as not considered to be dependent on the quality and flow of water in any watercourse.
Cribb's Lodge Meadows SSSI, Cribb's Meadow NNR 1003020	SSSI, NNR	SK 899 188, within Study Area	Neutral grassland	No, although this SSSI is adjacent to the River Witham it is not considered to be dependent on flows and quality of water in the brook.
Stonesby Quarry, 1003065	SSSI	SK 812 251, within Study Area	Calcareous grassland	No, as not considered to be dependent on the quality and flow of water in any watercourse.
Holwell Mouth, 1003038	SSSI	SK 725 245, within Study Area	Neutral grassland, mixed deciduous woodland, lowland fens, including basin, flood-plain, open water transition and valley fens	**Yes**, River Smite flows through the Scoping Boundary.

Site Name, SSSI ID	Designation type	Approx. NGR and Location relative to Project	Main Habitat and/or Reason for Designation	Hydrological Importance or flow path between site and Scoping Boundary
Frisby Marsh, 1003031	SSSI	SK 686 173, within Study Area	Lowland fens, including basin, flood-plain, open water transition and valley fens	**Yes,** SSSI is alongside River Wreake which flows through the Scoping Boundary.
Tilton Cutting, 1003067	SSSI	SK 763 052, within Study Area	Earth heritage	No as not relevant given the SSSI is a geological site.
Leighfield Forest, 1003042	SSSI	SK 765 028, within Study Area	Broadleaved, mixed and yew woodland and neutral grassland	No, although Eye Brook flows through Scoping Boundary, this SSSI is not considered to be water dependent on the brook.
Great Bowden Borrowpit, 1003035	SSSI	SP 743 898, within Study Area	Fen, marsh and swamp, and neutral grassland	No, although the habitat on the Site is dependent on local hydrology and the site is within the Scoping Boundary, it is isolated from any watercourse and surrounded on all sides by major roads, railway lines or areas of urban development.
Birch Spinney and Mawsley Marsh, 1002749	SSSI	SP 809 766, within Study Area	Lowland wetland including basin fen, valley fen, floodplain fen, waterfringe fen, spring/flush fen and raised bog lagg, lowland mixed deciduous woodland, and lowland neutral grassland	**Yes,** Unnamed watercourse flows through SSSI into Cransley Reservoir, both of which lie in the Scoping Boundary.
Badsaddle, Withmale Park and Bush Walk Woods, 1002748	SSSI	SP 832 720, within Study Area	Broadleaved, mixed and yew woodland	No, as this SSSI is not considered to be water dependent.
Hardwick Lodge Meadow, 1003134	SSSI	SP 834 702, within Study Area	Neutral grassland	No, although this SSSI is adjacent to Swanspool Brook it is not considered to be dependent on flows and quality of water in the brook.
Upper Nene Valley Gravel Pits SSSI, 1082789	SSSI, SPA, Ramsar	SP 928 693, within Scoping Boundary and Study Area	Standing open water and canals, and >20,000 non-breeding waterbirds	**Yes,** SSSI contains a series of lakes within the Scoping Boundary and Study Area and the downstream area of the River Nene corridor.

Site Name, SSSI ID	Designation type	Approx. NGR and Location relative to Project	Main Habitat and/or Reason for Designation	Hydrological Importance or flow path between site and Scoping Boundary
Wollaston Meadows, 1003075	SSSI	SP 897 648, within Study Area	Neutral grassland	No, as this SSSI is not considered to be water dependent.
Rutland Water, 1003058	SSSI, SPA, Ramsar	SK 906 071, south and east of the Study Area	Standing open water and canals, and >20,000 non-breeding waterbirds	No, although a large and important water body it is not believed to be downstream of any watercourses in Scoping Boundary that maybe affected by the Project.
The Wash, 1002998	SSSI, SAC, SPA, Ramsar, NNR	TF 537 402, north east of Study Area, approximately 6.5 km downstream	43 reasons, including, reefs, non-breeding and breeding birds, common seal, saline coastal lagoons, and sheltered muddy shores	No, coastal water designation 6.5 km downstream of River Welland. There will be significant dilution and dissipation of any chemical pollutants as conveyed along the River Welland and then by the tidal cycle.
Pitsford Reservoir, 1002766	SSSI	SP 773 701, west of Study Area	Standing open water and canals	No, water body not believed to be downstream of watercourses in Scoping Boundary that may be impacted by the Project.
Eye Brook Reservoir, 1003027	SSSI	SP 852 955, east of Study Area, approximately 9.5 km downstream	Standing open water and canals	No, water body at too great a distance to likely be impacted.
Wymondham Rough, 1003070	SSSI	South of Study Area, approximately 2.6 km downstream	Neutral grassland	No, as this SSSI is not considered to be water dependent despite being downstream along unnamed watercourses.

10.5.33 Ecological survey data will be used to further inform the determination of importance classification for each surface water receptor for the ES. Different types and levels of fish population, or the presence of relevant aquatic / semi-aquatic (e.g. water vole, otter) protected species, are relevant to the overall importance of a surface water feature.

Flood Risk

Flood Risk from Tidal and Fluvial Sources

10.5.34 The Environment Agency's Flood Map for Planning (Ref 10.20) and Long Term Flood Risk Map (Ref 10.21) were examined to assess the flood risk from fluvial, tidal and

surface water sources along the Scoping Boundary. This assessment was based on the updated flood maps published by the Environment Agency in 2025.

10.5.35 The Environment Agency's Flood Map for Planning provides an indication of the likelihood of flooding from fluvial and tidal sources. Flood Zone extents are shown on **Figure 10.2 Fluvial flood risk** and are defined as follows:

- Flood Zone 1 (low probability) is assessed as having a less than 0.1% annual probability of fluvial or tidal flooding (shown as clear on the Flood Map for Planning – all land outside of Flood Zones 2, 3a and 3b).
- Flood Zone 2 (medium probability) is assessed as having between a 0.1% and 1% annual probability of fluvial flooding, or between a 0.1% and 0.5% annual probability of tidal flooding (land shown in light blue on the Flood Map for Planning).
- Flood Zone 3a (high probability) is assessed as having a 1% or greater annual probability of fluvial flooding, or a 0.5% or greater annual probability of tidal flooding (land shown in dark blue on the Flood Map for Planning).

10.5.36 Flood Zone 3b ('functional floodplain') is not distinguished separately from Flood Zone 3a on the Flood Map for Planning (and therefore, not distinguished separately on **Figure 10.2 Fluvial flood risk**) but is a sub-part of Flood Zone 3. Flood Zone 3b comprises land where water from rivers or the sea has to flow or be stored in times of flood. It normally comprises land having greater than a 3.3% or greater annual probability of flooding, with existing flood risk management features and structures operating effectively, or land that is designed to flood (such as a flood attenuation scheme), even if it would only flood in more extreme events (such as 0.1% annual probability of flooding).

10.5.37 It should be noted that the Flood Zones shown on the Environment Agency's Flood Map for Planning (Ref 10.20) do not take account of the possible impacts of climate change and consequent changes in the future probability of flooding.

10.5.38 The River Welland, which is tidally influenced, flows north-east through the eastern edge of the proposed new overhead line section of the Project, just north of Spalding. There are large areas of Flood Zones 2 and 3 between Haconby and the eastern edge of the Scoping Boundary associated with this watercourse and its tributaries, including the River Glen, Vernatt's Drain and Blue Gowt Drain, as shown of **Figure 10-2 Fluvial flood risk**. There are also a large number of other drains contributing to flood risk east of Haconby, including the South Forty Foot Drain which discharges to the Haven to the north east of the Scoping Boundary. New infrastructure is proposed within this area of Flood Zone 2 and 3.

10.5.39 West of Haconby, the majority of the Scoping Boundary is within Flood Zone 1. There are small areas of Flood Zones 2 and 3 where tributaries of the River Glen, including the East Glen River, West Glen River, and other watercourses, including the River Witham, River Eye, Freeby Brook, Thorpe Brook, Scalford Brook and other unnamed Ordinary Watercourses cross the Scoping Boundary.

10.5.40 There are large areas of Flood Zones 2 and 3 along the reconductoring section of the Scoping Boundary from the new WMEL-B substation to the existing Grendon substation. These areas of Flood Zones 2 and 3 are located just west of Melton Mowbray (River Wreake), north east of Market Harborough (River Welland and River Jordan), and east of Northampton (River Nene). Along this section of the Scoping Boundary, there are also smaller areas of Flood Zones 2 and 3 associated with the Gaddesby Brook, Stonton Brook and River Ise.

10.5.41 The WMEL-A and WMEL-B substations are both proposed within Flood Zones 1, however the Siting Zone for the Weston Marsh substation infrastructure is located entirely within an extensive area of Flood Zone 3.

10.5.42 There are various flood defences located within the Scoping Boundary between Spalding and Melton Mowbray in the form of embankments and natural high ground. The locations of existing flood defences are presented in **Figure 10-2 Fluvial flood risk**. The impact of flood defences is not included within the Flood Zone extents. However, the Environment Agency have published a defended flood extents map which shows the potential impact of flood defences on flood risk, assuming the defences are operating in the way they were intended (or designed) to function. The defended flood extents data is noted to show inconsistent results in some areas. However, following a review of the watercourse and defence locations, they look accurate within the Scoping Boundary. Where the Flood Zones showed the greatest flood risk between Haconby and the eastern edge of the Scoping Boundary, the defended flood extents are significantly reduced, suggesting the flood defences are effective at reducing flood risk (if operating appropriately). The defended flood extents also show reduced flood risk within the Siting Zone for the Weston Marsh substation infrastructure. There are however some large areas of flooding around the watercourses which proposed towers may not be able to avoid.

Flood Risk from Surface water

10.5.43 Surface water flooding, also known as pluvial flooding, occurs when heavy rainfall overwhelms drainage systems or the rate of infiltration, causing water to accumulate on the surface and flow over land.

10.5.44 The Environment Agency's Surface Water Flood Map for Planning (Ref 10.21) presents the surface water flood risk across the Scoping Boundary. The Environment Agency describes the surface water flood risk levels as follows:

- Very Low Risk: Less than 0.1% change of flooding each year;
- Low Risk: Between 0.1% and 1% chance of flooding each year;
- Medium Risk: Between 1% and 3.3% chance of flooding each year; and,
- High Risk: Greater than 3.3% chance of flooding each year.

10.5.45 The flood risk from surface water varies across the Scoping Boundary with a similar trend to the flood risk from rivers and the sea. Along the section where the new overhead line is proposed, there are areas of high, medium and low surface water flood risk, which are associated with Ordinary Watercourses and low spots in topography. Within the reconductoring section of the Project, there is particularly high surface water flood risk just west of Melton Mowbray, north east of Market Harborough, and east of Northampton. This corresponds to the areas also at high risk of flooding from rivers.

10.5.46 When considering surface water flood risk to the proposed substation locations, there are several small Ordinary Watercourses (field drains) located within and around the proposed location of Substation WMEL-B. In particular, there is a narrow flow path with a high surface water flood risk through the centre of the WMEL-B Siting Area, which may be associated with a small field drain. For WMEL-A, there is a large surface water flow path directly through the proposed location, near to the southern boundary. The location of the Weston Marsh substation infrastructure is yet to be defined within the Siting Zone, but it is possible that there may be surface water flow paths near or within the location that will need to be considered. The surface water

flood risk, including at the substation locations, is presented in **Figure 10.3 Surface water flood risk**.

Flood Risk from Groundwater

10.5.47 Groundwater flooding occurs when water levels below the ground rise to the surface, often after prolonged rainfall or seasonal changes. This can happen in areas where the ground contains permeable rock or porous substrate that allows water to soak in and travel through, like chalk or sand and gravel.

10.5.48 The groundwater flood risk across the Study Area is represented in the Lincolnshire Preliminary Flood Risk Assessments (PFRA) (Ref 10.7) for the east of the Project, and in the Leicestershire Strategic Flood Risk Assessments (SFRA) (Ref 10.8) for the west of the Project. These maps show that there is low susceptibility (<25% chance) of groundwater flooding across the majority of the Study Area, including in the vicinity of the proposed substations. There are some small areas of greater susceptibility (>=50% <75% chance) of groundwater flooding distributed across the Study Area, as well as an area of high susceptibility (>=75%) around Buckminster. As the Project proposes an overhead line, there should be limited interaction with groundwater and any associated flooding. Ground investigations will be undertaken at the proposed substation locations and other relevant locations (e.g. access routes) which will confirm groundwater levels within these locations.

Flood Risk from Artificial Sources

10.5.49 The Environment Agency's Long Term Flood Risk Map (Ref 10.23) shows the majority of the Scoping Boundary is not located in an area expected to be impacted by reservoir flooding. This includes the locations of the two proposed WMEL substations, and the Weston Marsh substation infrastructure Siting Zone. There is however a small area around Spalding on the overhead line route, which is expected to flood if a dam or reservoir fails when river levels are considered normal (dry day scenario). There are also some small areas around Melton Mowbray, Market Harborough and Northampton along the reconductoring route, which are expected to flood in the dry day scenario (i.e. breach not connected to other rainfall or flooding), or when there is also flooding from rivers (i.e. the wet day scenario). However, the Environment Agency maintain reservoirs to very high standard and hence breaches are highly unlikely.

Flood Risk from Drainage Assets

10.5.50 The majority of the Scoping Boundary, including the locations of the two proposed WMEL substations, as well as the Weston Marsh substation infrastructure Siting Zone, is located within rural areas where there are likely to be limited sewer connections. Hence, the risk of flooding from sewers is not considered as a significant source of flooding. This is reflected within the South Kesteven SFRA (Ref 10.9) (Section 2) which shows no sewer flood records at the location of the WMEL-A substation, and within the Leicester and Leicester City SFRA (Ref 10.8) which shows only 2 sewer records at the postcode location of WMEL-B substation.

Future Baseline

10.5.51 The future baseline relates to known or anticipated changes to the current baseline in the future which would develop in the absence of the Project and should be considered in the ES.

10.5.52 Climate change is likely to lead to significant changes in hydrological conditions within the Study Area over the lifetime of the Project. Outputs from UKCP18 (Ref 10.36) and the Future Flows and Groundwater Levels Project (Ref 10.37) will be used to assess likely changes in ambient conditions for the purposes of the future baseline. For the FRA, the impacts of climate change on future flood risk would be assessed in line with current Environment Agency guidance (Ref 10.20). Appropriate climate change allowances from this guidance would be incorporated into assessments of future baseline flood risk. This would be factored into the design of flood resilience and mitigation measures and drainage systems for the proposed lifetime of the Project.

10.5.53 Changes in environmental legislation or the introduction of new standards under the Environment Act 2021 (Ref. 10.1) may drive future improvements in the ecological and chemical quality of water features, building on the implementation of future cycles of RBMPs. However, while the general water quality and health of aquatic ecosystems had been improving due to stricter planning policies and regulations, in recent years this positive trend is facing challenges. Climate change, population growth, a lack of recent investment in foul sewage treatment and sewer capacity, and the emergence of new chemicals and pollutants are all working against these improvements.

10.5.54 Despite these countering factors, it is not expected that the future baseline will significantly alter the overall importance of water features. Their significance is largely determined by attributes like their size, specific designations or presence of important fish populations or relevant protected species, or third party uses, and not water quality at any given time. The approach is therefore less sensitive to more subtle longer-term changes in water quality per se driven by climate change or stricter environmental regulation and standards.

10.5.55 The effects of known future development that share the same hydrological catchments as the Study Area would also be considered, in terms of the potential for these developments to impact on the status of water receptors as part of the cumulative effects assessment that will be reported in the ES. **Chapter 5 EIA Approach and Methodology** sets out the approach to the cumulative effects assessment.

10.6 Design and Control Measures

Design Measures

Overhead Line

10.6.1 Principal routing and siting for the Project has sought to avoid designated sites and sensitive receptors as far as possible, as set out in the Corridor Preliminary Routing and Siting Study (CPRSS) (Ref 10.30). As the Project progresses, further work will be done to identify and evaluate water environment receptors to avoid and minimise adverse impacts through design. This will include:

- As far as practicable lakes, reservoirs and large ponds will be avoided and disruption to watercourses and ditches minimised.
- Where possible crossing rivers and their floodplains at a narrow location.
- The horizontal clearance of any towers from watercourses and other water features is at least 15 m measured from the top of the bank, batter, edge of a culvert or landward toe of any existing flood defence to avoid hydromorphological impacts, where practicable.
- Overflight of watercourses by the overhead line will be as perpendicular as possible.
- Vertical clearance of the overhead line above the bank or flood bank crest level will be at a minimum height above the watercourse in line with National Grid standards and guidance (Ref 10.41).
- Consent will be sought for any works within 9m of drainage and floor risk infrastructure from the relevant IDB, in line with South Holland Drainage Board Byelaw 10.

Substations

10.6.2 The substation Siting Zones provided opportunity for siting a substation in areas of lowest flood risk as far as possible, considering the distribution of flood risk along the preferred route corridor, and taking into account other environmental and engineering constraints as described in the CPRSS (Ref 10-30). The sequential approach has been taken to identify potential locations for the new substation infrastructure. This has resulted in these being proposed within Flood Zone 1. This is in line with the NPPF (Ref. 10.21) and Section 5.8 of the National Policy Statement for Energy (EN-1) (Ref. 10.19). Therefore, the WMEL-A and WMEL-B substations are to be positioned in the lowest flood risk area as possible.

10.6.3 For the Weston Marsh substation infrastructure, the entire Siting Zone is located within an extensive area of Flood Zone 3 which poses a challenge with regards to location, design and mitigation, noting that the substation infrastructure will need to remain operational at times of flood. It should be noted that the flood zones do not account for the impact of nearby flood defences, and when accounting for the defences, the flood risk may reduce. Further investigation will be undertaken once the substation infrastructure locations have been confirmed.

10.6.4 Further design measures will be developed as the Project design evolves. This includes a minimum set-back distance between infrastructure and watercourses, flood mitigation measures infrastructure which must, through further design development, be located in higher flood risk areas due to a lack of alternative lower flood risk sites, and drainage design for substations to ensure no increase in flood or pollution risk arising from site runoff. These measures will be developed in collaboration with the engineering design team, other environmental disciplines and in consultation with relevant stakeholders.

10.6.5 There are areas of surface water flooding within both the proposed WMEL substation Siting Areas, and potentially affecting the Weston Marsh substation infrastructure. Surface water flood risk to and from the proposed substations will need to be assessed further, and compensatory storage or diversion of flow paths may be required depending on the design.

10.6.6 A suitable Drainage Strategy will be required for all substations and any other permanent above ground works. This will set out how changes in surface water runoff

will be captured and discharged. In doing so, the Drainage Strategy will describe how surface water runoff will be adequately attenuated and treated to avoid any change to flood risk and to protect the receiving water environment from pollution. Electrical equipment such as supercharged transformers contain oil and although self-bunded, surface water runoff from certain areas will be captured and passed through an oil separator. Reinforced concrete bunds forming the perimeter to the substations also act as a secondary spillage containment.

10.6.7 In keeping with the current National Standards for SuDs Guidance (Ref 10.1), where possible it is proposed that surface water outfalls to any receiving watercourse will be ditches. This avoids the need for the placement of new engineered structures along watercourses. The design of the final connection of these ditches to the receiving watercourse will be done after development consent is granted. Where required, the ES and FRA would identify specific measures, which would be adopted in the detailed design and secured through the development consent order.

10.6.8 Substations will generally be unmanned and operated remotely, and at this stage permanent welfare provision is not considered necessary.

Control and Management Measures

10.6.9 A range of standard measures for the Project will be adopted throughout the duration of the construction phase. An Initial Outline Code of Construction Practice (CoCP) is provided in **Appendix 4A Initial Outline Code of Construction Practice**. Measures relevant to the control and management of impacts that could affect the water environment are (refer to **Appendix 4A** for the full description of each measure):

- GG05: on environmental training for construction workers.
- GG07: requiring the development and implementation of a Construction Environmental Management Plan (CEMP).
- GG09: on reinstatement of land and vegetation.
- GG16: on storage of fuels, oils and chemicals.
- GG17: on the control of water runoff.
- GG18: on the wash down of vehicles and equipment, and use of sediment traps.
- GG24: requiring the development of an Emergency Action Plan for the construction phase.
- W01: on works near to, within, over or under Main Rivers or likely to affect the flow in Ordinary Watercourses, requiring appropriate environmental permits.
- W02: on measures to be employed for any open cut watercourse crossings.
- W03: on retention of riverbank and in-channel vegetation and use of natural substrate for temporary watercourse crossing culverts.
- W04: on measures to be employed where watercourses are to be crossed by construction traffic.
- W05: on requirements for works affecting watercourses, de-watering and other discharge activities.
- W06: on surface water drainage measures to be incorporated into the design.
- W07: on the use of the Environment Agency's Floodline service, for advance warning of potential local flooding events, and development and implementation of a suitable Flood Risk Action Plan.

- W08: on engagement and alternative supply where Private Water Supplies are impacted.
- W09: on response in the event of a significant spill during construction.
- W10: on potential severance of existing land drainage routes, including agricultural field drainage systems.
- W11: on control of runoff from working areas through implementation of a Drainage Management Plan (DrMP).

10.7 Potential for Significant Effects

10.7.1 A description of the construction, operation and maintenance of the Project stages is set out in **Chapter 4 Description of the Project**. The potential for significant effects and inclusion (Scoped in) and exclusion (Scoped out) of matters in the scope of the water environment ES assessment is set out below, taking into account the embedded design, and control and management measures described in Section 10.6.

10.7.2 Paragraphs 10.7.3 to 10.7.21 and **Table 10.7** identify the sources of potential impacts on receptors identified in the baseline that could result in a significant effect. Where an impact could give rise to significant effects on receptors identified in the Study Area, these are then scoped into the ES. Impact pathways that are unlikely to give rise to potentially significant effects on receptors identified in the Study Area are proposed to be scoped out of the ES.

Potential Sources of Impacts

Sources of Construction Impacts

10.7.3 Construction activities as described in **Chapter 4 Description of the Project**, including the following:

- soil stripping, earthworks and excavations;
- use and refuelling of plant and vehicles;
- watercourse crossings for access (culverts and clear span bridges);
- watercourse crossings for overhead lines (crossing protection scaffolds);
- temporary works (e.g. spoil storage; works on the floodplain);
- temporary drainage;
- water use for mixing small quantities of cementitious materials, dust suppression and welfare; and
- foul drainage from welfare facilities.

Sources of Operational Impacts

10.7.4 Operational activities as described in **Chapter 4 Description of the Project**, including the following:

- runoff (volume and quality) from any impermeable surfaces; and
- loss of floodplain storage/disruption of flow paths.

10.7.5 Potential adverse impacts on the surface water environment during operation are related to surface water runoff and spillage risk from the substation infrastructure.

Although there may be some small areas of new hardstanding elsewhere, these areas are likely to be too small to represent any pollution risk to water receptors or result in any change to flood risk.

Sources of Maintenance Impacts

10.7.6 Maintenance activities as described in **Chapter 4 Description of the Project** include the use of machinery and vehicles for non-intrusive inspections and localised repairs. Due to the small scale nature of these works, their low frequency and localised nature, there is no potential for significant effects providing standard good practice measures are adopted, that can be incorporated into task specific method statements and Environmental Management Plans.

Potential impacts

Construction Impacts

10.7.7 The control and management measures, described in Section 10.6 and detailed in **Appendix 4B**, would reduce the risk of pollution of the water environment during construction by removing pathways between sources and receptors for many construction activities. However, potential for specific construction works to cause localised and temporary pollution effects would remain.

10.7.8 Surface water quality of receiving water features may be adversely impacted by site runoff or the dewatering of excavations with high sediment concentrations, or from accidental spillage of fuels, oils, and other potentially polluting chemicals and liquids. The risk of pollution is higher when vegetation is removed and soil is exposed, as well as when works are close to or in, under or over watercourses. Herbicide may be used to control the growth of weeds on any stockpiles of soil and earth, therefore, stockpiles should be located away from water features to minimise risk and the use of herbicides will be carefully controlled.

10.7.9 There may be localised and temporary changes to hydromorphology at watercourse crossings for access tracks or temporary surface water outfalls. Construction works may also alter surface water flow paths, runoff volumes and rates of discharge, especially when vegetation has been removed, ground compacted, and temporary new hardstanding provided, as well as cause the build-up of sediment and other materials in the channel. This can potentially affect local flows in watercourses and result in localised erosion or deposition. Additionally, construction activities have the potential to create blockages in watercourses (e.g. from debris falling into watercourses or from the accumulation of silt).

10.7.10 During the construction of the substations, there would be the potential for impacts on existing land drainage regimes and associated surface water flood risk due to changes in land surface permeabilities or local topography. For example, vegetation cover may be stripped, earthworks may be undertaken, or existing land drainage infrastructure may be disrupted. Some infrastructure and working areas, including the temporary storage of excavation arisings, may also be located within Flood Zones 2 and 3. This has the potential to affect floodplain storage or conveyance during construction, and may require temporary compensation to be provided.

10.7.11 Overall, as detailed further in **Table 10.7**, there is the potential for some significant construction phase impacts on the surface water environment associated with the overhead line infrastructure and substations, which are **scoped into** the ES. Impacts

on flood conveyance and from any dewatering for substation construction are not likely to result in significant effects and are proposed to be scoped out, as detailed further in **Table 10.7**.

Operational Impacts

Overhead Line

10.7.12 Given the nature of these Project components (new overhead line and reconducted section), there is generally unlikely to be any permanent adverse impacts on watercourse hydromorphology, flow regimes or floodplains other than where existing towers may need to be replaced. In these cases, the application of suitable buffers from water features should avoid any significant adverse effects, although this is yet to be confirmed and so physical disturbance and change to flow regime is **scoped in** at this stage.

10.7.13 There would be no new consumptive water uses, and the water quality of water receptors would not be degraded. There are no significant sources of potential pollution associated with overhead line infrastructure once construction is complete. Therefore, the potential for likely significant effects on water features as well as any third-party users of water (such as licenced abstractions or PWS) is expected to be negligible and is proposed to be scoped out.

10.7.14 Alteration of ground elevations and changes in surface water flood flow pathways may result in the some very localised modification of surface water flows. The introduction of a barrier to natural overland flow paths, such as introduction of embankments may have permanent impacts on catchment dynamics for surfaced water. However, new electricity transmission infrastructure is likely to have a localised impact only that is unlikely to be significant, but this matter is **scoped in** at this stage due to the current uncertainty as to the location of new towers and set off distances.

10.7.15 There would be negligible adverse impacts to flood risk and land drainage during the operation of the overhead line, as long as the towers are situated at a minimum setback distance (assumed to be at least 15 m) from the banks of watercourses, with floodplains of watercourses avoided where possible, and appropriate post construction surface water management and land drainage systems are incorporated into the design. Some towers may have to be located within Flood Zones 2 and 3, however they are considered essential infrastructure. Any permanent impermeable surfaces associated with the towers could have a minimal impact on surface water runoff to watercourses and the capacity of floodplain storage, which is **scoped in.**

10.7.16 Overall, as detailed further in **Table 10.7**, it is proposed that the operational phase impacts associated with the overhead line infrastructure are **scoped in** to the ES at this stage, with the exception of increased water pollution risk, which is proposed to be scoped out.

Substations

10.7.17 The proposed WMEL-A and WMEL-B substations are located within Flood Zone 1, so are not at risk of fluvial flooding and should not require any associated compensatory storage. However, there is high existing surface water flood risk at the proposed substation locations. This will have to be managed in the design to ensure the surface water flood risk to nearby receptors is not increased. The Weston Marsh

substation infrastructure is located entirely within an extensive area of Flood Zone 3. This will be considered further through design to ensure that flood risk to the surrounding area is not increased.

10.7.18 The proposed substation infrastructure will have large areas of impermeable surfaces which have the potential to increase the volume of runoff in the area and increase flood risk to downstream receptors. This will be avoided through appropriate design of drainage infrastructure to limit runoff rates to the greenfield rate (or an alternative rate agreed with the LLFA or IDB).

10.7.19 There may also be plant and electrical equipment that contains oils and other potentially polluting substances. Drainage designs will incorporate the use of SuDS and other pollution control devices to ensure that the runoff discharged from the substations is of good quality, thereby avoiding water quality impacts on receiving water features.

10.7.20 Overall, it is proposed that the operational phase impacts associated with the substation infrastructure are **scoped into** the ES due to the potential risks, as detailed further in **Table 10.7**.

Maintenance Impacts

10.7.21 Maintenance activities would generally be limited to non-intrusive inspections. Where repairs are necessary, the activities involved would be similar to those for construction, albeit over a much smaller area and scale. Maintenance would be undertaken in line with National Grid operational management procedures and given the nature of the Project; maintenance activities are not considered likely to result in significant effects on surface water environment receptors. It is therefore proposed that all maintenance impacts are scoped out of any further assessment in the ES.

Table 10.7 Impacts, receptors and the potential for significant effect

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
Construction	Soil stripping, earthworks and excavations, watercourse crossings, and temporary works	Pollution from silt, and other construction materials. Potential reduction in channel flow capacity due to siltation.	Surface water receptors such as watercourses, standing water bodies, and surface water abstractions etc.	**Yes** – Although measures outlined in Section 10.6 would act to manage work site runoff to ensure water features are not polluted, nor their flow capacities reduced, the scale of the proposed works (especially at substation sites) means that the potential for a significant effect cannot be ruled out at this stage.	**Scoped in**
Construction	Watercourse crossings, temporary works, temporary drainage, use and refuelling of plant, water use on site, and foul drainage from welfare facilities.	Pollution from hydrocarbons, chemicals and other construction materials.	Surface water receptors such as watercourses, standing water bodies, and surface water abstractions etc.	**Yes** – Although measures outlined in Section 10.6 would act to manage work site runoff to ensure water features are not polluted, the scale of the proposed works (especially at substation sites) means that the potential for a significant effect cannot be ruled out at this stage.	**Scoped in**
Construction	Watercourse crossings for access and OHL; Temporary works (e.g. temporary outfalls)	Physical disturbance and change to flow regime.	Watercourses	**Yes** – the Project will cross numerous watercourses, with potential for temporary physical disturbance and impacts on flow regimes. Watercourses should be buffered from the location of new towers.	**Scoped in**

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
Construction	Temporary works (e.g. spoil storage, in the floodplain)	Increased fluvial flood risk to people, existing property and infrastructure.	People, existing property, and infrastructure.	**Yes –** parts of the proposed works (overhead line and substation infrastructure) are located within the floodplain to the east of the study area, temporary works in floodplain cannot be avoided.	**Scoped in**
Construction	Temporary works (e.g. construction discharges).	Impacts on other forms of flood risk (e.g. surface water)	People, existing property, and infrastructure.	**Yes** – the Project interacts will interact with numerous minor watercourses and areas at risk from different forms of flooding.	**Scoped in**
Construction	Crossing protection scaffolds for watercourse crossings.	Impact on flood conveyance arising from scaffolding structures on river banks.	Watercourses.	No – installations will be temporary, with an anticipated relatively small footprint, and can be managed through good practice mitigation and regulatory permitting process (e.g. FRAP or Land Drainage Consent). Effects on flood conveyance will be localised. Significant effects are not likely to occur.	Scoped out
Construction	Temporary works impacting groundwater – surface water interactions.	Impact from any dewatering for substation construction	Watercourses, standing water bodies and any surface water abstractions.	No – relatively low levels of permeability and low BFI values for most gauged watercourses suggest the risk is low. Construction works would also be temporary.	Scoped out

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
				Significant effects are not likely to occur.	
Operation	Operational runoff from impermeable surfaces associated with towers.	Increased surface water flood risk.	People, existing property, and infrastructure.	**Yes** - Permanent new impermeable surfaces associated with the overhead line infrastructure could increase surface water flood risk.	**Scoped in**
Operation	Operational runoff from impermeable surfaces associated with towers.	Increased water pollution risk.	Surface water receptors such as watercourses, standing water bodies, and surface water abstractions etc.	No – there are no significant sources of potential pollution associated with overhead line infrastructure once construction is complete. Significant effects are not likely to occur.	Scoped out
Operation	Placement of new towers and their foundations	Physical disturbance and change to flow regime.	Watercourses	**Yes** – there is currently uncertainty as to the location of new towers and a number of factors to balance and avoid water features by assumed off set distances may not always be possible.	**Scoped in**
Operation	Loss of floodplain storage/disruption to flow paths associated with overhead line.	Increased fluvial flood risk.	People, property and infrastructure	**Yes -** The footprint of the towers, which are likely to be a lattice design could cause increased flood risk from loss of floodplain storage/disruption to flow paths.	**Scoped in**

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
Operation	Loss of floodplain storage/disruption to flow paths associated with substations.	Increased flood risk.	People, property and infrastructure.	**Yes** – although the WMEL-A and WMEL-B substations are located in Flood Zone 1, there is a risk from surface water flooding. Both substation locations are impacted by a surface water flow path which will therefore need to be considered further so that flood risk to the development / surrounding land is not increased. The Weston Marsh substation infrastructure is located entirely within an extensive area of Flood Zone 3. This will need to be considered further so that flood risk to the development / surrounding land is not increased.	**Scoped in**
Operation	Surface water drainage from substations (including potential pollutants such as oil-filled transformers).	Increased surface water pollution risk.	Watercourses.	**Yes** – operational works have the potential to increase water pollution risk if suitable Drainage Strategies are not implemented. Any foul drainage will also need to be appropriately managed.	**Scoped in**
Maintenance	Use of machinery and vehicles for non-intrusive inspections and localised repairs.	Pollution of watercourses and physical disturbance.	Watercourses, standing water bodies, and any surface water abstractions.	No – the nature and scale of the maintenance activities would not cause pollution of the water	Scoped out

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
				environment and any physical disturbance would be highly localised. Good practice methods and mitigation measures to be applied to all maintenance works. Significant effects are not likely to occur.	

10.8 Proposed Assessment Methodology

Proposed Data Sources

10.8.1 The scope of the assessment is based on a review of baseline information and will be confirmed through review of additional data sources, site visits and further consultation with relevant stakeholders.

10.8.2 In addition to the data sources listed in **Table 10.2** in Section 10.5, additional information will be used to inform the assessment including site walkover surveys, data from Environment Agency flood models, drainage and flood data from Local Authority Surface Water Management Plans and Strategic Flood Risk Assessments, data defining surface water catchment areas and hydrological properties (e.g. rainfall, slopes, and soil permeability) from the Flood Estimation Handbook webservice (Ref 10.19), as data on licenced and private water abstractions, discharges and pollution incidents recorded on the National Incident Reporting System in the past 5 years.

Technical Guidance

10.8.3 The assessment will be undertaken in accordance with the following good practice and guidance documents:

- Planning Inspectorate Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive (Ref 10.38);
- Local flood risk management guidelines published by the LLFAs (various dates);
- British Industry Standards and Construction Industry Research and Information Association (CIRIA) publications (various dates);
- National Highways Design Manual for Roads and Bridges (DMRB) LA113 (Ref 10.39) and LA 104 for criteria to determine the significant of effect (Ref 10.40); and
- Guidance for Pollution Prevention series (various dates).

Proposed Assessment Methodology

10.8.4 This section summaries the methodology proposed for the water environment assessment. This includes the criteria for the determination of the importance of the receptor and the magnitude of change from baseline conditions.

10.8.5 Potential impacts of the Project on the water environment, drainage, and flood risk will be assessed by:

- Considering the existing (baseline) status of the water environment within the Study Area and relevant surroundings with respect to surface water features, flood risk, and drainage, following the source-pathway-receptor approach.
- Identifying potential impacts of the Project on the water environment, drainage and flood risk during the operational and construction phases, as well as cumulative effects.
- Proposing suitable mitigation measures to be incorporated into the Project design, construction and operation, to reduce or minimise significant adverse impacts (i.e. embedded mitigation).

10.8.6 Presenting additional mitigation measures to reduce, minimise or offset impacts, which remain after embedded and good practice measures have been accounted for.

Source-Pathway-Receptor Approach

10.8.7 The water environment, drainage, and flood risk impact assessment will be based on a source-pathway-receptor model. For an impact on the water environment to exist the following is required:

- An impact source (such as the release of polluting chemicals, particulate matter, or biological materials that cause harm or discomfort to humans or other living organisms, or the loss or damage to all or part of a water body);
- A receptor that is sensitive to that impact (i.e. water bodies and the services they support); and
- A pathway by which the two are linked.

10.8.8 The first stage in applying the Source-Pathway-Receptor model is to identify the causes or 'sources' of potential impact from the Project. The impact sources will be identified through a review of the details of the Project, including the size and nature of the Project, potential construction and operation methodologies and timescales. The next step is to undertake a review of the potential receptors, that is, the water environment receptors that have the potential to be affected. Water features including their attributes will be identified through desk study and walkover surveys, building on the baseline information provided in this chapter. The last stage of the model is, therefore, to determine if there is a viable exposure pathway or a 'mechanism' linking the source to the receptor. This will be undertaken in the context of local conditions relative to the water receptors within the Study Area, such as topography, geology, climatic conditions and the nature of the impact (e.g. the mobility of a liquid pollutant or the proximity to works that may physically impact a water body).

10.8.9 The assessment of the likely significant effects is qualitative, and will consider the construction and operational phases. Cumulative effects with other developments will be considered and reported in the ES.

10.8.10 To support the assessment of effects on the water environment some sub-topic specific assessments will be undertaken. These are described in more detail in the following sections.

Water Quality and Resource Assessment

10.8.11 Relevant data will be requested and obtained from the Environment Agency. A walkover survey will be undertaken by a hydromorphologist and a water resources specialist. This will be to observe surface water features in the Order Limits and to make observations about their current condition and character, the presence of existing risks and any potential pathways for construction and operation impacts as a result of the Project.

10.8.12 Although relevant background water quality data from the Environment Agency will be used to inform the baseline at subsequent stages of assessment, the importance of water bodies will be determined from a holistic review of water body features and does not rely on water quality. This is due to the principle that no controlled water may be polluted and thus it is not appropriate to potentially allow a greater impact based on a perceived lower water quality. Due to the nature of the types of water quality impacts from the Project, the assessment will be based on a risk assessment

basis that does not require input of raw background water quality data. This is considered an appropriate and standard approach. Water quality monitoring is only effective when there is a clear purpose for it and may require monitoring over a long period of time to ensure reliable and robust results, which is not considered the case here. Therefore, no water quality sampling is proposed to support the water environment assessment.

10.8.13 A qualitative assessment of potential effects on surface water quality from construction and operation of the Project will be undertaken. This will consider the risk to surface water features resulting from construction or future operation activity using the source-pathway-receptor approach. Where there is a risk of pollution, mitigation measures will be described with reference to best practice guidance (e.g. Guidance on Pollution Prevention Notes, British Industry Standards and Construction Industry Research and Information Association guidance).

Hydromorphology and Water Framework Directive (WFD) Assessment

10.8.14 A WFD Screening and Scoping Assessment has been undertaken in accordance with Planning Inspectorate Advice on The Water Framework Directive (Ref 10.38), and is provided as **Appendix 10-1: Water Framework Directive (WFD) Screening and scoping Assessment**. It has concluded that there are potential risks from the Project to the WFD objectives of those water bodies screened in. A scoping review has also been undertaken to identify which WFD elements may be at risk from Project activities. The risks of WFD impacts are currently considered to be low, and it is likely that all WFD risks can be designed out or mitigated through the application of standard protection measures. However, until designs affecting water bodies including appropriate mitigation measures become available, risks to WFD objectives cannot be ruled out. The assessment therefore concludes, on a precautionary basis, that a WFD Impact Assessment will need to be undertaken to demonstrate WFD compliance.

10.8.15 At the ES stage, when more construction and design information is available, the existing screening and scoping assessment will be extended to determine the potential for any non-compliance of the Project with WFD objectives for affected water bodies, using readily available information and Site observations obtained during site walkover surveys. This will include a qualitative examination of the potential construction and operation phase impacts of the Project on relevant WFD hydromorphological, biological and physio-chemical parameters. Depending on the outcomes of the assessment, more detailed investigations may be required, which will be determined in consultation with the Environment Agency.

Surface Water Drainage Strategy

10.8.16 The design of drainage systems aims to ensure that there would be no significant increases in flood risk downstream, during storms up to and including the 1 in 100 (1%) annual probability design flood, with an allowance for climate change.

10.8.17 A Surface Water Drainage Strategy will be prepared for the substations with the FRA to ensure the risk of surface water flooding is not increased as a result of the Project, including any increased land take for foundations and any access roads.

10.8.18 Careful consideration of the SuDS features, in keeping with local planning policy and through liaison with the LLFA, IDB and Environment Agency, will be undertaken to ensure that the Surface Water Drainage Strategy adequately attenuates and treats

runoff from the Project, whilst minimising flood risk to the Order Limits and surrounding areas.

10.8.19 In accordance with planning policies of the LLFAs (i.e. Leicestershire County Council, Lincolnshire County Council, West Northamptonshire Council and North Northamptonshire Council) and general good practice, mitigation will be provided by restricting surface water discharge rates and providing on-site attenuation, primarily via SuDS, such as Rural SuDS (RSuDS) techniques or other appropriate solutions.

10.8.20 A water quality risk assessment of the substation infrastructure sites will be undertaken using the Simple Index Approach described in The SuDS Manual (Version 6) (CIRIA C753) (Ref 10.29) and also summarised above. This will inform what, if any treatment measures are required to manage the risk from diffuse urban runoff to watercourses or ground.

Flood Risk Assessment

10.8.21 Given the size of the Project and the presence of areas of Floods Zone 2 and 3 within the Study Area, a FRA will be produced in accordance with the requirements of the NPS EN-1 and also the NPPF, PPG and local planning policy. The FRA will include a review of the current and future flood risk to the Project from all sources (including tidal, fluvial, surface water, groundwater, sewer, and artificial sources) to inform the Project design and set out any proposed mitigation requirements.

10.8.22 The proposed WMEL-A and WMEL-B substations are located within Flood Zone 1 and will be sequentially located away from any surface water flow paths. However, the siting area for the Weston Marsh substation infrastructure is located within a spatial extensive area of Flood Zone 3. An appropriate level of flood risk assessment will be required to assess this area for the most suitable site and to determine what design/mitigation measures are required.

Determining the Significance of Effects

10.8.23 The significance of effects will be determined using the principles of the guidance and criteria set out in the DMRB LA113 Road Drainage and the Water Environment (Ref 10.39) adapted to take account of hydromorphology, and DMRB LA 104 Environmental Assessment and Monitoring (Ref 10.40). This can be applied to all development types and represents the most robust and nationally accepted criteria for the determination of potential effects on the water environment.

10.8.24 In accordance with the stages of the methodology, there are three stages to the assessment of effects on water environment, drainage, and flood risk as follows:

- A level of importance (negligible to very high) is assigned to the water resources receptor from **Table 10.8** Criteria to Determine Receptor Importance (adapted from DMRB LA 113 (Ref 10.39)) and is based on a combination of attributes (such as water supply, biodiversity, recreation) and on receptors to flood risk based on the vulnerability of the receptor to flooding (i.e. as shown in **Table 10.8**, essential infrastructure would be very high importance, to water compatible development which would be of low importance).
- The magnitude of potential and residual impact (classed as negligible, minor, moderate or major adverse/ beneficial) is determined based on the criteria listed in **Table 10.9** and the assessor's knowledge of the Project. Embedded or standard mitigation measures are considered in the initial assessment, but any other mitigation is not considered until the assessment of residual effects. The

magnitude of impact will be determined considering the likelihood of the effect occurring. The likelihood of an effect occurring is based on a scale of certain, likely or unlikely. Likelihood has been considered in the case of water resources only, as likelihood is inherently included within the FRA.

- A comparison of the importance of the resource and magnitude of the impact (for both potential and residual impacts) results in an assessment of the overall significance of the effect on the receptor using the matrix presented in **Table 10.10** (Ref 10.40). The significance of each identified effect (both potential and residual) will be classed as very large, large, moderate, slight or neutral and either beneficial or adverse significance. Effects that are moderate or worse are significant in planning terms (shaded cells in **Table 10.10**).

Table 10.8 Criteria to Determine Receptor Importance (adapted from DMRB LA 113 (Ref 10.39))

Importance	General Criteria	Surface Water	Hydromorphology	Flood Risk
Very High	Nationally significant attribute of high importance - the receptor has little or no ability to absorb change without fundamentally altering its present character and is therefore of very high environmental value.	Designated Salmonid/ Cyprinid fishery. Watercourse having a WFD classification as shown in a RBMP and Q95 ≥ 1.0 m^3/s. Site protected / designated under UK habitat legislation (SAC, SPA, SSSI, Water Protection Zones, Ramsar site). Species protected by UK legislation. Critical social or economic uses (e.g. public water supply and navigation).	Unmodified, near to or pristine conditions, with well-developed and diverse geomorphic forms and processes characteristic of river and lake type.	Essential Infrastructure or highly vulnerable development.
High	The receptor has low ability to absorb change without fundamentally altering its present character, is of high environmental value, or of national importance.	Watercourse having a WFD classification as shown in a RBMP and Q95 < 1.0 m^3/s; Major Cyprinid Fishery. Species protected under UK habitat legislation. Critical social or economic uses (e.g. water supply and navigation). Important social or economic uses such as water supply, navigation or mineral extraction.	Conforms closely to natural, unaltered state and will often exhibit well-developed and diverse geomorphic forms and processes characteristic of river and lake type. Deviates from natural conditions due to direct and/or indirect channel, floodplain, bank modifications and/or catchment development pressures.	More vulnerable development.
Medium	Locally significant attribute of high importance - the receptor has moderate capacity to absorb change without significantly altering its present character.	Watercourses not having a WFD classification shown in a RBMP and Q95 >0.001m^3/s. May be designated as a local wildlife site and support a small/ limited population of protected species. Limited social or economic uses.	Shows signs of previous alteration and/or minor flow/ water level regulation but still retains some natural features or may be recovering towards conditions indicative of the higher category.	Less vulnerable development.
Low	Lower quality, common place - the receptor is tolerant of change without detriment to its character and is of a local and low environmental value.	Watercourses not having a WFD classification shown in a RBMP and Q95 <0.001m^3/s. Low aquatic fauna and flora biodiversity and no protected species. Minimal economic or social uses.	Substantially modified by past land use, previous engineering works or flow/ water level regulation. Watercourses likely to possess an artificial cross-section (e.g. trapezoidal) and will probably be deficient in bedforms and bankside vegetation. Watercourses may also be realigned or channelized with hard bank protection or culverted and enclosed. May be significantly impounded or abstracted for water resources	Water compatible development.

Importance	General Criteria	Surface Water	Hydromorphology	Flood Risk
			use. Could be impacted by navigation, with associated high degree of flow regulation and bank protection, and probable strategic need for maintenance dredging. Artificial and minor drains and ditches will fall into this category.	
Negligible	The receptor is resistant to change and is of little environmental value	Not applicable	Not applicable	Not applicable

Magnitude

10.8.25 The magnitude of change acting on water environment receptors is independent of the sensitivity of the feature. This is a largely qualitative assessment, which relies on professional judgement, although it may be informed by quantitative information and analysis where data is available and where appropriate. The criteria consider the scale and extent of the predicted change and the nature and duration of the impact. **Table 10.9** defines the criteria for how the magnitude of impact will be determined and provides potential examples in relation to the water environment.

Table 10.9 Magnitude of impact criteria (adapted from DMRB LA 113 (Ref 10.39))

Magnitude	Description
Major Adverse	Results in a loss of attribute and/or quality and integrity of the attribute.
Moderate Adverse	Results in impact on integrity of attribute, or loss of part of attribute.
Minor Adverse	Results in some measurable change in attribute's quality or vulnerability.
Negligible	Results in impact on attribute, but of insufficient magnitude to affect the use or integrity.
Minor Beneficial	Results in some beneficial impact on attribute or a reduced risk of negative impact occurring.
Moderate Beneficial	Results in moderate improvement of attribute quality.
Major Beneficial	Creation of new attribute or major improvement of attribute quality.
No Change	No loss or alteration of characteristic, features of elements; no observable impact in either direction.

Significance of effects

10.8.26 The importance of the receptor (**Table 10.8**) and the magnitude of impact (**Table 10.9)** are determined independently from each other and are then used to determine the overall significance of effects using the matrix provided in **Table 10.10.** Options for mitigation will be considered and secured where possible to avoid, minimise and reduce adverse impacts, particularly where significant effects may have otherwise occurred. The residual effects of the Project with identified mitigation in place will then be reported.

Table 10.10 Determination of significance matrix (Ref 10.40)

Importance of Receptor (Table 4)	Magnitude of Impact (Table 5)				
	Major	**Moderate**	**Minor**	**Negligible**	**No Change**
Very High	Very large	Large or very large	Moderate or large	Slight	Neutral
High	Large or very large	Moderate or large	Slight or moderate	Slight	Neutral
Medium	Moderate or large	Moderate	Slight	Neutral or slight	Neutral
Low	Slight or moderate	Slight	Neutral or slight	Neutral or slight	Neutral
Negligible	Slight	Neutral or slight	Neutral or slight	Neutral	Neutral

10.8.27 An impact is considered significant if the resultant effect is Moderate or greater. This matrix approach provides a guide to authors however professional judgement can be used in concluding the significance of an effect.

10.8.28 The following significance categories will be used for both potential and residual effects:

- Negligible: An imperceptible effect or no effect to a water resources receptor;
- Beneficial: A beneficial/ positive effect on the quality of a water resources receptor; or
- Adverse: A detrimental/ negative effect on the quality of a water resources receptor.

10.9 Assumptions and Limitations

10.9.1 To ensure transparency within the assessment, the following limitations and assumptions have been identified:

- Hydraulic modelling data will be requested from the Environment Agency, LLFAs and IDBs to characterise all aspects of flood risk to the Project. Where this is not available, hydraulic modelling may need to be undertaken as part of the FRA, although currently assumed not to be required. This will be discussed and agreed with the Environment Agency and LLFAs.
- It is assumed there is sufficient data from the Environment Agency to define the current condition and standards of protection provided by existing flood defences, and that no baseline condition surveys will be required. However, the Environment Agency will be consulted on this matter.
- The FRA will be based on desktop surveys and best available layout proposals in line with good practice. Where available, topographical data will be used to

support the FRA. In the absence of topographical data, LiDAR data will be used to inform the FRA.

- The locations of PWS and licensed water abstractions have not yet been determined and so these are not included as specific receptors at this time. Details of any abstractions from surface water features will be identified and included in the ES.
- Water activity permits (i.e. permitted discharges) are not yet known in detail and have not been considered in the current baseline. These receptors and water feature attributes will be considered as part of the ES once data has been received from the Environment Agency.
- It is assumed that the iterative design process will allow water receptors to be avoided and a suitable drainage strategy developed that includes attenuation and treatment of runoff, as required.
- It is assumed that the new line will be entirely overhead. If any undergrounding of the line is required, further consideration of any impacts to surface water features will be required. This may include identification of any watercourse crossings and then the determination of a suitable crossing method and the minimum depth below the bed.
- Visual surveys will be undertaken of accessible water/drainage features to inform the surface water environment impact and WFD assessments. Where possible, surveys will be scheduled for late autumn through to mid-spring when vegetation growth is at its lowest allowing greater visibility of water features, and when flows tend to be higher to aid identification of smaller, perhaps ephemeral or only intermittently flowing watercourses. However, it may not be possible to survey all crossing locations or structures due to access constraints and visibility issues (e.g. dense vegetation) cannot be ruled out entirely. Where this is the case, a survey close to the area of interest will be attempted and this data used as a proxy. In addition, some watercourses may be small, ephemeral and flow only intermittently, and these may not be identified in the field or observed when flowing.
- As part of the EIA, the risk from surface water drainage to surface or groundwater features from new above ground development will be assessed according to the Simple Index Approach presented in the C753 The SuDS Manual (Ref 10.29).
- At the time of writing, it is not known whether there would be a need for a permanent foul drainage solution from any of the proposed new substations. If required, options may include connecting to the nearest available public sewer or a self-contained independent non-mains domestic storage and/or treatment system. Iterative design and assessment will consider the options and adopt a precautionary worst-case approach.

10.10 Conclusion

10.10.1 This Scoping Report chapter has outlined relevant legislation, policy and guidance in relation to the water environment assessment for the Project. The data sources that will be used to define the current and future baselines have been presented, and the impact design, control and management measures that will be implemented. The potential for significant effects has been identified, as well as the associated source, impact and receptors as reported in **Table 10.7**.

10.10.2 A summary of the proposed scope of the assessment is provided in **Chapter 20 Summary**.

References

Ref 10.1 Defra (2025) National standards for sustainable drainage systems. [Online] Available at: https://www.gov.uk/government/publications/national-standards-for-sustainable-drainage-systems [Accessed August 2025].

Ref 10.2 MHCLG (2014) Planning Practice Guidance: Flood Risk and Coastal Change. [Online] Available at: https://www.gov.uk/guidance/flood-risk-and-coastal-change. [Accessed 31/07/2025].

Ref 10.3 Environment Agency (2018) The Environment Agency's approach to groundwater protection. [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/692989/Envirnment-Agency-approach-to-groundwater-protection.pdf. [Accessed August 2025].

Ref 10.4 Environment Agency (2025) Environmental permits: regulatory position statements. [Online] Available at: https://www.gov.uk/government/collections/basic-rules-environmental-permitting-regulatory-positions#groundwater-discharges [Accessed August 2025].

Ref 10.5 Environment Agency (2025) Anglian River Basin District [Online] Available at: https://environment.data.gov.uk/catchment-planning/RiverBasinDistrict/5 [Accessed August 2025].

Ref 10.6 Environment Agency (2025) Humber River Basin District [Online] Available at: https://environment.data.gov.uk/catchment-planning/RiverBasinDistrict/4 [Accessed August 2025].

Ref 10.7 Lincolnshire County Council (2011) Preliminary Flood Risk Assessment [Online] Available at: https://www.lincolnshire.gov.uk/flood-risk-management/preliminary-flood-risk-assessment [Accessed August 2025].

Ref 10.8 JBA (2017) Leicestershire and Leicester City Level 1 Strategic Flood Risk Assessment [Online] Available at: https://www.llstrategicgrowthplan.org.uk/the-plan/stage-two/developing-the-evidence-base/leicestershire-leicester-city-level-1-strategic-flood-risk-assessment/ [Accessed August 2025].

Ref 10.9 AECOM (2017) South Kesteven District Council Strategic Flood Risk Assessment [Online] Available at: https://www.southkesteven.gov.uk/planning-building-control/planning-policy-local-plans/south-kesteven-local-plan [Accessed August 2025].

Ref 10.10 Met Office (2025) Location-specific long-term averages at Wittering. [Online]. Available at: https://www.metoffice.gov.uk/research/climate/maps-and-data/location-specific-long-term-averages/gcrem3s9m [Accessed August 2025].

Ref 10.11 Ordnance Survey Mapping (2025) Bing Maps [Online] Available at: https://www.bing.com/maps?cp=52.804386%7E-0.205645&lvl=12.2&style=s [Accessed August 2025].

Ref 10.12 British Geological Survey (2025) Geology Viewer [Online]. Available at: https://geologyviewer.bgs.ac.uk/?_ga=2.242096642.1894801621.1755169496-126629760.1755169496 [Accessed August 2025].

Ref 10.13 British Geological Survey (2025) GeoIndex Onshore [Online] Available at: https://mapapps2.bgs.ac.uk/geoindex/home.html?_ga=2.174220770.1367311209.1755173341-451263298.1755173341 [Accessed August 2025].

Ref 10.14 DEFRA. (2017) Designation of 'main rivers': guidance to the Environment Agency [Online] Available at: https://www.gov.uk/government/publications/designation-of-main-rivers-guidance-to-the-environment-agency/designation-of-main-rivers-guidance-to-the-environment-agency [Accessed August 2025].

Ref 10.15 Department for Environment, Food and Rural Affairs (DEFRA) (2024). MAGIC Maps. [Online] Available at: https://magic.defra.gov.uk/MagicMap.html [Accessed August 2025].

Ref 10.16 Cranfield Soil and AgriFood Institute (2024) Soilscapes Map [Online]. Available at https://www.landis.org.uk/soilscapes/ [Accessed August 2025].

Ref 10.17 DEFRA (2025) Hydrology Data Explorer. [Online] Available at: https://environment.data.gov.uk/hydrology/explore [Accessed August 2025].

Ref 10.18 Environment Agency (2019). Environment Agency Statutory Main River Map [Online]. Available at: https://www.arcgis.com/apps/webappviewer/index.html?id=17cd53dfc524433980cc333726a56386 [Accessed August 2025].

Ref 10.19 UK Centre of Ecology & Hydrology Flood Estimation Handbook Web Service. [Online]. Available at: https://fehweb.ceh.ac.uk/ [Accessed August 2025].

Ref 10.20 GOV.UK (2010). Flood Map for Planning [Online]. Available at: https://flood-map-forplanning.service.gov.uk/ [Accessed August 2025].

Ref 10.21 Environment Agency (2024) Long Term Flood Risk [Online]. Available at: https://www.gov.uk/check-long-term-flood-risk [Accessed August 2025].

Ref 10.22 NAFRA Dataset (2020) [Online]. Available at: https://www.arcgis.com/home/item.html?id=f8488c24a34f4456a69abd894a2ba180 [Accessed August 2025].

Ref 10.23 Environment Agency Risk of Flooding from Reservoirs (2024) [Online]. Available at: https://check-long-term-flood-risk.service.gov.uk/map [Accessed August 2025].

Ref 10.24 Environment Agency Flood Defence Asset Database (2024) [Online]. Available at: https://www.data.gov.uk/dataset/76828b72-3c9c-4700-83c7-d7c36047d322/floodmap-for-planning-rivers-and-sea-spatial-flood-defences-without-standardisedattributes [Accessed August 2025].

Ref 10.25 Environment Agency (2024). Catchment data explorer database [Online]. Available at: https://environment.data.gov.uk/catchment-planning/ [Accessed August 2025].

Ref 10.26 Environment Agency (2025). Water Quality Data Archive [Online]. Available at: https://environment.data.gov.uk/water-quality/view/landing [Accessed 11/08/2025].

Ref 10.27 Natural England (2025) Designated Sites View [Online]. Available at: https://designatedsites.naturalengland.org.uk/SiteSearch.aspx [Accessed August 2025].

Ref 10.28 Environment Agency (2025) Check for Drinking Water Safeguard Zones and NVZs [Online]. Available at: https://environment.data.gov.uk/farmers/ [Accessed August 2025].

Ref 10.29 CIRIA (2015) The SuDS Manual (C753F). [Online] Available at: https://www.ciria.org/ItemDetail?iProductCode=C753F&Category=FREEPUBS [Accessed August 2025].

Ref 10.30 UK National River Flow Archive (2025) [Online] Available at: https://nrfa.ceh.ac.uk/data/search [Accessed August 2025].

Ref 10.31 Environment Agency (2025) Drinking Water Protected Areas (Surface Water) [Online] Available at: https://www.data.gov.uk/dataset/3d136e9a-78cf-4452-824d-39d715ba5b69/drinking-water-protected-areas-surface-water [Accessed August 2025].

Ref 10.32 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 August 2025].

Ref 10.33 Environment Agency (2021). Welland Catchment Abstraction Licensing Strategy. [Online]. Available at: https://assets.publishing.service.gov.uk/media/606d942fd3bf7f4017cbef03/CAMS-The-Welland-Catchment-Abstraction-Management-Strategy.pdf [Accessed August 2025].

Ref 10.34 Environment Agency (2020). Witham Abstraction Management Strategy [Online]. Available at: https://www.gov.uk/government/publications/witham-abstraction-licensing-strategy/witham-abstraction-licensing-strategy [Accessed 12/08/2025]

Ref 10.35 Environment Agency (2020). Soar Abstraction Management Strategy [Online]. Available at: https://assets.publishing.service.gov.uk/media/5f574829e90e070995ad8255/Soar_Abstraction_Licensing_Strategy.pdf [Accessed August 2025].

Ref 10.36 Met Office (2024). UKCP18 Summaries and Headline Findings [Online]. Available at: https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/summaries/index [Accessed 15/08/2025].

Ref 10.37 UK Centre for Ecology & Hydrology (2024). Future Flows and Groundwater Levels [Online]. Available at: https://www.ceh.ac.uk/our-science/projects/future-flows-and-groundwater-levels [Accessed: August 2025].

Ref 10.38 Planning Inspectorate (2025). Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive [Online]. Available at: https://www.gov.uk/government/publications/nationally-significant-infrastructure-projects-advice-note-eighteen-the-water-framework-directive [Accessed August 2025].

Ref 10.39 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/tses/attachments/d6388f5f-2694-4986-ac46-b17b62c21727?inline=true [Accessed August 2025].

Ref 10.40 National Highways (2020) Design Manual for Roads and Bridges (DMRB) LA 104 Environmental Assessment and Reporting [Online]. Available at: https://www.standardsforhighways.co.uk/search/0f6e0b6a-d08e-4673-8691-cab564d4a60a [Accessed August 2025].

Ref 10.41 National Grid (n.d.) Documents [Online]. Available at: https://commercial.nationalgrid.co.uk/documents/all [Accessed September 2025]

11. Geology and Hydrogeology

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11. Geology and Hydrogeology

11.1 Introduction

11.1.1 This chapter presents how the Geology and Hydrogeology assessment will consider the potential likely significant effects relating to land contamination, groundwater and designated geological sites, that may arise from the construction, operation and maintenance of the Project (as described in **Chapter 4, Description of the Project**). It describes the methodology and datasets to be used within the assessment, presents an overview of the baseline conditions, and identifies the potential likely significant effects to be considered within the assessment, and how these will be assessed for the purpose of the Environmental Statement (ES). As detailed in **Chapter 4, Description of the Project**, the decommissioning of the Project has been scoped out of the environmental assessment.

11.1.2 The Scoping Boundary is illustrated on **Figure 1.2 Scoping Boundary**.

11.1.3 This chapter should be read in conjunction with the following chapters which provide the Project context and approach to EIA:

- **Chapter 2 Regulatory and Planning Policy Context;**
- **Chapter 3 Main Alternatives Considered;**
- **Chapter 4 Description of the Project;** and
- **Chapter 5 EIA Approach and Methodology**.

11.1.4 There may be interrelationships with other disciplines. Therefore, this chapter should also be read in conjunction with the following chapters:

- **Chapter 8 Ecology and Biodiversity –** this chapter covers effects identified by the Geology and Hydrogeology assessment that may affect ecological receptors;
- **Chapter 9 Cultural Heritage –** this chapter covers effects identified by the Geology and Hydrogeology assessment that may affect archaeological remains;
- **Chapter 10 Water Environment –** this chapter considers effects on groundwater identified by the Geology and Hydrogeology assessment that may affect hydrological receptors; and
- **Chapter 12 Agriculture and Soils –** this chapter covers the temporary and permanent loss of soils and soil functions.

11.1.5 This chapter is supported by the following figures and appendices:

- **Figure 1.2 Scoping Boundary.**
- **Figure 11.1 Geology & Hydrogeology Location Plan and Study Areas (including Substations).**
- **Figure 11.2 Superficial Geology.**
- **Figure 11.3 Bedrock Geology.**

- **Figure 11.4 Groundwater Features.**

11.2 Legislation, Policy and Guidance

11.2.1 Key legislation, policy, and planning guidance relevant to the assessment of potential effects on Geology and Hydrogeology associated with the construction, operation, and maintenance of the Project is provided in **Chapter 2 Regulatory and Planning Policy Context, Appendix 2A Key Legislation, Appendix 2B National and Regional Planning Policy and Appendix 2C Local Policy**.

11.2.2 Technical Guidance relevant to the Geology and Hydrogeology chapter is provided below:

- The Environment Agency Land Contamination Risk Management (LCRM) guidance (2023) (Ref 11.1).
- The Environment Agency Protect groundwater and prevent groundwater pollution (2017) (Ref 11.2).
- The Environment Agency Groundwater protection technical guidance (2017) (Ref 11.3).
- The Environment Agency Pollution Prevention Guidance (PPG) notes (PPG1, PPG5, PPG8 and PPG21) (Ref 11.4).
- Construction Industry Research and Information Association (CIRIA) Contaminated land risk assessment guidance (2001) (Ref 11.5).
- Design Manual for Roads and Bridges (DMRB) Environmental assessment and monitoring LA104 (2020) (Ref 11.6).
- Design Manual for Roads and Bridges (DMRB) Sustainability and Environment Appraisal LA 109 Geology and soils" (2019) (Ref 11.7).

11.3 Consultation and Engagement

11.3.1 The ES will be informed by consultation and engagement with stakeholders, including the Environment Agency, Mining Remediation Authority (formerly the Coal Authority), Local Authorities and County Councils. These are: South Holland, South Kesteven, Melton, Harborough (District Councils), North Northamptonshire and West Northamptonshire (Unitary Authorities) and Leicestershire and Lincolnshire (County Councils). In addition, engagement will be undertaken with non-statutory stakeholders as required to ensure that specialist local views and expertise can be considered as part of the ES.

11.3.2 In preparing this Scoping Report chapter, consideration has been given to stakeholder feedback received following Non-Statutory Consultation held between 11 June and 6 August 2025, as set out in **Table 11.1.**

Table 11.1 Engagement with Stakeholders

Stakeholder	Summary of response	Consideration in the Scoping Report
The Forestry Commission	Concerns about the impact of site stored fuel or chemicals on woodland habitats including ancient and veteran trees.	The storage of fuel and other chemicals has been considered during the construction, operation and maintenance phases. **Table 11.2** sets out the proposed scope of assessment, with management and mitigation measures presented in **Section 11.6** and **Appendix 4A Initial Outline CoCP** (GH04 and GG09). Ancient woodland has been avoided through consideration during option selection and routeing. **Chapter 8 Ecology and Biodiversity** considers potential effects and mitigation required on ancient woodland and veteran trees including pollution. Tree surveys will be undertaken in accordance with planning requirements.
Mineral Products Association (MPA)	Concerns about the lack of consideration of mineral safeguarding areas (MSAs) along the proposed development.	**Section 11.7.4** and **Chapter 4** provide detail on how mineral safeguarding areas will be presented in the Minerals Assessment Report which will be provided with the application for development consent.
Environment Agency	There is potential for contamination to be present across the proposed development, historical landfills are present along parts of the route. The proposed development crosses over areas of Source Protection Zone (SPZs) and will require further detail to ensure groundwater is protected during all phases.	Impacts on human health, geology, soil and groundwater during the construction phase have been considered**. Table 11.2** sets out the proposed scope of assessment, with management and mitigation measures presented in **Section 11.6** and **Appendix 4A Initial Outline CoCP**. **Section 11.5** sets out the baseline conditions, including areas of potential contamination (historical

Stakeholder	Summary of response	Consideration in the Scoping Report
		landfills) and groundwater receptors.
Mining Remediation Authority (formerly Coal Authority)	The Project lies within a coal mining area which may contain unrecorded coal mining related hazards.	Impacts on human health regarding the coal mining reporting area have been considered in **Table 11.2** which sets out the proposed scope of assessment, with management and mitigation measures presented in **Section 11.6** and the **Outline CoCP**. **Section 11.5.42** of the baseline outlines the coal mining reporting area and mine entries.

11.4 Study Area

11.4.1 The Scoping Boundary is shown on **Figure 1.2 Scoping Boundary**.

11.4.2 For the purposes of this assessment, the Study Area is defined as the Scoping Boundary plus a 250 m buffer for geological receptors and a 500 m buffer for hydrogeological receptors which has been applied, as shown on **Figure 11.1 Location Plan and Study Areas**. This is considered to be a proportionate and suitable approach for the assessment. Hydrogeological receptors further from the Study Area are more susceptible to effects from the Project due to the mobile nature of groundwater and corresponding potential for the Project to affect receptors at a greater distance.

11.4.3 The Study Area for the ES will be refined throughout the development of the Project, ultimately comprising the land within the Order Limits with the same buffer zones defined above applied.

11.5 Baseline Conditions

Data Sources

11.5.1 The known or predicted current and future baseline environment described in this section has been informed by the following data sources:

- British Geological Survey (BGS) 1:50,000 scale geological mapping, available online at the BGS GeoIndex (Ref 11.13).
- Department for Environment, Food and Rural Affairs (Defra) Multi-Agency Geographic Information for the Countryside (MAGIC) interactive Map (Ref 11.15).
- Defra Hydrology Data Explorer (Ref 11.16).
- Environment Agency data download for Groundwater Dependent Terrestrial Ecosystem information (GWDTE) (Ref 11.17).

- Environment Agency interactive map for Drinking Water Safeguard Zones and Nitrate Vulnerable Zones (NVZ) (Ref 11.18).
- Defra Catchment Data Explorer (Ref 11.19).
- Environment Agency Historical and Authorised landfill records, available online (Ref 11.20, Ref 11.21).
- Natural England designated Sites, i.e. Geological SSSIs (Ref 11.22).
- Satellite Imagery.

11.5.2 The initial overview of the baseline conditions provided in this chapter of the Scoping Report is intended only to establish the scope of effects that require assessment, so is focused only on key datasets and should not be considered exhaustive. More detailed information will be obtained and reported in the Preliminary Environmental Information Report (PEIR) and ES. Details of the proposed additional data gathering are provided in Section 11.8.

Baseline

11.5.3 The Project has been divided into five Sections as described in **Chapter 4, Description of the Project** and shown in **Figure 1.2 Scoping Boundary**. The Sections are defined by the geographical alignment of the Scoping Boundary and the administrative boundaries of the local authorities. The baseline environment is reported for the Study Area of the five Sections as shown on **Figure 11.1 Location Plan and Study Areas**. The five Sections are presented below:

- Section 1: receptors within South Holland;
- Section 2: receptors within South Kesteven;
- Section 3: receptors within Melton;
- Section 4: receptors within Harborough; and
- Section 5: receptors within North Northamptonshire and West Northamptonshire.

11.5.4 The geological and hydrogeological setting and potential contamination for each Section is discussed below. The superficial and bedrock geology in the Study Area is shown in **Figure 11.2** and **Figure 11.3** respectively, and groundwater features shown in **Figure 11.4**.

Section 1

11.5.5 Section 1 comprises new overhead line from Weston Marsh substation to South Forty Foot Drain and includes Weston Marsh Substation Infrastructure.

11.5.6 The published geology within the Study Area for Section 1 is recorded to comprise:

- Made Ground deposits are recorded within the eastern extent of the Scoping Boundary and the wider 250 m Study Area. Further Made Ground deposits are likely to be present in areas adjacent to roads, tracks, railways and existing properties/structures including the A16, the East Coast Main Line Railway and Vernatt's Drain.

- Superficial deposits, present across the entire Study Area are recorded to comprise: Tidal Flat Deposits – Clay and Silt with a small pocket Abbey Sand and Gravel in the western extent of the Study Area for Section 1.
- Bedrock is recorded to comprise the Oxford Clay Formation – Mudstone present across the entirety of the Study Area for Section 1.

11.5.7 Both the superficial deposits and the bedrock are defined by the Environment Agency as Unproductive Strata (strata that are largely unable to provide usable water supplies and are unlikely to have surface water and wetland ecosystems dependent on them).

11.5.8 Bedrock underlying the Refine Weston Marsh Substation Siting Zone comprises the Oxford Clay Formation. The underlying superficial deposits include Tidal Flat Deposits.

11.5.9 Radon levels in the area have been assessed using the published maps by the UK Health Security Agency (UKHSA) and are shown on the BGS on shore GeoIndex (Ref 11.13). The proposed Weston Marsh Substation Infrastructure is located within an area of low radon potential where less than 1% of homes are at or above the radon Action Level.

11.5.10 There are no WFD Groundwater bodies located within the Study Area for Section 1. WFD waterbodies are examined in more detail in **Chapter 10 Water Environment**.

11.5.11 The western end of Section 1 is located on two areas of Source Protection Zone (SPZ) 1 – Inner Protection Zone, surrounded by SPZ 2 – Outer Protection Zone and SPZ 3 – Total Catchment which share the same boundaries. These areas cover the westernmost 2km of the Study Area for Section 1, from near Northgate and to the west.

11.5.12 There are no groundwater Drinking Water Safeguard Zones within the Study Area for Section 1.

11.5.13 There are no GWDTE within the Study Area for Section 1.

11.5.14 Locations of groundwater abstractions and discharges will be identified and assessed at ES stage.

11.5.15 One historical landfill site is recorded within the Scoping Boundary of Section 1 approximately 900 m northwest of Crossgate. A further two historical landfill sites are recorded within the wider 250 m Study Area , but no authorised landfill sites are present.

Section 2

11.5.16 Section 2 includes new overhead line and the WMEL-A Substation.

11.5.17 The published geology within the Study Area for Section 2 comprises:

- Made Ground deposits are recorded within the Study Area for Section 2 and are located at the western extent near Sewstern associated with former pits. Further Made Ground is likely to be present in areas adjacent to roads, railways and existing properties/ structures such as the A1 which passes through Lobthorpe and associated with the East Coast Main Line Railway.
- Superficial deposits, present across the entirety of the Study Area for Section 2 are recorded to comprise:

- Till, comprising sand and gravel of Mid Pleistocene age largely present in the central and western extent of the Study Area for Section 2.
- Glaciofluvial deposits comprising sand and gravel are present in pockets across the Study Area for Section 2.
- Abbey Sand and Gravel present in isolated pockets within the east of the Study Area for Section 2.
- Alluvium comprising clay, silt, sand and gravel present along the traces of rivers across the Study Area for Section 2.
- River Terrace deposits comprising sand and gravel present in the east of the Study Area for Section 2 and also present adjacent to the West Glen River in places.
- Peat is present southeast of Dunsby within the Study Area for Section 2.
- Tidal Flat Deposits – comprising clay and silt.

- Bedrock is recorded to comprise the following across the Study Area for Section 2:
  - Whitby Mudstone Formation.
  - Northampton Sand Formation - Ironstone, Ooidal.
  - Grantham Formation – Sandstone, Siltstone and Mudstone.
  - Limestone of the Lower Lincolnshire Limestone Member and Upper Lincolnshire Limestone Member is present in the western extent ofthe Study Area for Section 2.
  - Rutland Formation – Limestone present in pockets in the centre of the Study Area, and areas of argillaceous (clayey) rocks with subordinate Sandstone and Limestone present across much of the western half of the Study Area for Section 2.
  - Limestone of the Blisworth Limestone Formation and Cornbrash Formation.
  - Oxford Clay Formation – Mudstone.
  - Kellaways Sand Member – Sandstone and Siltstone.
  - Mudstone of the Kellaways Clay Member and Oxford Clay Formation.

11.5.18 Bedrock underlying the proposed WMEL-A Substation comprises Rutland Formation, Limestone of the Lower and Upper Lincolnshire Limestone Member and Blisworth Limestone Formation. No superficial deposits are recorded underlying the WMEL-A Substation.

11.5.19 Most of the superficial deposits present across the Study Area for Section 2 are designated as secondary A aquifers, these are the Glaciofluvial deposits, Abbey Sand and Gravel, Alluvium, and River Terrace Deposits. Secondary aquifers are described as permeable layers that can support local water supplies and may form an important source of base flow to rivers. Till and the River Terrace Deposits located near the West Glen River are described as secondary undifferentiated aquifers this means that it is impossible to categorise as either secondary A or secondary B because of variable characteristics of the rock type. Secondary B aquifers are mainly lower permeability layers that may store and yield limited amounts of groundwater

through characteristics such as thin cracks (fissures) and openings or eroded layers. Tidal Flat Deposits and Peat are described as unproductive strata. There are also areas where superficial deposits are absent across much of the central part of the Study Area for Section 2.

11.5.20 The Limestone of the Lower Lincolnshire Limestone Member and Upper Lincolnshire Limestone Member, and Bilsworth Limestone Formation underlying the Study Area for Section 2 are described as principal aquifers (layers of rock that have high intergranular and/or fracture permeability and a high level of water storage, they may support water supply and/or river base flow on a strategic scale). The Northampton Sand Formation, Cornbrash Formation, Kellaways Sand Member, and Rutland Formation – Limestone underlying the Study Area are all described as secondary A aquifers. The Rutland Formation – Sandstone and Limestone is described as a secondary B aquifer. The Grantham Formation is described as a secondary undifferentiated aquifer. The Whitby Mudstone Formation, Mudstone of the Kellaways Clay Member and Oxford Clay Formation are described as unproductive strata.

11.5.21 The Study Area for Section 2 crosses four WFD Groundwater bodies. Welland Limestone Unit B has an Overall Water Body status of Poor, due to a Poor Quantitative Status, despite a Good Chemical Status. Welland Mid Jurassic has an Overall Water Body status of Good, with Good Quantitative and Chemical statuses. Welland Limestone Unit A has an Overall Water Body status of Poor, due to a Poor Chemical status, despite a Good Quantitative status. Witham Lias has an Overall Water Body status of Good, with Good Quantitative and Chemical statuses.

11.5.22 Most of the Study Area for Section 2 is located on SPZs, with SPZ 3 – Total Catchment other than a small area extending 5 km west of Lobthorpe to the western boundary. SPZ 2 – Outer Protection Zone covers all of the Study Area for Section 2 east of Swayfield, which accounts for approximately three quarters of the Study Area for Section 2. Much of the eastern most 4 km of the Study Area for Section 2 is covered by SPZ 1 – Inner Protection Zone, this is in the area west of Haconby. The areas of SPZ 1 are not continuous, there are areas between these which have the lower classification of SPZ 2.

11.5.23 There are no groundwater Drinking Water Safeguard Zones within the Study Area for Section 2.

11.5.24 The Lincolnshire Limestone groundwater NVZ covers most of the western part of the Study Area for Section 2 there is complete coverage across the Study Area for Section 2 from 4 km west of Morton to 3 km east of the crossing of the A1; further west, the NVZ is absent.

11.5.25 There are two GWDTEs within the Study Area for Section 2, The Hermitage SSSI located between Irnham and Corby Glen, and Porter's Lodge Meadows SSSI located between South Witham and Castle Bytham. Both are located within the 500m buffer but not within the Scoping Boundary.

11.5.26 Locations of groundwater abstractions and discharges will be identified and assessed at ES stage.

11.5.27 Radon levels in the area have been assessed using the published maps by the UK Health Security Agency (UKHSA) and shown on the BGS on shore GeoIndex (Ref 11.13). The proposed WMEL-A Substation is in an elevated area of radon potential, where more than 10-30% of homes are at or above the radon Action Level.

11.5.28 No historical or authorised landfills are present within the Scoping Boundary; one historical landfill is recorded within the wider 250 m Study Area.

11.5.29 Existing or historical airfields present within the Study Area for Section 2 may be a source of potential contamination. Royal Air Force (RAF) North Witham is a former RAF station situated within the Study Area located approximately 80 m north of the Scoping Boundary, the site opened and operated during the Second World War. Historical mapping shows part of the runways to be within the Study Area for Section 2 of the Scoping Boundary. Potential contamination sources associated with RAF Witham include underground tanks, fuel spillages and asbestos.

Section 3

11.5.30 Section 3 includes new overhead line, WMEL-B Substation and reconductoring of the existing overhead line.

11.5.31 The published geology within the Study Area for Section 3 comprises:

- Made Ground deposits are recorded within the Scoping Boundary located near Wartnaby, Ab Kettleby, Holwell, Saxelbye, Asfordby, Ashby Folville and a small area in the northeastern corner located near Sewstern. Further Made Ground deposits are recorded within the wider 250 m Study Area north of Holwell and Sewstern. The Made Ground deposits are largely associated with former quarries and pits.
- Superficial deposits, present across the entirety of the Study Area for Section 3 are recorded to comprise:
  - Bytham Sand and Gravel Formation present along the traces of rivers.
  - Thrussington Member is resent in an isolated area in the southern extent of the Study Area.
  - Oadby Member glacial till – Lias and Trias-Rich and Diamicton.
  - Birstall Member present in isolated pockets south of Asfordby.
  - Till, Mid Pleistocene – Diamicton present in the eastern extent of the Study Area for Section 3.
  - Glaciofluvial deposits present in isolated pockets
  - Head, Alluvium, Colluvium and River Terrace deposits present along the traces of rivers across the Study Area for Section 3.
- Bedrock is recorded to comprise the following across the Study Area for Section 3:
  - Charmouth Mudstone Formation;
  - Dyrham Formation consisting of Silt and Sand with impersistent beds of limestone and sandstone.
  - Whitby Formation – Mudstone.
  - Scunthorpe Mudstone Formation.
  - Marlstone Rock Formation – Limestone.
  - Northampton Sand Formation - Ironstone, Ooidal.

- Grantham Formation – Sandstone, Siltstone and Mudstone.
- Lower Lincolnshire Limestone Member.
- North of Sholby largely comprises Mudstone of the Blue Lias, Scunthorpe and Charmouth Mudstone Formation and Granby Member – Mudstone and Limestone.

11.5.32 Bedrock underlying the proposed WMEL-B Substation comprises largely Charmouth Mudstone Formation with Dyrham Formation and Sandstone in the northeastern corner. Superficial deposits recorded in the area of the proposed WMEL-B Substation include Till (Oadby Member) across the entire Substation with traces of clay, silt, sand and gravel (Head).

11.5.33 Most of the Study Area for Section 3 is located on superficial deposits described as secondary undifferentiated, these units comprise Head, Till, Oadby Member Glacial Till and the Thrussington Member. Predominantly located along rivers within the Study Area for Section 3 are the remaining superficial aquifers: Alluvium, River Terrace Deposits, Bytham Sand and Gravel Formation, Glaciofluvial Deposits, and Birstall Member are all described as secondary A, whilst Colluvium is described as secondary B. There are also areas where superficial deposits are absent, the largest area of which is north of Wartnaby on the northern corner of the Study Area for Section 3.

11.5.34 The Study Area for Section 3 is located partly on the Lower Lincolnshire Limestone Member principal aquifer, the only principal aquifer within the Study Area for Section 3. The Dyrham Formation where it is a Sandstone, Marlstone Rock Formation and Northampton Sand Formation are described as secondary A aquifers and the Granby Member is described as a secondary B aquifer. The Charmouth Mudstone Formation and Blue Lias Formation which underly most of the Study Area for Section 3 are described as secondary undifferentiated aquifers, along with the Grantham Formation and the Dyrham Formation where it is interbedded Siltstone and Mudstone. The Whitby Formation and Scunthorpe Mudstone Formations are described as unproductive strata.

11.5.35 There are no SPZs within the Study Area for Section 3.

11.5.36 The Study Area for Section 3 crosses three WFD Groundwater bodies, all with an Overall Water Body status of Good, with Good Quantitative and Chemical statuses. These are: Witham Lias, Soar – Secondary Combined, and Lower Trent Erewash – Secondary Combined.

11.5.37 There are no groundwater Drinking Water Safeguard Zones within the Study Area for Section 3.

11.5.38 A small area in the eastern end of the Study Area for Section 3 directly south of Sewstern is part of the Lincolnshire Limestone groundwater NVZ, there are no other areas of groundwater NVZ within the Study Area for Section 3.

11.5.39 There are two GWDTEs within the Study Area for Section 3 – Holweth Mouth SSSI is located within the Scoping Boundary and is 1km north of Ab Kettleby. Frisby Marsh SSSI is located 0.8 km west of Frisby on The Wreake and is fully within the Scoping Boundary.

11.5.40 Locations of groundwater abstractions and discharges will be assessed at ES stage.

11.5.41 Radon levels in the area have been reviewed using the published maps by the UKHSA (Ref 11.13). The proposed WMEL-B Substation is in an area of elevated radon potential, with a 30% chance or more of homes exceeding the radon Action Level (Ref 11.13).

11.5.42 A coal mining reporting area covers part of the Study Area for Section 3 in the northwestern extent including WMEL-B Substation. Two mine entries are shown, located within the wider 250 m Study Area southwest of Welby.

11.5.43 Multiple historical landfill sites are recorded within the Scoping Boundary located near Asfordby and one is located southeast of Ashby Folville. No authorised landfill sites are recorded within the Study Area for Section 3.

Section 4

11.5.44 Section 4 includes reconductoring of the existing overhead line.

11.5.45 The published geology within the Study Area for Section 4 comprises:

- Made Ground deposits are recorded across the Scoping Boundary in isolated areas comprising of former quarries, pits and historical landfills.
- Superficial deposits, present across the entirety of the Study Area for Section 4 are recorded to comprise:
  - Till.
  - Oadby Member – Diamicton.
  - a small pocket of Glaciolacustrine deposits.
  - glaciofluvial deposits consisting of sand and gravel present in pockets across the Study Area for Section 4;
  - Alluvium and Colluvium comprising clay, silt, sand and gravel present along the traces of rivers across the Study Area for Section 4. Small pockets of Head are recorded adjacent to Stonton Brook and Glooston Arm; tributaries of the River Welland; and
  - pockets of River Terrace Deposits and Alluvial Fan deposits are present in the southern extent of the Study Area for Section 4.
- Bedrock is recorded to comprise the following across the Study Area for Section 4:
  - Mudstone of the Blue Lias Formation and Charmouth Mudstone Formation in a small area of the northern extent;
  - Dyrham Formation – Siltstone and Mudstone;
  - Limestone of the Marlstone Rock Formation; and
  - Whitby Mudstone Formation.

11.5.46 Most of the superficial deposit coverage in the Study Area for Section 4 is from units described as secondary (undifferentiated) aquifers. These are Till, Oadby Member, Glaciofluvial Deposits and Head. There are also large areas within the Study Area for Section 4 where superficial deposits are absent. River Terrace Deposits, Alluvium and Alluvial Fan Deposits are present within the Study Area for Section 4 and are

described as secondary A aquifers. Colluvium is described as a secondary B aquifer and the Glaciolacustrine deposits are described as unproductive strata.

11.5.47 Most of the Study Area for Section 4 is underlain by bedrock units described as secondary and unproductive, these are the Blue Lias Formation, Charmouth Mudstone Formation and the Dyrham Formation. Limestone of the Marlstone Rock Formation is described as a secondary A aquifer, and the Whitby Mudstone Formation is described as unproductive strata.

11.5.48 The Study Area for Section 4 crosses two WFD Groundwater bodies all with an Overall Water Body status of Good, with Good Quantitative and Chemical statuses. These are: Soar – Secondary Combined, and Welland Lower Jurassic Unit.

11.5.49 There are no SPZs, groundwater Drinking Water Safeguard Zones, or groundwater NVZs within the Study Area for Section 4.

11.5.50 There is one GWDTE within the Study Area for Section 4, Great Bowden Borrow pit SSSI located on the northern edge of Great Bowden in the South and located fully within the Scoping Boundary.

11.5.51 Locations of groundwater abstractions and discharges will be identified and assessed at ES stage.

11.5.52 Five historical landfills are recorded within the Scoping Boundary, but no authorised landfills are present within the Study Area for Section 4.

Section 5

11.5.53 Section 5 proposed include reconductoring of the existing overhead line.

11.5.54 The published geology within the Study Area for Section 5 comprises:

- Made Ground deposits are present across the Study Area for Section 5 in areas recorded as historical landfill sites and former pits. A large area of Made Ground is present in the southern extent of the Scoping Boundary, Upper Nene Gravel Pits SSSI. Further Made Ground deposits are likely adjacent to roads and existing properties and structures including the A427, A6, A14, A43, A45 and villages in the Scoping Boundary.
- Superficial deposits, present across the entirety of the Study Area for Section 5 are recorded to comprise:
  - Bozeat Till present in isolated pockets across the Study Area for Section 5;
  - Oadby Member – Diamicton present to Foxall;
  - Till– Diamicton present from Foxall to Market Harborough;
  - glaciofluvial deposits present in isolated pockets;
  - sand and gravel (Grendon Member and Ecton Member) and river terrace deposits comprising isolated pockets adjacent to rivers in the north and south of the Study Area for Section 5;
  - Alluvial Fan deposits and Alluvium present along the traces of rivers; and
  - Tufa present in a few small pockets across the southern extent of the Scoping Boundary including approximately 700 m north of Hardwick.

- Bedrock is recorded to comprise the following across the Study Area for Section 5:
  - Whitby Mudstone Formation;
  - Northampton Sand Formation – Ironstone, Ooidal;
  - Grantham Formation – Sandstone, Siltstone and Mudstone;
  - Stamford Member – Sandstone and Siltstone;
  - Rutland Formation – Mudstone;
  - Lower Lincolnshire Limestone Member located near Harrington;
  - Limestone of the Wellingborough Member and Blisworth Member; and
  - towards Market Harborough, in the north of the Study Area for Section 5 the bedrock largely consists of Mudstones including Charmouth Mudstone, Dyrham Formation and Whitby Mudstone.

11.5.55 Most of the superficial deposit coverage in the Study Area for Section 5 is from units described as secondary (undifferentiated) aquifers, these are Till, Oadby Member and Bozeat Till. Note that there are large areas within the Study Area where superficial deposits are absent. Glaciofluvial deposits, river terrace deposits, alluvium and alluvial fan deposits and tufa are present and are described as secondary A aquifers.

11.5.56 There are two geological units that are described as principal aquifers, Blisworth Limestone Formation and Lower Lincolnshire Limestone Member. The Stamford Member, the Northampton Sand Formation and the Wellingborough Limestone Member are described as secondary A aquifers. The Rutland Formation is described as a secondary B aquifer. The Grantham Formation, Charmouth Mudstone and the Dyrham Formation are described as secondary (undifferentiated) aquifers. The Whitby Mudstone Formation is described as unproductive strata.

11.5.57 The Study Area for Section 5 crosses three WFD Groundwater bodies all with an Overall Water Body status of Good, with Good Quantitative and Chemical statuses. These are: Welland Lower Jurassic Unit, Nene Mid Lower Jurassic Unit, and Northampton Sands.

11.5.58 There are no SPZs within the Study Area for Section 5.

11.5.59 There are no groundwater Drinking Water Safeguard Zones within the Study Area for Section 5.

11.5.60 Most of the Study Area for Section 5 is within the Northampton Sands groundwater NVZ.

11.5.61 There are three GWDTEs within the Study Area for Section 5, Birch Spinney & Mawsley Marsh SSSI is located on the north side of Mawsley Village, entirely within the Scoping Boundary. Hardwick Lodge Meadow SSSI is located between Hardwick and Hannington, within the 500 m Study Area. The Upper Nene Valley Gravel Pits SSSI extend across the south of Section 5, partly within the Scoping Boundary.

11.5.62 Locations of groundwater abstractions and discharges will be identified and assessed at ES stage.

11.5.63 Multiple historical landfill sites are recorded within the Study Area for Section 5. No authorised landfill sites are recorded.

11.5.64 Existing or historical airfields present within the Study Area for Section 5 include RAF Harrington, a former RAF station located south of the village of Harrington. Historical aerial photography shows that the eastern extent of the airfield site within the Scoping Boundary. The airfield opened in 1943 with the majority now returned to agricultural land however the Thor Missile launch pads remain visible on the aerial photos approximately 70 m west of the Scoping Boundary. RAF Harrington has potential contamination sources associated with historical underground tanks and bomb storage including high explosive (HE), pyrotechnic and classified warhead store within Section 5 of the Scoping Boundary.

Future Baseline

11.5.65 The future baseline relates to known or anticipated changes to the current baseline in the near future. These will be assessed for the Project in the ES.

11.5.66 To assess the potential effects of the Project, it is required to predict how the baseline conditions recorded within this chapter may change from the time of baseline data collection to the commencement of development and during the construction, operation and maintenance. It is currently anticipated that, subject to gaining development consent in 2029, construction works would begin in 2030 and be completed by 2034. 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 land contamination legislation and planning policy.

11.5.67 Hydrogeological conditions are more susceptible to change and therefore may be affected by the following factors:

- Climate change – changes in rainfall can affect aquifer recharge, groundwater levels and flow gradients.
- Future developments, including housing – increases in housing within the areas surrounding the Study Area have the potential to affect recharge to the underlying aquifers. Increased demand for drinking water associated with these can also affect future water resources and groundwater levels in aquifers, including the SPZs present within Sections 1 to 5.

11.5.68 Regarding climate change impacts on hydrogeology, the UK Climate Projections 2018 (UKCIP18) predicts the following changes up to 2099 (Ref 11.23):

- Temperatures will continue to increase, with larger temperature increases estimated in summer.
- The average summer rainfall rate is estimated to decrease, whereas the average winter rainfall is estimated to increase.
- An overall increase in extreme weather events.

11.5.69 The UK Groundwater Forum concluded the following, as the potential impacts of climate change on groundwater (Ref 11.24):

- A long-term decline in groundwater storage.

- Increased frequency and severity of groundwater droughts.
- Increased frequency and severity of groundwater-related floods.

11.5.70 This will lead to greater variability in groundwater levels, with prolonged periods of high and low groundwater levels relating to the variability of rainfall and recharge.

11.5.71 The UK Centre for Ecology and Hydrology (UKCEH) has run predictive models to simulate these impacts of climate change, across England, Scotland and Wales, using predictions from UKCP09 (Ref 11.25). This report also predicts the impact on groundwater stations, the closest of which is New Red Lion, at Aslackby, approximately 4.6 km to the north of the Scoping Boundary in Section 2. This groundwater station is on the Lincolnshire Limestone. At this location, groundwater level is predicted to change between -2.0 and +2.0 m in elevation to 2070, with ~2 m seasonal variation.

11.5.72 It is not considered likely at this stage that any change in baseline conditions would be likely to significantly influence the assessment of effects. However, this will be reviewed during the EIA and consideration given to any instances where the future baseline requires more detailed specific consideration, on a case-by-case basis. This will include consideration of changes in baseline conditions that could result from any nearby allocated/proposed future development sites, which will be considered in the Geology and Hydrogeology ES and/or cumulative effects assessment as appropriate.

11.6 Design and Control Measures

Design Measures

11.6.1 The Project has, where possible, been routed to avoid, geologically designated sites and sensitive receptors, considering both overhead line routeing and substation sites, as set out in the Corridor Preliminary Routing and Siting Study (CPRSS) (Ref 11.14). With suitable stand offs from springs, spring catchments and groundwater abstractions.

11.6.2 Vehicle parking, fuel storage, de-icer storage, rock salt storage, and washout/cleaning of ready-mix concrete vehicles and equipment will be sited outside SPZ1, where possible. For the purposes of assessing the effects of the Project it will be assumed that the design of the Project will incorporate suitable consideration of the ground conditions, and therefore that risks from ground instability, or from the chemical aggressivity of the ground towards construction materials, would be considered within the engineering design of the new infrastructure, in accordance with best practice. This will mean that the Project will be built with the required design and construction mitigation in place. As this is a fundamental engineering requirement it is considered to be an embedded measure.

11.6.3 Further design measures will be developed as the Project design evolves.

Control and Management Measures

11.6.4 A range of standard measures for the Project will be adopted throughout the duration of the construction phase. An Initial Outline Code of Construction Practice is provided in **Appendix 4A: Initial Outline Code of Construction Practice (CoCP)**. Measures relevant to the control and management of impacts that could affect geology and hydrogeology are (refer to **Appendix 4A** for the full description of each measure):

- GH01 – on ground investigations and assessment.
- GH02 – on construction methods including piling techniques in line with guidance (Ref 11.8).
- GH03 – on the use of appropriate occupational health and safety measures and statutory and safety compliance.
- GH04 and GH05 – on the use, handling and storage of chemicals in accordance with relevant regulations and guidance.
- GH06 – on the control of earthworks or materials movement under appropriate Environmental Permits, exemptions or CL:AIRE (Ref 11.9).
- GH07 – on temporary dewatering activities during construction being undertaken with the relevant guidance.
- GH08 – on dealing with unexpected contamination.
- GH09 – on contamination avoidance and waste management procedures.
- GH10: If required, herbicides to be used in accordance with relevant Defra guidance.
- GH11 – on any application of salt grit.
- GH12 – on water discharges and pre-treatment.
- GH13 – on minimising the area of hardstanding required during construction.

11.7 Potential for Significant Effects

11.7.1 The Geology and Hydrogeology assessment in the ES will consider the construction, operation and maintenance of the Project. A description of each of these stages is set out in **Chapter 4 Description of the Project**. The potential for significant effects and inclusion (Scoped in) and exclusion (Scoped out) of aspects and matters in the scope of the Geology and Hydrogeology ES assessment is set out below and has been determined using the approach described in **Chapter 5 EIA Approach and Methodology**.

11.7.2 The potential for the Project to result in the likely significant effects identified below takes into account the embedded design, and control and management measures described in Section 11.6. The receptors identified within the Study Area and the potential impacts as a result of construction, operation and maintenance activities associated with the Project are described. Where an impact could give rise to potentially significant effects on receptors identified in the Study Area, these are scoped into the ES. Impact pathways that are unlikely to give rise to significant effects on receptors identified in the Study Area are proposed to be scoped out of the ES.

11.7.3 A precautionary approach has been taken and where there is no strong evidence, insufficient or incomplete baseline, or the significance is uncertain at this stage the impact has been scoped into the ES. Where there is clear evidence that the effect from the impact will not be significant, either alone or in combination with other plans and projects, the impact has been scoped out of the ES.

Table 11.2 Impacts, receptors and the potential for significant effects

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
Construction	Disturbance of ground during construction that is affected by pre-existing contamination	Harm to human health through exposure to contamination, including dust and vapours	Adjacent land users, construction workers	**Yes** - initial consideration of the Study Area indicates a generally low risk of potential contamination, but isolated areas of existing contamination cannot be discounted.	**Scoped in**
		Deterioration in chemical quality of the land and aquifers	Aquifers Groundwater abstractions Springs		
Construction	Groundwater control measures (construction dewatering and associated discharge), e.g. during excavations for foundations for new structures	Physical effects on aquifers, such as depletion of the aquifer and increased solids/turbidity Deterioration in chemical quality of aquifers	Aquifers Groundwater abstractions Springs GWDTEs	**Yes** - due to the nature of the Project and the potential for shallow groundwater, there is likely to be some level of dewatering required, so the effect is scoped in for further consideration/ assessment.	**Scoped in**
Construction	Release of contamination and sediment by construction activities (e.g.	Deterioration in chemical quality of the land and aquifers	Soil/land quality Aquifers Groundwater abstractions Springs	**Yes** – Some level of risk of inadvertent release of contamination is inherent in the construction activities associated with the Project.	**Scoped in**

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
	accidental loss of fuels to an aquifer)		GWDTEs	However, environmental and site management controls should be such that any accidental leaks / spills are minimised as far as reasonably possible.	
Construction	Ingress and accumulation of ground gas within buildings or other confined spaces	Explosion or asphyxiation as a result of ingress and accumulation of ground gas within structures	Adjacent land users, construction workers	**Yes** - potential for localised areas of gas generating soils cannot be discounted, so the effect should be given consideration on a precautionary basis.	**Scoped in**
Construction	Ingress and accumulation of ground gas within buildings or other confined spaces	Explosion or asphyxiation as a result of ingress and accumulation of ground gas within structures	Structures	**No** – although there is potential for localised areas of gas generating soils, this is considered to be a matter of engineering design and will be addressed as an 'embedded engineering measure'.	Scoped out
Construction	Dissolution of soluble rocks due to changed patterns of groundwater flow/ discharges caused by construction activities	Deterioration in chemical quality of the land and aquifers	Soil/land quality (aspects related to land contamination, other effects for these receptors fall under **Chapter 12 Agriculture and Soils**) Groundwater within aquifers s of differing	**Yes** - initial consideration of the Study Area indicates a potential for dissolution. There is generally a low potential for contamination, but isolated areas of existing contamination cannot be discounted. Therefore, there is a risk that construction	**Scoped in**

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
			sensitivities, including principal aquifers and groundwater Source Protection Zones (SPZ)	activities could introduce contamination pathways.	
Construction	Any construction activity involving ground disturbance	Damage to designated geological conservation sites	Geological conservation sites	**No** - at present no such sites have been identified within the Study Area. On this basis, significant effects are not likely to occur.	**Scoped out** See Note [1]
Construction	Disturbance of unstable ground from historical mining, leading to potential emergency of sink holes	Harm to human health and aquifers from disturbance of historical mining	Adjacent land users, construction workers Groundwater aquifers, Surface water bodies	**No –** this will be addressed by the engineering/geotechnical study and design, following applicable standards to ensure no likely significant environmental effects.	Scoped out
Construction	Disturbance of unstable ground from historical mining, leading to potential mobilisation of mine gases and mine water	Harm to human health and aquifers from disturbance of historical mining	Adjacent land users, construction workers Groundwater aquifers, Surface water bodies	**Yes** - part of Section 3 is located within a Coal Mining Reporting Area (Section 3 and WMEL-B Substation).	**Scoped in**
Operation and Maintenance	Presence of residual soil contamination from construction activities	Harm to human health through exposure to contamination,	Future land users, adjacent land users Aquifers Groundwater abstractions	**No** - Whilst some ground disturbance may be necessary during maintenance, this is likely to be restricted to land	Scoped out

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
		including dust and vapours Deterioration in chemical quality of the land and aquifers	Springs GWDTEs	previously disturbed during construction. Earthworks and materials movement would be controlled by National Grid standard operational and maintenance procedures. Having regard to the nature of the operational and maintenance phases, significant effects are not likely to occur.	
Operation and Maintenance	Presence of impermeable surfaces (in relation to infiltration)	Potential changes to shallow groundwater flow and levels at the site and downstream and to hydraulically connected habitats as a result of permanent below ground structures (e.g. piling) and surface structures intercepting recharge (e.g. hardstanding).	Aquifers Groundwater abstractions Springs GWDTEs	**Yes** – particularly in relation to substations due to the relatively larger area of impermeable surfacing and presence of engineered drainage. Effects on flows and levels from other aspects of the Project, such as tower foundations and permanent accesses, are not expected to be significant, but this should be verified through assessment.	**Scoped in**
Operation and Maintenance	Groundwater control measures during the operational phase	Physical effects on aquifers, such as depletion of the aquifer and	Aquifers Groundwater abstractions Springs	**No** – there are not expected to be any permanent dewatering requirements during the operational and	Scoped out

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
		increased solids/turbidity	GWDTEs	maintenance phase of the Project. On this basis, significant effects are not likely to occur.	
Operation and Maintenance	Unstable or chemically aggressive ground conditions	Structural damage caused by aggressive ground conditions.	Proposed Structures	**No** – this is considered to be a matter of engineering design (i.e. addressed as an 'embedded engineering measure' as previously described) and is not to be considered further within the ES.	Scoped out
Operation and Maintenance	Ingress and accumulation of ground gas within substation buildings	Explosion or asphyxiation as a result of ingress and accumulation of ground gas within structures	Workers (i.e. manual access to carry out operational activities).	**Yes** – there is potential for localised gas generating ground in proximity of proposed substations and possible mine gas.	**Scoped in**
Operation and Maintenance	Disturbance of ground that is affected by pre-existing contamination for maintenance purposes	Harm to human health via exposure to contamination, including dust and vapours	Maintenance workers, future land users, adjacent land users	**No** - initial consideration of the Study Area indicates a generally low risk of potential contamination and National Grid standard operational and maintenance procedures will be implemented. This is considered sufficient to ensure no likely significant effects during operation and maintenance.	Scoped out

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
		Deterioration in chemical quality of the land and aquifers	Soil/land quality Aquifers Groundwater abstractions Springs GWDTEs	**Yes** - initial consideration of the Study Area indicates a generally low risk of potential contamination but isolated areas of existing contamination cannot be discounted.	**Scoped in**
Operation and Maintenance	Release of contamination by maintenance activities (e.g. accidental loss of fuels to an aquifer)	Deterioration in chemical quality of the land and aquifers via maintenance purposes	Soil/land quality Aquifers Groundwater abstractions Springs GWDTEs	**Yes** - although National Grid standard operational and maintenance procedures will be implemented, there is a risk of inadvertent and/or accidental release or spillage of contamination during operation.	**Scoped in**

1- Note that this is provisional and is subject to confirmation of the absence of locally designated sites in the Scoping Boundary and Study Area, which will be carried out as part of further baseline characterisation to support the ES. Therefore, the proposed assessment methodology in Section 11.7 includes a methodology for how effects on geological conservation receptors would be assessed, should it be necessary to scope this effect back into the assessment following further baseline characterisation.

11.7.4 Additionally, the following effects will not be covered in this chapter. It is emphasised that these effects are not scoped out, and will be addressed in full in the ES chapters as described below:

- Effects of groundwater level changes on archaeological remains which rely on groundwater for preservation. These will be considered in **Chapter 9 Cultural Heritage**. This assessment will consider any effects on groundwater levels identified by the Geology and Hydrogeology assessment and how these may in turn affect these archaeological receptors.
- Effects on Groundwater Dependent Terrestrial Ecosystems (GWDTE). These are ecological receptors and will be considered in **Chapter 8 Ecology and Biodiversity**. This assessment will consider any effects on groundwater levels or quality identified by the Geology and Hydrogeology assessment and how these may in turn affect these ecosystem receptors.
- Effects on surface water receptors. These are a hydrological receptor and will be considered in **Chapter 10 Water Environment**. This assessment will consider any effects on groundwater levels or quality identified by the Geology and Hydrogeology assessment and how these may in turn affect these hydrological receptors.
- Minerals safeguarding. As stated in **Chapter 4 Description of the Project** it is not anticipated that there would be likely significant effects in EIA terms regarding minerals and waste, However, if required for compliance with relevant policy, this matter will be addressed through a stand-alone Minerals Assessment Report. This will identify safeguarded minerals and provide an appraisal of the effects of the Project in terms of relevant minerals policy. This report will not form part of the ES but will be submitted as a separate document as part of the application for development consent. This approach is considered to present a proportionate way of assessing potential minerals sterilisation in a manner that is familiar to relevant consultees (i.e. a conventional minerals planning report), allowing transparent appraisal of the Project against relevant policy requirements.
- Risk of damage to structures from vibrations caused by piling, should this be required for the proposed structures. If required, this is a matter of consideration for a structural engineer and would be dealt with by the “Engineering Requirements”, so is outside the scope of the Geology and Hydrogeology assessment.

11.8 Proposed Assessment Methodology

Proposed Data Sources

11.8.1 In addition to the data sources listed in Section 11.5.1, the following data sources are proposed to be used to inform the Geology and Hydrogeology ES assessment:

- Observations from site walkovers at PEIR stage.
- Published historical mapping to identify potentially contaminative former land uses.
- UK Health Security Agency radon mapping.

- Groundwater abstraction details (public and private), discharge consents, historical pollution incident records, and historical and authorised landfills, as available from the Environment Agency and Local Planning Authorities and to be obtained through formal data requests.
- Hazard mapping for naturally occurring geohazards.
- Natural England designated Sites, i.e. Geological SSSIs, GWDTEs.
- Environment Agency Report SC040016/R 'New Groundwater Vulnerability Mapping Methodology in England, and Wales'.
- Any relevant information regarding historical ground contamination that is available from the local planning authorities. This would be obtained through formal data requests to the Environment Protection departments (or equivalent) of each authority.
- Records on locally designated geological sites (LGS), including a review of relevant local planning documentation and any readily available local geo-conservation documents.

Proposed Assessment Methodology

11.8.2 The following section summarises the methodology proposed to be used for the Geology and Hydrogeology ES assessment which builds on the general assessment methodology presented in **Chapter 5 EIA Approach and Methodology**.

11.8.3 The data collection outlined above will enable the baseline conditions to be considered. For land contamination these data will be used to identify potential source-pathway-receptor linkages and inform a risk-based assessment of the effects of the Project. This approach follows published guidance (e.g. Land Contamination Risk Management (Ref 11.1).

11.8.4 For each potential contamination source, an initial contamination screening assessment will be undertaken to determine the risk and potential for contamination as shown in **Table 11.3**. The potential contamination sources classed as moderate or greater risk will be subject to further assessment in the ES as described below.

11.8.5 For each potential effect, the receptor sensitivity and magnitude of effect will be assigned using **Table 11.4** and **Table 11.5** which will then be combined to give an output in **Table 11.6**.

11.8.6 The output of the assessment will be the level of effect determined from **Table 11.6**. This will classify each potential effect as either negligible, minor, moderate or major. Effects may be adverse or beneficial. An example of a beneficial effect could be remediation of ground contamination that happens as a direct result of the Project.

11.8.7 It should be noted that, when considering effects relating to contamination, the output of the assessment is a risk classification, rather than a predicted effect. For example, minor 'effects' in relation to health risks from exposure to soil contamination would reflect an assessment that there is a low/very low risk of significant effects occurring, rather than indicating that there is a predicted adverse effect that would be of a minor nature.

11.8.8 This approach integrates the topic-specific requirement for effects to be assessed via a risk-based approach in the EIA methodology and is an application of the

methodology provided within Construction Industry Research and Information Association (CIRIA) C552 (Ref 11.11), which recommends considering potential effects as a function of 'consequence' and the probability of the effect occurring.

Table 11.3 Initial Contamination Screening Assessment

Risk Classification	Potential for Contamination
Very Low	Contamination that could be of note in the context of electricity infrastructure construction project is very unlikely – e.g. residential, retail or offices, agriculture
Low	Some potential for contamination, but previous and current uses are of low risk and unlikely to be of note in the context of an electricity infrastructure construction project e.g. low risk commercial uses, such as depots or warehouses
Moderate	Some potential for contamination, with previous and current processes that are considered a risk of generating widespread slightly elevated contamination levels and/or more localised areas of more severe contamination – e.g. railways, railway yards, collieries, scrap yards, inert landfills
High	Previous and current uses that are commonly associated with widespread elevated contamination potential – e.g. major industry, "non-hazardous" landfills
Very High	Previous and current uses that are associated with the highest risk of elevated contamination – e.g. hazardous landfills, gas works, chemical works

11.8.9 Each potential effect of moderate or greater risk of contamination as per **Table 11.3** above will then be carried forward for assessment in the ES using **Table 11.4** and **Table 11.5**, to give an assessment of the effect in **Table 11.6**

Sensitivity

11.8.10 The value or sensitivity of receptors will be reported in accordance with the criteria presented in **Table 11.4.**

Table 11.4 Sensitivity of receptors

Value/Sensitivity	Land Contamination, Geological Conservation	Hydrogeology
Very High	Human health risk, in areas of high sensitivity land use (e.g. residential, allotments) where receptor characteristics promote exposure and/or vulnerability to soil contamination or ground gas Geological conservation: very rare and of either international or	Principal aquifer providing a regionally important resource and/or supporting a site protected under EC legislation. Ecology and Nature Conservation. Groundwater locally supports designated GWDTE. Source Protection Zone I (inner zone)

Value/Sensitivity	Land Contamination, Geological Conservation	Hydrogeology
	national importance with no potential for replacement (e.g. United Nations Educational, Scientific and Cultural Organisation (UNESCO) World Heritage Sites, UNESCO Global Geoparks, Geological Conservation Review (GCR) sites where citations indicate features of international importance, geological SSSI, ASSI). Geology meeting international or national designation citation criteria which is not designated as such.	associated with a Public Water Supply.
High	Human health risk, in areas of high sensitivity e.g. public open space, schools, where receptor characteristics promote exposure and/or vulnerability to soil contamination or ground gas and vapour. Geological conservation: rare and of either international or national importance with little or potential for replacement (e.g. Geological SSSI, ASSI). Geology meeting international or national designation citation criteria which is not designated as such.	Principal aquifer providing locally important resource or supporting a river ecosystem. Groundwater supports a GWDTE (non-designated). Licensed groundwater abstraction. Source Protection Zone I associated with a private water abstraction, SPZ 2 (outer zone) associated with a Public Water Supply.
Medium	Human health risk, medium sensitivity land use such as commercial or industrial where receptor characteristics limit exposure and/or vulnerability to soil contamination, ground gas and vapour. Soil/land: crops, livestock, or plants in managed planting/landscaping schemes (parks/verges) etc. Agricultural assets whose quality may be affected by exposure to contamination. Geological Conservation: geology of regional importance with limited potential for replacement (e.g.	Aquifer providing water for agricultural or industrial use with limited connection to surface water. Secondary aquifers, unlicensed abstractions, SPZ 3 (total catchment).

Value/Sensitivity	Land Contamination, Geological Conservation	Hydrogeology
	Regionally Important Geological Sites/Local Geological Sites (LGS). Geology meeting regional designation citation criteria which is not designated as such	
Low	Human health risk, low sensitivity land use such as highways and rail where receptor characteristics significantly minimise exposure and/or vulnerability to soil contamination and ground gas. Geology of local importance interest with potential for replacement e.g. non designated geological exposures, former quarries, mining sites.	Unproductive strata.
Negligible	Human health undeveloped land, no sensitive land uses proposed. Land/soil: phytotoxic effects on non-agricultural plants that are not part of managed planting/landscaping schemes. Geological Conservation: no designated sites or geology of known recorded local interest.	n/a

Magnitude

11.8.11 Magnitude of change will be reported in accordance with the criteria listed in **Table 11.5**.

Table 11.5 Magnitude of impact

Magnitude	Land Contamination, Geological Conservation	Hydrogeology[1]
Major	Risk assessments indicate that contaminant levels exceed relevant screening criteria (e.g. Category 4 screening levels) and may present unacceptable acute or substantial chronic human health risks.	Release of Priority Hazardous Substances or substances regulated under The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015 (Ref 11.3) of the Water Supply (Water

[1]The hydrogeological criteria do not include the magnitude of effect that may be caused to GWDTE or surface water receptors as a result of changes to groundwater that feeds these receptors. This is because effects on these receptors are considered in Chapter 8 Ecology and Biodiversity and Chapter 10 Water Environment, respectively.

Magnitude	Land Contamination, Geological Conservation	Hydrogeology[1]
	Geological conservation: loss of geological features/ designation and/or quality and integrity, severe damage to key characteristics, features, or elements.	Quality) Regulations 2016 (Ref 11.4) at concentrations that may present a direct/imminent risk to abstractions. Physical or chemical effects on an aquifer (i.e. changes in groundwater levels, flows, yield, or quality) that substantively restrict its viability as an abstractable resource and/or its WFD status.
Moderate	Risk assessment indicates that contaminant concentrations may be slightly or moderately above precautionary screening criteria, potentially resulting in a chronic health risk that although likely to be low or moderate, may require remediation and/or control measures. Death or major health effects on livestock or significant direct damage to crops or plants in a managed planting /landscaping scheme that is directly attributable to soil contamination. Geological conservation: partial loss of geological feature/designation, potentially adversely affecting the integrity; partial loss of/damage to key characteristics, features, or elements.	Release of contamination at concentrations that may lead to substantial localised degradation in groundwater quality but not present a direct/ imminent risk to abstractions. Physical or chemical effects on an aquifer (i.e. changes in groundwater levels, flows, yield or quality) that limit its effectiveness as a resource and may affect its status.
Minor	Contaminant concentrations are below relevant screening levels and there is no requirement for control/remediation measures. Minor damage to crops or plants in a managed planting /landscaping scheme that is directly attributable to soil contamination.	Minor localised changes to groundwater quality, flow, levels, or yields. Changes are localised, with little effect on the use or status of the groundwater resource and present no significant risk to abstractions.

Magnitude	Land Contamination, Geological Conservation	Hydrogeology[1]
	Geological conservation: minor measurable change in geological feature/designation attributes, quality, or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features, or elements.	
Negligible	Contaminant concentrations are at background and risk assessments indicate that there is no significant potential for adverse human health effects from soil contamination. No damage to crops, livestock or plants. Geology: negligible loss or detrimental alteration to one or more characteristics, features or elements of geological feature/designation. Overall integrity of resource unaffected.	Minimal measurable effect on groundwater levels, quantities, flows, or chemical quality, or on the use or status of a groundwater resource.
No Change	Contaminant concentrations are at or below background and risk assessments indicate that there is no significant potential for adverse human health effects from soil contamination. No damage to crops, livestock or plants. Geology: no loss or detrimental alteration to one or more characteristics, features or elements of geological feature/designation. Overall integrity of resource unaffected.	No measurable effect on groundwater levels, quantities, flows, or chemical quality, or on the use or status of a groundwater resource.

Significance of effects

11.8.12 The general approach adopted for evaluating the significance of effects considering the sensitivity of the receptor and the magnitude of impacts is outlined in **Table 11.6**.

Table 11.6 Determination of significance matrix (Ref 11.6)

Sensitivity of Receptor	Magnitude of Impact					
		Major	**Moderate**	**Minor**	**Negligible**	**No Change**
	Very High	Very large	Large or very large	Moderate or large	Slight	Neutral
	High	Large or very large	Moderate or large	Slight or moderate	Slight	Neutral
	Medium	Moderate or large	Moderate	Slight	Neutral or slight	Neutral
	Low	Slight or moderate	Slight	Neutral or slight	Neutral or slight	Neutral
	Negligible	Slight	Neutral or slight	Neutral or slight	Neutral	Neutral

11.8.13 An impact is considered significant if the resultant effect is Large or Moderate. A resultant effect of Slight/Neutral is not considered significant. This matrix approach provides a guide however professional judgement will be used in concluding the significance of an effect.

11.9 Assumptions and limitations

11.9.1 The following assumptions and limitations apply to this chapter of the Scoping Report:

- A detailed baseline data gathering exercise is yet to be undertaken and will be completed as part of the EIA and reported in the PEIR and ES. Whilst this is essential to inform the assessment of effects, it is considered unlikely that the findings will substantively alter the scope of or approach to, the assessment described in this chapter.
- The proposed assessment approach in this chapter is based on desk study information. 'Reasonable worst case' assumptions regarding the likely ground conditions will be made when assessing effects in the ES, determined from the desk study information. It is not proposed to undertake site inspections or ground investigation specifically to support the ES unless specific high-risk circumstances are identified from desk study information that would warrant this. However, ground investigation is planned to collect site data for design purposes and this data will be used to support the ES, where relevant and where programmes align.
- The scope of assessment and likely significant effects described in this chapter are based on the current Scoping Boundary and the Project description provided in **Chapter 4 Description of the Project**. It is anticipated that these details of the development will be subject to refinement as the Project progresses and subsequent reports will be based on more detailed design information. The approach to data gathering and assessment provided within this chapter is

intended to be flexible and is expected to remain applicable as the design develops.

- At scoping stage, the source of construction water supply is unknown. This could either be from mains water, surface water or groundwater. If groundwater is selected as a source for construction water at a later phase, the assessment of impact of this abstraction will be incorporated into the Geology and Hydrogeology assessment.

11.10 Conclusions

11.10.1 This Scoping Report chapter has outlined relevant legislation, policy and guidance in relation to the Geology and Hydrogeology assessment for the Project. The data sources that will be used to define the current and future baselines have been presented, together with the impact control and management measures that will be implemented. The potential for significant effects has been identified, as well as the associated source, impact and receptors in **Table 11.2**.

11.10.2 A summary of the proposed scope of the assessment is provided in **Chapter 20 Summary**.

References

Ref 11.1 The Environment Agency Land Contamination Risk Management (LCRM) guidance (2023).

Ref 11.2 The Environment Agency Protect groundwater and prevent groundwater pollution (2017).

Ref 11.3 The Environment Agency Groundwater protection technical guidance (2017).

Ref 11.4 The Environment Agency Pollution Prevention Guidance (PPG) notes (PPG1, PPG5, PPG8 and PPG21).

Ref 11.5 Construction Industry Research and Information Association (CIRIA) Contaminated land risk assessment guidance (2001).

Ref 11.6 Design Manual for Roads and Bridges (DMRB) Environmental assessment and monitoring LA104 (2020).

Ref 11.7 Design Manual for Roads and Bridges (DMRB) Sustainability and Environment Appraisal LA 109 Geology and soils" (2019).

Ref 11.8 CL:AIRE guidance 'Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention' (Ref, 2025).

Ref 11.9 CL:AIRE 'The definition of Waste: The development industry Code of Practice (2011).

Ref 11.10 CIRIA 648 'Control of water pollution from linear construction projects (2006).

Ref 11.11 CIRIA C552 Contaminated land risk assessment. A guide to good practice' (2001).

Ref 11.12 Environmental Protection Act (1990), Chapter 43.

Ref 11.13 British Geological Survey (2025) *GeoIndex Onshore*. [online] Available at: https://mapapps2.bgs.ac.uk/geoindex/home.html [Accessed 17 July 2025]

Ref 11.14 National Grid (2025) Weston Marsh to East Leicestershire Corridor Preliminary Routeing and Siting Study. [online] Available at: https://www.nationalgrid.com/document/561431/download [Accessed 29 August 2025]

Ref 11.15 Department for Environment Food and Rural Affairs (2025) *MAGIC*. [online] Available at: https://magic.defra.gov.uk/MagicMap.html [Accessed 17 July 2025]

Ref 11.16 Department for Environment Food and Rural Affairs (2025) *Hydrology Data Explorer.* [online] Available at: https://environment.data.gov.uk/hydrology/explore [Accessed 17 July 2025]

Ref 11.17 Data.gov.uk (2025) *Environment Agency, Groundwater Dependent Terrestrial Ecosystems.* [online] Available at: https://www.data.gov.uk/dataset/72a149a2-1be7-441f-bc37-94a77f261e27/groundwater-dependent-terrestrial-ecosystems-england-only [Accessed 17 July 2025]

Ref 11.18 Environment Agency (2025) *Check for Drinking Water Safeguard Zones and NVZs Ecosystems.* [online] Available at: https://environment.data.gov.uk/farmers/ [Accessed 17 July 2025]

Ref 11.19 Department for Environment Food & Rural Affairs (2025) *Environment Agency, Catchment Data Explorer.* [online] Available at: https://environment.data.gov.uk/catchment-planning/ [Accessed 17 July 2025]

Ref 11.20 Environment Agency, (2025). Historical Landfill Sites. Available at: https://www.data.gov.uk/dataset/17edf94f-6de3-4034-b66b-004ebd0dd010/historic-landfill-sites1. Accessed 16 July 2025.

Ref 11.21 Environment Agency, (2025). Permitted Waste Sites – Authorised Landfill Site Boundaries. Available at: https://www.data.gov.uk/dataset/ad695596-d71d-4cbb-8e32-99108371c0ee/permitted-waste-sites-authorised-landfill-site-boundaries1. Accessed 16 July 2025.

Ref 11.22 Natural England, (2025). Designated Sites View.

Ref 11.23 Met Office Hadley Centre and Environment Agency, (2019). *UKCP18 Science Overview Report.*

Ref 11.24 UK Groundwater Forum, (2011). *Groundwater Resources and Climate Change.*

Ref 11.25 C. Prudhomme *et al*., (2014). Future Flows: a dataset of climate, river flow and groundwater levels for climate change impact studies in Great Britain in Hydrology in a changing world: environmental and human dimensions (IAHS Publication, 363). Wallingford, International Association of Hydrological Sciences, 2014, pp. 330-335.

12. Agriculture and Soils

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12. Agriculture and Soils

12.1 Introduction

12.1.1 This chapter presents how the Agriculture and Soils assessment will consider the potential likely significant effects on agricultural and soil receptors that may arise from the construction, operation and maintenance of the Project (as described in **Chapter 4 Description of the Project**). Agricultural and soil receptors comprise best and most versatile (BMV) agricultural land, soil resources and agricultural operations. It describes the methodology and datasets to be used within the assessment, presents an overview of the baseline conditions, and identifies the potential likely significant effects to be considered within the assessment, and how these will be assessed in the Environmental Statement (ES). As detailed in **Chapter 4 Description of the Project**, the decommissioning of the Project has been scoped out of the environmental assessment.

12.1.2 The Scoping Boundary is illustrated on **Figure 1.2 Scoping Boundary**.

12.1.3 This chapter should be read in conjunction with the following chapters which provide the Project context and approach to EIA:

- **Chapter 2 Regulatory and Planning Policy Context**;
- **Chapter 3 Main Alternatives Considered**;
- **Chapter 4 Description of the Project**; and
- **Chapter 5 EIA Approach and Methodology.**

12.1.4 There may be interrelationships with other disciplines and therefore, this chapter should also be read in conjunction with the following chapters:

- **Chapter 6 Landscape**, where soils are significant in characterising landscapes and the soil requirements for establishing vegetation for landscaping;
- **Chapter 8 Ecology and Biodiversity**, where habitat mapping identifies land use, particularly where soil is fundamental to a habitat and its biodiversity, and the soil requirements for habitat creation proposals;
- **Chapter 10 Water Environment**, which includes the connection between the surface water cycle and drainage and agriculture; and,
- **Chapter 11 Geology and Hydrogeology** which includes the base geology beneath soil formation and detail of groundwater receptors that could be impacted by any land contamination or pollution related impacts from the Project

12.1.5 This chapter is supported by the following figures and appendix:

- **Figure 12.1 Provisional Agricultural Land Classification**;
- **Figure 12.2 Soil Associations**; and
- **Appendix 12A Agriculture and Soils Survey Strategy.**

12.2 Legislation, Policy and Guidance

12.2.1 **Chapter 2 Regulatory and Planning Policy Context** describes the overall regulatory and planning policy context for the Project. Key legislation, policy, and planning guidance relevant to the assessment of potential effects on Agriculture and Soils associated with the construction, operation, and maintenance of the Project is provided in **Chapter 2 Regulatory and Planning Policy Context, Appendix 2A Key Legislation, Appendix 2B National and Regional Planning Policy** and **Appendix 2C Local Policy.**

12.2.2 National guidance exists for field assessment of soils, assessment of environmental impacts and for good practice in handling soils and the sustainable use of soil in relation to development projects. Relevant guidance and standards, along with other relevant material, that have informed the scoping process are listed below and will also be taken into account as part of the ES assessment:

- **Natural England's Guide to Assessing Development Proposals on Agricultural Land** (Ref 12.1): sets out the government policies and legislation that developers and local planning authorities (LPA) should refer to when considering proposals that affect agricultural land and provides guidance on when Natural England should be consulted on development proposals. The guidance notes that the LPA should ensure that development proposals include plans to protect soils. It explains circumstances in which new detailed surveys may be required and summarises the required survey methodology (also presented in Natural England's Technical Information Note 049 (Ref 12.2).
- The Institute of Environmental Management and Assessment (IEMA), now known as The institute of Sustainability and Environmental Professionals (ISEP), published the first guidance for the consideration of the impacts of development on soils and land in EIA: A New Perspective on Land and Soil in Environment Impact Assessment (Ref 12.3) (hereafter referred to as 'the ISEP guidance'). The aim of the ISEP guidance is to advocate "*a broader approach [to the assessment of soils and agricultural land in EIA] that involves assessing the natural capital and functional ecosystem services provided by land and soils*". The guidance introduces a soil functions-based evaluation methodology and improved mitigation measures for soil conservation, to avoid and minimise detrimental impacts on soil.
- Defra's Construction Code of Practice for the Sustainable Use of Soil on Development Sites (Ref 12.4) provides technical guidance on the handling, storage and (re)use of soil within construction projects.
- The Institute of Quarrying (IoQ) Good Practice Guide for Handling Soils in Mineral Workings (Ref 12.5) details good practice methods for stripping, handling, storage, reinstatement, and management of soil resources. This guidance updates and replaces the Ministry of Agriculture, Fisheries and Food's (MAFF) Good Practice Guide for Handling Soils and despite originating in the quarrying sector is considered relevant as the described measures are applicable to all development where soils are handled.
- MAFF's Agricultural Land Classification of England and Wales Revised guidelines and criteria for grading the quality of agricultural land (Ref 12.6) provides the current guidelines and criteria for grading the quality of agricultural land in England and Wales.

- The British Society of Soil Science (BSSS) Guidance Document 3: Working with Soil - Guidance Note on Benefitting from Soil Management in Development and Construction (2021) (Ref 12.7) has been written for development planning and control professionals, site owners and developers to help promote the protection of soils and the important functions they support within the planning system and the development of individual sites.

12.3 Consultation and Engagement

12.3.1 The ES will be informed by consultation and engagement with stakeholders, including Natural England, which is a statutory consultee for projects affecting more than 20 ha of Best and Most Versatile (BMV) agricultural land. In addition, engagement will be undertaken with non-statutory stakeholders as required to ensure that specialist local views and expertise can be considered as part of the ES.

12.3.2 In preparing this Scoping Report chapter, consideration has been given to stakeholder feedback received during Non-Statutory Consultation held from 11 June to 6 August 2025

12.3.3 The principal feedback received from Non-statutory Consultation of relevance to this scoping chapter is included in **Table 12.1** together with a response on how the comments have been considered in this Scoping Report, where applicable.

Table 12.1 Engagement with Stakeholders

Stakeholder	Summary of response	Consideration in the Scoping Report
South Kesteven District Council, South Holland District Council and National Farmers Union	Concern over the loss of arable farmland and BMV land from construction.	Agricultural Land Classification, including BMV, will be ascertained through soils sampling and analysis and be mapped as part of the assessment. Impacts on BMV can be minimised by considering the location of infrastructure, however, some BMV land will be impacted. The effects of this impact will be assessed as described in **Section 12.8** of this chapter and reported in the ES.
National Farmers Union	Concern over the timing of the consultation falling over the harvest period for farmers.	Public consultation exercises are caried out at key stages of the programme and subject to various requirements. Engagement with relevant parties directly affected by the Project will be ongoing outside of this public consultation periods as the design and assessment

Stakeholder	Summary of response	Consideration in the Scoping Report
		progress and as part of the statutory process of applying for development consent.

12.4 Study Area

12.4.1 For the purposes of this Scoping Report, the Study Area is the Scoping Boundary, without applying a buffer, as shown in **Figure 1.2 Scoping Boundary**. Impacts regarding the loss of agricultural land relate only to those soils directly affected. This is considered an appropriate Study Area based on this stage of the project, requirements for completing a Scoping Report, professional judgment, and knowledge of similar projects.

12.4.2 The Study Area for the assessment will be further refined throughout the development of the Project, ultimately comprising the land within the Order Limits defined in the application for development consent.

12.4.3 The identified receptors in relation to agriculture and soils within the Study Area are:

- Agricultural land (the quality of which is defined by the Agricultural Land Classification (ALC) system and includes BMV land);
- Soil resources; and
- Agricultural land holdings.

12.5 Baseline Conditions

Data Sources

12.5.1 The known or predicted current and future baseline environment described in this section has been informed by the following data sources:

- Provisional ALC, published by Natural England and available within Defra's Multi-Agency Geographic Information for the Countryside (MAGIC) (Ref 12.8). The ALC system classifies land into five grades. Grade one is best quality and grade five is poorest quality. Grade 3 is divided between Subgrades 3a and 3b. Grade 1 to Subgrade 3a are considered BMV farmland. Provisional ALC mapping does not currently differentiate between Subgrades 3 and 3b, meaning that the identification of BMV land from baseline data is incomplete if based solely on provisional ALC mapping. However, as described in **Appendix 12A Agriculture and Soils Survey Strategy**, Natural England is to present more accurate ALC grading for England than is provided in the published ALC mapping, that will include subdivision of Grade 3 land into Subgrades 3a and 3b.
- The Land Information System (LandIS) operated by Cranfield University, including 'Soilscapes Viewer' an online soil reporting tool providing summary soils information that conveys summary information for broad regional variation in the soil landscapes of England and Wales (Ref 12.9). It provides summary information of soil texture, fertility, and drainage, which supports further

generalised information on land cover and agricultural cropping suitability. Soilscape units are assigned a Soilscape reference number and attributes are listed within the mapping viewer.

- The Soil Survey of England and Wales Eastern England as presented on the National Soil Map of England and Wales digital mapping product 'NATMAP' (Ref 12.10).

12.5.2 The following additional sources of published information will be used to establish the baseline environment for Agriculture and Soils:

- Likelihood of Best and Most Versatile (BMV) Agricultural Land - Strategic scale map East (Natural England, 2017) (Ref 12.11).
- Met Office (1989) Climatological Data for Agricultural Land Classification (ALC) (Ref 12.12).
- Cranfield University (2015). 'Research to develop the evidence base on soil erosion and water use in agriculture: Final Technical Report (Ref 12.13).

Baseline

12.5.3 The Project has been divided into five Sections as described in **Chapter 4, Description of the Project** and shown in **Figure 1.2 Scoping Boundary**. The Sections are defined by the geographical alignment of the Scoping Boundary and the administrative boundaries of the local authorities. The baseline environment is reported below for each Section.

Section 1

Soils and Geology

12.5.4 Soil associations within Section 1 are presented in **Table 12.2**. Each soil type is deep and stoneless, either clayey or silty, derived from marine alluvium.

Table 12.2 Soil Associations within the Scoping Boundary in Section 1

Soil Association	Area (ha)	Soil site characteristic	Dominant soils	Geology
AGNEY	737.1	Seasonally wet deep silty	Deep stoneless calcareous fine and coarse silty soils.	Marine alluvium
WALLASEA 2	153.0	Seasonally wet deep clay	Deep stoneless clayey soils. Calcareous in places.	Marine alluvium
WISBECH	956.9	Seasonally wet deep silty	Deep stoneless calcareous coarse silty soils.	Marine alluvium

Soilscape and Land Use

12.5.5 The soils in Section 1 fall exclusively within Soilscape 21. They are loamy and clayey soils of coastal flats with naturally high groundwater. Soils are mostly drained. Shallow groundwater and ditches at field boundaries make water resources vulnerable to pollution. The land is typically flat and soils are generally stoneless with much available water. As such, lighter soils support a wide range of crops and are highly productive.

Agricultural Land Classification

12.5.6 The provisional ALC grade is dominated by Grade 1 land with some Grade 2 at the western boundary of Section 1, summarised in **Table 12.3**.

Table 12.3 Distribution of Agricultural Land Classification within the Scoping Boundary in Section 1

ALC Grade	Area (ha)	Percentage
Grade 1	1864.5	97.6
Grade 2	45.4	2.4
Grade 3	0	0
Grade 4	0	0
Grade 5	0	0
Non-agricultural	0	0
Urban	0	0

Section 2

Soils and Geology

12.5.7 Soil associations within Section 2 are presented in **Table 12.4**. Soil types are typically loamy, but there are also areas of deep clay and silt close to the boundary with Section 1. The geology, referenced in **Table 12.4**, associated with each soil type is variable.

Table 12.4 Soil Associations within the Scoping Boundary in Section 2

Soil Association	Area (ha)	Soil site characteristic	Dominant soils	Geology
ASWARBY	77.3	Loam over limestone	Shallow permeable calcareous fine loamy soils over limestone, some affected by groundwater.	Jurassic limestone and clay
BADSEY 2	213.4	Loam over gravel	Well drained calcareous fine loamy soils over limestone gravel.	River terrace and lacustrine gravel
BANBURY	3.4	Loam over sandstone	Well drained brashy fine and coarse loamy ferruginous soils over ironstone.	Jurassic and Cretaceous ironstone
BECCLES 1	156.2	Seasonally wet deep loam to clay	Chalky till	Slowly permeable seasonally waterlogged fine loamy over clayey soils,
CURDRIDGE	363.5	Seasonally wet deep loam	Deep stoneless permeable coarse loamy soils with groundwater controlled by ditches.	Jurassic sand and clay
DENCHWORTH	80.8	Seasonally wet deep clay	Slowly permeable seasonally waterlogged clayey soils with similar fine loamy over clayey soils.	Jurassic and Cretaceous clay
ELMTON 1	678.0	Shallow loam over limestone	Shallow well drained brashy calcareous fine	Jurassic Limestone

Soil Association	Area (ha)	Soil site characteristic	Dominant soils	Geology
			loamy soils over limestone.	
Elmton 3	1034.5	Shallow loam over limestone	Shallow well drained brashy calcareous fine loamy soils over limestone.	Jurassic limestone and clay
RAGDALE	2217.2	Seasonally wet deep clay	Slowly permeable seasonally waterlogged clayey and fine loamy over clayey soils.	Chalky till
WALLASEA 2	1328.5	Seasonally wet deep clay	Deep stoneless clayey soils. Calcareous in places.	Marine alluvium
WISBECH	49.6	Seasonally wet deep silty	Deep stoneless calcareous coarse silty soils.	Marine alluvium

Soilscape and Land Use

12.5.8 Soilscape 21 is represented also in the eastern parts of Section 2. Progressing westward, the soils form a mixture of Soilscapes 5 and 22. Soilscape 5 contains freely draining lime-rich loamy soils. The soils are considered well suited to autumn sown cereal cropping. Soilscape 22 comprises loamy soils with naturally high groundwater, which also makes water resources vulnerable to pollution. Soils are typically drained and may be droughty in summer. Most land is used for arable cropping. The ALC is a combination of Grades 2 and 3 with the higher grade more likely to be associated with Soilscape 5.

12.5.9 Westward the soils of the Section 2 form bands (oriented north south) of Soilscapes 18 and 3. Soilscape 18 are slowly permeable, seasonally wet clayey soils that may become compacted or poached. The soils are best suited to grass production for livestock with some cereal production for animal feed. Land may be tile drained with periodic mole drainage. Soilscape 3 comprises shallow, lime-rich soils over chalk or limestone. Cereals can be grown but over hard limestone soils are suitable only for grassland. Yields are most likely limited by soil moisture.

Agricultural Land Classification

12.5.10 The provisional ALC of both Soilscapes is principally Grade 3 but with substantial areas of Grade 2 and minor components of Grade 1 and Grade 4, summarised in **Table 12.5.**

Table 12.5 Distribution of Agricultural Land Classification within the Scoping Boundary in Section 2

ALC Grade	Area (ha)	Percentage
Grade 1	14.0	0.2
Grade 2	1837.9	29.2
Grade 3	4399.3	69.8
Grade 4	28.1	0.4
Grade 5	0	0
Non-agricultural	22.4	0.4
Urban	0	0

Section 3

Soils and Geology

12.5.11 Soil associations within Section 3 are presented in **Table 12.6**. Soil types are typically deep loams and clays. The geology, referenced in **Table 12.6**, exhibits variability to include Jurassic and Cretaceous materials but also river alluvium, glaciofluvial river terrace drift and chalky till.

Table 12.6 Soil Associations within the Scoping Boundary in Section 3

Soil Association	Area (ha)	Soil site characteristic	Dominant soils	Geology
ASHLEY	593.5	Deep loam to clay	Fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging associated with similar but wetter soils.	Chalky till
BANBURY	428.8	Loam over sandstone	Well drained brashy fine and coarse loamy ferruginous soils over ironstone.	Jurassic and Cretaceous ironstone
DENCHWORTH	267.6	Seasonally wet deep clay	Slowly permeable seasonally waterlogged	Jurassic and Cretaceous clay

Soil Association	Area (ha)	Soil site characteristic	Dominant soils	Geology
			clayey soils with similar fine loamy over clayey soils.	
FLADBURY 1	272.2	Seasonally wet deep clay	Stoneless clayey soils, in places calcareous variably affected by groundwater.	River alluvium
FLINT	278.6	Deep red loam	Reddish fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging.	Reddish till
HANSLOPE	3767.5	Deep clay	Slowly permeable calcareous clayey soils.	Chalky till
OXPASTURE	146.1	Deep loam to clay	Fine loamy over clayey and clayey soils with slowly permeable subsoils and slight seasonal waterlogging.	Drift over Jurassic and Cretaceous clay shale
RAGDALE	3862.9	Seasonally wet deep clay	Slowly permeable seasonally waterlogged clayey and fine loamy over clayey soils.	Chalky till
WICK 1	45.9	Deep loam	Deep well drained coarse loamy and sandy soils locally over gravel.	Glaciofluvial or river terrace drift

Soil Association	Area (ha)	Soil site characteristic	Dominant soils	Geology
WICKHAM 2	1033.8	Seasonally wet silty to clayey over shale	Slowly permeable seasonally waterlogged fine loamy over clayey, fine silty over clayey and clayey soils.	Drift over Jurassic and Cretaceous clay or mudstone
Water body	29.9	N/A	N/A	N/A

Soilscape and Land Use

12.5.12 Section 3 is dominated by Soilscape 18 (described in paragraph 12.5.9). For much of Section 3 it is in mosaic with Soilscape 9, which comprises lime-rich loamy and clayey soils with impeded drainage. These soils are suited to autumn sown crops and grassland.

12.5.13 Distribution of Soilscape 7 is very localised, but it is present south of Sewston, at the eastern boundary of Section 3 and around Holwell in the western part. Soilscape 7 contains freely draining acid but base-rich soils. They are suitable for arable crops and grassland. Soil moisture is most likely to limit yields, particularly where soils are stony or shallow.

12.5.14 West of Melton Mowbray, there are also areas of Soilscape 20 on floodplain soils and of Soilscape 6. Soilscape 20 are clayey and loamy soils with a naturally high groundwater. Productive grassland is found provided drainage is maintained but there is a risk of poaching and soil damage early and late in the grazing season. Cereal production is only possible where the flood risk is low. Soilscape 6 is a freely draining, slightly acid loamy soil, suitable for cereal cropping or grass. Grass has a long grazing season. Shortage of soil moisture is the most likely limiting factor on cereal yields, particularly where stony or shallow.

Agricultural Land Classification

12.5.15 The provisional ALC grading is dominated by Grade 3 with areas of Grade 2 forming a mosaic that approximates to areas of Soilscape 9. Section 3 incorporates some relatively minor Grade 4 land. The ALC distribution is summarised in **Table 12.7**.

Table 12.7 Distribution of Agricultural Land Classification within the Scoping Boundary in Section 3

ALC Grade	Area (ha)	Percentage
Grade 1	0	0
Grade 2	1314.5	12.2
Grade 3	8786.9	81.3
Grade 4	702.1	6.5
Grade 5	0	0
Non-agricultural	0	0
Urban	0	0

Section 4

Soils and Geology

12.5.16 Soil associations within Section 4 are presented in **Table 12.8**. Soil types are typically deep loams and clays, with some areas of silt over shale. The geology, referenced in **Table 12.8**, exhibits variability to include Jurassic and Cretaceous materials but also river alluvium and chalky till.

Table 12.8 Soil Associations within the Scoping Boundary in Section 4

Soil Association	Area (ha)	Soil site characteristic	Dominant soils	Geology
BANBURY	335.6	Loam over sandstone	Well drained brashy fine and coarse loamy ferruginous soils over ironstone.	Jurassic and Cretaceous ironstone
BECCLES 3	170.6	Seasonally wet deep loam to clay	Slowly permeable seasonally waterlogged fine loamy over clayey soils and similar soils with only slight seasonal waterlogging.	Chalky till

Soil Association	Area (ha)	Soil site characteristic	Dominant soils	Geology
DENCHWORTH	1133.2	Seasonally wet deep clay	Slowly permeable seasonally waterlogged clayey soils with similar fine loamy over clayey soils.	Jurassic and Cretaceous clay
FLADBURY 1	685.6	Seasonally wet deep clay	Stoneless clayey soils, in places calcareous variably affected by groundwater.	River alluvium
HANSLOPE	877.0	Deep clay	Slowly permeable calcareous clayey soils.	Chalky till
OXPASTURE	435.7	Deep loam to clay	Fine loamy over clayey and clayey soils with slowly permeable subsoils and slight seasonal waterlogging.	Drift over Jurassic and Cretaceous clay shale
RAGDALE	2913.1	Seasonally wet deep clay	Slowly permeable seasonally waterlogged clayey and fine loamy over clayey soils.	Chalky till
WICK 1	15.3	Deep loam	Deep well drained coarse loamy and sandy soils locally over gravel.	Glaciofluvial or river terrace drift
WICKHAM 2	1778.1	Seasonally wet silty to clayey over shale	Slowly permeable seasonally waterlogged fine loamy over clayey, fine silty	Drift over Jurassic and Cretaceous clay or mudstone

Soil Association	Area (ha)	Soil site characteristic	Dominant soils	Geology
			over clayey and clayey soils.	
Water body	3.6	N/A	N/A	N/A

Soilscape and Land Use

12.5.17 Section 4, like Section 3 is similarly dominated by Soilscape 18. It incorporates Soilscapes 8, 9 and 20. Soilscape 8 is slightly acid loamy and clayey soils with impeded drainage. Cropping options are reasonably flexible but are most suited to autumn sown crops and grassland, particularly as wet soil conditions in spring may limit options groundwork and grazing opportunities. The remaining soilscapes are described above in paragraphs 12.5.9, 12.5.12, 12.5.14.

Agricultural Land Classification

12.5.18 The provisional ALC grading within Section 4 is principally Grade 3 with very limited areas of Grade 2 and some limited areas of Grade 4, associated with floodplain soils as shown in **Table 12.9**.

Table 12.9 Distribution of Agricultural Land Classification within the Scoping Boundary in Section 4

ALC Grade	Area (ha)	Percentage
Grade 1	0	0
Grade 2	217.6	2.6
Grade 3	7806.4	92.9
Grade 4	268.7	3.2
Grade 5	0	0
Non-agricultural	0	0
Urban	113.2	1.3

Section 5

Soils and Geology

12.5.19 Soil associations within Section 5 are presented in **Table 12.10**. Soil types are principally deep clays, with some loams and silts. Section 5 includes areas of restored soils following ironstone working. The geology, referenced in **Table 12.10**, includes Jurassic and Cretaceous ironstone, including soils of the Banbury association, that have not been worked. Other geology includes Permian, Jurassic

and Cretaceous limestone, drift over Jurassic and Cretaceous mudstone, chalky till and river alluvium and river terrace drift.

Table 12.10 Soil Associations within the Scoping Boundary in Section 5

Soil Association	Area (ha)	Soil site characteristic	Dominant soils	Geology
ABERFORD	117.5	Loam over limestone	Shallow, locally brashy well drained calcareous fine loamy soils over limestone.	Permian Jurassic and Eocene limestone
ASHLEY	9.0	Deep loam to clay	Fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging associated with similar but wetter soils.	Chalky till
BANBURY	2100.9	Loam over sandstone	Well drained brashy fine and coarse loamy ferruginous soils over ironstone.	Jurassic and Cretaceous ironstone
DENCHWORTH	989.7	Seasonally wet deep clay	Slowly permeable seasonally waterlogged clayey soils with similar fine loamy over clayey soils.	Jurassic and Cretaceous clay
FLADBURY 1	594.1	Seasonally wet deep clay	Stoneless clayey soils, in places calcareous variably affected by groundwater.	River alluvium
FLY RST IRONSTONE	474.9	Restored following ironstone working	Restored ironstone workings. Very variable depending on restoration but	Jurassic ironstone

Soil Association	Area (ha)	Soil site characteristic	Dominant soils	Geology
			mainly fine loamy over clayey often reddish soils.	
HANSLOPE	4804.3	Deep clay	Slowly permeable calcareous clayey soils.	Chalky till
MORETON	1402.0	Clayey over limestone	Jurassic clay and limestone	Jurassic clay and limestone
OXPASTURE	1046.9	Deep loam to clay	Fine loamy over clayey and clayey soils with slowly permeable subsoils and slight seasonal waterlogging.	Drift over Jurassic and Cretaceous clay shale
RAGDALE	195.9	Seasonally wet deep clay	Slowly permeable seasonally waterlogged clayey and fine loamy over clayey soils.	Chalky till
STRETHAM	213.7	Deep clay	Deep well drained calcareous clayey soils	Chalky till
WATERSTOCK	365.5	Deep loam	Deep permeable mainly fine loamy soils variably affected by groundwater.	River terrace drift
WICKHAM 2	1107.3	Seasonally wet silty to clayey over shale	Slowly permeable seasonally waterlogged fine loamy over clayey, fine silty over clayey and clayey soils.	Drift over Jurassic and Cretaceous clay or mudstone

Soil Association	Area (ha)	Soil site characteristic	Dominant soils	Geology
Water body	78.0	N/A	N/A	N/A

Soilscapes and Land Use

12.5.20 Section 5 comprises an intricate mosaic of soilscapes. These are principally Soilscapes 5, 7, 8, 9 and 18, described in the preceding descriptions. There are also very limited areas of Soilscape 24, which are restored soils, mostly from quarry and opencast spoil. Many such sites suffer from compaction and are most suitable for grass.

Agricultural Land Classification

12.5.21 The provisional ALC grading within Section 5 is principally Grade 3 with areas of Grade 2 and some Grade 4 land, presented in **Table 12.11**.

Table 12.11 Distribution of Agricultural Land Classification within the Scoping Boundary in Section 5

ALC Grade	Area (ha)	Percentage
Grade 1	0	0
Grade 2	2092.4	15.4
Grade 3	10674.2	78.8
Grade 4	623.3	4.6
Grade 5	0	0
Non-agricultural	0	0
Urban	161.7	1.2

Future Baseline

12.5.22 The future baseline relates to known or anticipated changes to the current baseline in the future that are predicted to occur in the absence of the Project.

12.5.23 It is considered that the baseline in relation to soils and ALC grades would not change from that described within the timeframe for the construction of the Project. While there may be potential changes in relation to climate change, including greater rainfall intensity and droughts, that could affect soil conditions, land grade and farming practices, it is likely that these would only be visible over periods of time equivalent to or longer than the operational life of the Project.

12.5.24 There could potentially be changes to land management practices and business approaches across the landowners/land mangers over the construction and operation of the Project.

12.6 Design and Control Measures

Design Measures

12.6.1 The Project has been designed to avoid, as far as reasonably practicable, sensitive agriculture and soil features as set out in the Corridor and Preliminary Routing and Siting Study (CPRSS) (Ref 12.14).

12.6.2 The extent of land required temporarily and permanently to construct and operate the Project will continue to be evaluated as part of the design development process, in order to minimise impacts on BMV land, soils, and agricultural land use, where practicable.

12.6.3 Further design measures will be developed as the Project design evolves.

Control and Management Measures

A range of standard measures for the Project will be adopted throughout the duration of the construction phase. An **Initial Outline Code of Construction Practice** (CoCP) is provided in **Appendix 4A**. Measures relevant to the control and management of impacts that could affect agriculture and soils are (refer to **Appendix 4A** for the full description of each measure):

- GG03: on the requirement for a final CoCP (based on the provisions in the Outline CoCP) to be produced prior to the commencement of construction.
- GG04: on the appointment of Environmental Managers and Environmental Clerks of Works during construction.
- GG05: on environmental training for construction workers, including on soil management.
- GG06: on recording existing conditions to inform appropriate reinstatement.
- GG07: on production of a Soil Management Plan (SMP) prior to construction.
- GG20: on dust suppression during earthworks and stockpiling of soil.
- GG25/AS09: on the use of temporary work pads of suitable materials (stone, wooden, bog mats or similar) where heavy equipment is to be used.
- LV03: requiring a five-year aftercare period mitigation planting.
- AS01: on management measures to be included in the SMP.
- AS02: on returning land to agricultural use, soil conditions, and appropriate depth.
- AS03: on maintaining access to residential, commercial, community and agricultural land uses and engagement with the landowner/occupier.
- AS04: on water supplies for livestock.
- AS05: on land drainage.
- AS06: on procedure if a potential burial site is discovered.
- AS07: on movement of plant and vehicles in the event of a disease outbreak in the vicinity of the Project and working methods required to reduce the biosecurity risk.

- AS08: on the prevention of preferential drainage pathways being created.

12.7 Potential for Significant Effects

12.7.1 The Agriculture and Soil assessment in the ES will consider the construction, operation and maintenance of the Project. A description of each of these stages is set out in **Chapter 4 Description of the Project**. The potential for significant effects and inclusion (Scoped in) and exclusion (Scoped out) of matters in the scope of the Agriculture and Soil ES assessment is set out below and has been determined using the approach described in **Chapter 5 EIA Approach and Methodology.**

12.7.2 The potential for the Project to result in the likely significant effects identified below takes into account the embedded design, and control and management measures described in Section 12.6.

12.7.3 **Table 12.12** identifies the sources of potential impacts on receptors identified in the baseline that could result in a significant effect. Where an impact could give rise to potentially significant effects on receptors identified in the Study Area, these are then scoped into the ES. Impact pathways that are unlikely to give risk to significant effects on receptors identified in the Study Area are proposed to be scoped out of the ES.

Table 12.12 Impacts, receptors and the potential for significant effect

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
Construction	Construction of overhead line infrastructure, including supporting structures, and associated access tracks in areas of agricultural land use.	Temporary and permanent loss of agricultural land (including BMV land) during construction with associated reduction in agricultural production.	Agricultural land/BMV land (as defined by the ALC system)	**Yes** - A very large proportion of land within the Scoping Boundary is predicted to be BMV land and therefore the Project could result in an unavoidable temporary or permanent loss of agricultural land which is likely to include BMV land. ALC surveys are to be undertaken in areas where soils will be disturbed and BMV land is predicted. The assessment will inform good practice soil handling measures that will be detailed in the SMP.	**Scoped in**
Construction	Construction of overhead line infrastructure, including supporting structures, and associated access tracks in areas of agricultural land use.	Loss of agricultural soil function or volume with consequences for soil ecosystem services.	Soil	**Yes** – the Project would potentially result in soil quality being adversely affected during construction. Due to the presence of soils with low resilience to structural damage (particularly clayey soils), a significant effect on soils cannot be ruled out although good practice soil handling measures would be implemented through a SMP during construction.	**Scoped in**

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
Construction	Construction of overhead line infrastructure, including supporting structures, and associated access tracks in areas of agricultural land use.	Temporary acquisition and permanent loss of agricultural land holdings during construction.	Agricultural land holdings	**Yes** – a very large proportion of the land within the Scoping Boundary is predicted to be BMV land, the impact on which has the potential to result in a significant adverse effects on agricultural productivity and thus agricultural land holdings. However, once mitigation measures are considered, residual effects may not be significant. The temporary acquisition of land to accommodate construction activities will result in temporary disruption and severance to agricultural land holdings and the permanent loss of some land from agricultural land holdings, resulting in reduction in the operational capacity and loss of income to farm businesses (which would be addressed through compensation agreements, which lie out with the scope of the ES).	**Scoped in***
Operation and Maintenance	Operation and maintenance of overhead line infrastructure, including supporting structures,	Temporary loss of agricultural land (including BMV land)	Agricultural land/BMV land (as	No – The construction phase assessment will account for both temporary and permanent	Scoped out

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
	and associated access tracks in areas of agricultural land use.	during operation and maintenance.	defined by the ALC system)	loss of agricultural land, and therefore no further significant effects are anticipated. Periodic vehicle access for routine maintenance and emergency repairs may require temporary access tracks and small compound areas, but based on the Applicant's experience of similar projects these are likely to be limited in extent. All soil handling would be undertaken in line with published good practice, such as the measures described in AS01 of **Appendix 4A Initial Outline Code of Construction Practice** which will be part of the SMP and be required, and therefore no likely significant effects are expected. The ISEP guidelines (Ref 12.3) recognises temporary work to be low magnitude.	
Operation and Maintenance	Operation and maintenance of overhead line infrastructure, including supporting structures, and associated access tracks in areas of agricultural land use.	Loss of agricultural soil function or volume during operation and maintenance with consequences for soil ecosystem services.	Soil	No – The construction phase assessment will account for both temporary and permanent loss of agricultural land, and the majority of land required for construction would be returned to its pre-construction land use;	Scoped out

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
				therefore, no further significant effects are anticipated during the operation and maintenance phases. Maintenance activities may impact soil function and quality, but at a much smaller scale than construction. Any disturbance to soils during maintenance would be undertaken in accordance with good practice soil handling methods, such as the measures described in measure AS01 of **Appendix 4A Initial Outline Code of Construction Practice** in relation to the SMP, and, therefore, no likely significant effects are expected. The ISEP guidelines (Ref 12.3) recognises temporary work to be low magnitude.	
Operation and Maintenance	Operation/maintenance of overhead line infrastructure, including supporting structures, and associated access tracks in areas of agricultural land use.	Temporary acquisition of agricultural land during operation and maintenance.	Agricultural land holdings	No – The majority of land required for construction would be returned to its pre-construction land use on completion of construction. Any impacts on farm businesses from periodic vehicle access for routine maintenance and emergency repairs would be	Scoped out

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
				limited and would not result in significant effects. Financial agreements for access would lie outside the scope of the ES.	

* The implementation of mitigation measures, such as the provision of temporary access to farmland, is expected to reduce the effects of the Project on agricultural land holdings during construction to a level that is not significant. The significance of effects will be fully considered for those agricultural holdings subject to targeted soil survey, for which it is proposed additional information will be gathered from farmers on their agricultural operations. This information will be referenced in the ES. If, following consideration of this additional information, it is determined that there is no potential for significant effects on agricultural land holdings, the assessment of such effects will be scoped out of the ES.

12.8 Proposed Assessment Methodology

Proposed Data Sources

12.8.1 The data sources listed in section 12.5 will provide baseline information, supplemented by field data for substation sites. Field survey is additionally proposed in agricultural fields for tower locations to assist with micro-siting, if there is evidence for the presence of BMV land. Surveys will be undertaken in accordance with published guidance as described in **Appendix 12A Agriculture and Soils Survey Strategy** and used to inform the ES assessment.

12.8.2 Data on agricultural land holdings will be collected through landowner/occupier or land agent interviews to inform the ES assessment. The agricultural land holding information will enable an understanding of agricultural operations and if necessary, inform an assessment of impacts (including cumulative impacts) on agricultural land holdings.

Proposed Assessment Methodology

12.8.3 The following section summarises the methodology proposed to be used for the Agriculture and Soils ES assessment, which builds on the general assessment methodology presented in **Chapter 5 EIA Approach and Methodology**.

12.8.4 The assessment of Agriculture and Soils in the ES will be undertaken based on ISEP's guidance document 'A New Perspective on Land and Soil in Environmental Impact Assessment' (Ref 12.3), with particular reference to Section 9: Assessing Impacts on Land and Soil. It will focus on the potential impacts to agricultural land and land use including the loss of BMV land, and loss of soil functions/volumes and soil-related features.

Sensitivity

12.8.5 The sensitivity criteria to be used to inform the assessment of effects on agricultural land and soils are developed from Table 2 of the ISEP guidance (Ref 12.3) and are presented in **Table 12.13** and **Table 12.14** below.

12.8.6 Sensitivity criteria for agricultural land holdings are based on the spatial relationship between agricultural infrastructure and the farmed land and the frequency of access required between areas of the holding. Descriptions are provided in **Table 12.15.**

Table 12.13 Sensitivity of soil receptors

Sensitivity	Description
Very high	ALC Grade 1 & 2
High	ALC Subgrade 3a
Medium	ALC Subgrade 3b
Low	ALC Grade 4 & 5
Negligible	As for low sensitivity but with only indirect, tenuous and unproven links between sources of impact and soil functions.

Table 12.14 Sensitivity of topsoil and subsoil resources

Sensitivity	Description
High (low resilience to structural damage)	Soils with high clay and silt fractions (clays, silty clays, sandy clays, heavy silty clay loams and heavy clay loams) and organo-mineral and peaty soils where the Field capacity days (FCD) are 150 or greater. Medium-textured soils (silt loams, medium silty clay loams, medium clay loams and sandy clay loams) where the FCDs are 225 or greater. All soils in wetness class (WC) V or VI.
Medium (medium resilience to structural damage)	Clays, silty clays, sandy clays, heavy silty clay loams, heavy clay loams, silty loams and organo-mineral and peaty soils where the FCDs are fewer than 150; Medium-textured soils (silt loams, medium silty clay loams, medium clay loams and sandy clay loams) where FCDs are fewer than 225. Sands, loamy sands, sandy loams, and sandy silt loams where the FCDs are 225 or greater or are in WC III or WC IV.
Low (high resilience to structural damage)	Soils with a high sand fraction (sands, loamy sands, sandy loams, and sandy silt loams) where the FCDs are fewer than 225 and are in WCI or WCII.

Table 12.15 Sensitivity of agricultural land holdings

Receptor Sensitivity	Description
Very high	Areas of land in which the enterprise is wholly reliant on the spatial relationship of land to key agricultural infrastructure; and Access between land and key agricultural infrastructure is required on a frequent basis (daily).
High	Areas of land in which the enterprise is dependent on the spatial relationship of land to key agricultural infrastructure; and Access between land and key agricultural infrastructure is required on a frequent basis (weekly).
Medium	Areas of land in which the enterprise is partially dependent on the spatial relationship of land to key agricultural infrastructure; and Access between land and key agricultural infrastructure is required on a reasonably frequent basis (monthly).
Low	Areas of land which the enterprise is not dependent on the spatial relationship of land to key agricultural infrastructure; and

Receptor Sensitivity	Description
	Access between land and key agricultural infrastructure is required on an infrequent basis (monthly or less frequent
Negligible	Areas of land which are infrequently used on a non-commercial basis.

Magnitude

12.8.7 Magnitude of impact criteria to be used to inform the assessment of effects to agricultural land and soils are presented in **Table 12.16**. These are taken from Table 3 of the ISEP guidance (Ref 12.3). These consider the magnitude (or scale) of change from current baseline conditions; and as described in the guidance are based on “permanent irreversible loss of one or more soil functions or soil volumes (including the permanent sealing or land quality downgrading”.

12.8.8 Magnitude of impact criteria for agricultural land holdings are presented in **Table 12.17**

Table 12.16 Magnitude of impact on agriculture and soils

Magnitude	Description
Large	Permanent irreversible loss of one or more soil functions or soil volumes (including permanent sealing or land quality downgrading) or permanent improvement of one or more soil functions or soil volumes (due to remediation or restoration) over greater than 20 hectares (ha) of agricultural land.
Medium	Permanent irreversible loss (including permanent sealing or land quality downgrading) or permanent improvement of one or more soil functions or soil volumes (due to remediation or restoration) over greater than 5 ha but less than 20 ha of agricultural land.
Small	Permanent irreversible loss (including permanent sealing or land quality downgrading) or permanent improvement of one or more soil functions or soil volumes (due to remediation or restoration) over less than 5 ha of agricultural land. Temporary reversible loss / reduction of one or more soil function(s) and restriction to current or approved future use (e.g., through degradation, compaction, erosion of soil resource) or a temporary improvement in one or more soil functions due to remediation or restoration or off-site improvement.
Negligible	No discernible loss/reduction or improvement of soil functions or soil volumes that restrict current or proposed land use.

Table 12.17 Magnitude of impact on agricultural land holdings

Magnitude	Description
Large	Private property and housing, community land and assets, development land and businesses and agricultural land holdings: 1) Loss of resource and / or quality and integrity of resource; Severe damage to key characteristics, features or elements. e.g., direct acquisition and demolition of buildings and direct development of land to accommodate assets; and / or 2) Introduction (adverse) or removal (beneficial) of complete severance with no / full accessibility provision.
Medium	Private property and housing, community land and assets, development land and businesses and agricultural land holdings: 1) Partial loss of / damage to key characteristics, features or elements, e.g., partial removal or substantial amendment to access or acquisition of land compromising viability of property, businesses, community assets or agricultural holdings; and/or 2) Introduction (adverse) or removal (beneficial) of severe severance with limited / moderate accessibility provision.
Small	Private property and housing, community land and assets, development land and businesses and agricultural land holdings: 1) A discernible change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements, e.g., amendment to access or acquisition of land resulting in changes to operating conditions that do not compromise overall viability of property, businesses, community assets or agricultural holdings; and / or 2) Introduction (adverse) or removal (beneficial) of severance with adequate accessibility provision.
Negligible	Private property and housing, community land and assets, development land and businesses and agricultural land holdings: 1) Very minor loss or detrimental alteration to one or more characteristics, features or elements. e.g., acquisition of non-operational land or buildings not directly affecting the viability of property, businesses, community assets or agricultural holdings; and / or 2) Very minor introduction (adverse) or removal (beneficial) of severance with ample accessibility provision.
No change	No loss or alteration of characteristics, features, elements or accessibility; no observable impact in either direction.

Significance of effects

12.8.9 The general approach adopted for evaluating the significance of effects, considering the sensitivity of the receptor and the magnitude of impacts, is outlined in **Table 12.18**. The significance matrix allows for an element of professional judgement to consider, for example, permanent loss of cropped agricultural land for creation of permanent ecological habitats, but where soil function is preserved.

12.8.10 Following the criteria set out in the ISEP guidance (Ref 12.3), any permanent loss of highly sensitive Grade 1 or Grade 2 agricultural land will be classed as a significant effect regardless of the scale of that loss. Similarly, permanent loss of BMV land in Subgrade 3a may potentially result in significant effects, but is scale dependent.

Table 12.18 Determination of significance matrix

		Sensitivity of Receptor				
		Very high	**High**	**Medium**	**Low**	**Negligible**
Magnitude of Impact	**Large**	Major	Major/ moderate	Moderate/minor	Minor	Minor/ negligible
	Medium	Major/moderate	Moderate	Moderate/minor	Minor/ negligible	Negligible
	Small	Moderate/ minor	Moderate/ minor	Minor	Minor/ negligible	Negligible
	Negligible	Minor/negligible	Minor/ negligible	Minor/negligible	Negligible	Negligible

12.8.11 An impact is considered significant if the resultant effect is Major or Moderate and a resultant effect of Minor or Negligible is not considered significant. This matrix approach provides a guide to authors but, as recognised in paragraph 12.8.9, professional judgement can be used in concluding the significance of an effect. Both positive and negative effects will be considered.

12.9 Assumptions and limitations

12.9.1 It is assumed that at the end of the construction phase, land temporarily taken by the Project will be reinstated and returned to agricultural use, whilst land required permanently for the Project will remain out of agricultural use.

12.9.2 The provisional data for ALC does not differentiate between ALC Subgrades 3a (BMV) and 3b (non-BMV) and consequently cannot be used to determine the quantity or geographical distribution of BMV land. It is anticipated that most land is BMV but the provisional data is not accurate at the field level and it does not pick up variations in ALC grade for areas less than approximately 80 ha.

12.9.3 Furthermore, the provisional ALC mapping was produced in the 1970s and therefore there is the potential for some areas, which are shown as agricultural land within the mapping (that is, assigned an ALC grade) to have been subject to development.

12.9.4 The limitations in the use of provisional ALC data will be overcome by use of the new preliminary Natural England ALC data (when available), and focused soil and ALC surveys which will be reported in the ES, subject to land access.

12.10 Conclusion

12.10.1 This Scoping Report chapter has outlined the proposed scope for further assessment for the Project in relation to the Agriculture and Soils ES Chapter.

12.10.2 The data sources that will be used to define the current and future baselines have been presented, along with the impact control and management measures that will be implemented. The potential for significant effects has been identified, as well as the associated source, impact and receptors.

12.10.3 Whilst the measures included in **Appendix 4A Initial Outline Construction Code of Practice** will reduce effects as far as reasonably practicable, and at this stage, no matters are proposed to be scoped out in relation to the construction phase.

12.10.4 The construction phase assessment will account for both temporary and permanent loss of agricultural land. No further significant effects are anticipated in relation to the operation and maintenance phases and all matters are proposed to be scoped out.

12.10.5 A summary of the proposed scope of the assessment is provided in **Chapter 20 Summary.**

References

Ref 12.1 Natural England (2021) Guide to assessing development proposals on agricultural land. Available at: https://www.gov.uk/government/publications/agricultural-land-assess-proposals-for-development (Accessed 9 July 2025)

Ref 12.2 Natural England (2012) Technical Information Note 049, 'Agricultural Land Classification: protecting the Best and Most Versatile agricultural land'. Available at: http://publications.naturalengland.org.uk/publication/35012 (Accessed 9 July 2025)

Ref 12.3 Institute of Environmental Management and Assessment (2022). A New Perspective on Land and Soil in Environmental Impact Assessment. (Not available online)

Ref 12.4 DEFRA (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites. Available at: https://www.gov.uk/government/publications/code-of-practice-for-the-sustainable-use-of-soils-on-construction-sites

Ref 12.5 Institute of Quarrying (2021) Good Practice Guide for Handling Soils in Mineral Workings. Available at **:** https://www.quarrying.org/soils-guidance (Accessed 9 July 2025)

Ref 12.6 MAFF (1988) 'Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land'. Available at: http://publications.naturalengland.org.uk/publication/6257050620264448 (Accessed 9 July 2025)

Ref 12.7 British Society of Soil Science (2021). Guidance Document 3: Working with Soil Guidance Note on Benefitting from Soil Management in Development and Construction. Available at http://publications.naturalengland.org.uk/publication/35012 (Accessed 9 July 2025)

Ref 12.8 Department for Environment Food and Rural Affairs. (2025). Multi-Agency Geographic Information for the Countryside. Available at: https://magic.defra.gov.uk/MagicMap.html Accessed 9 July 2025 (Accessed 9 July 2025)

Ref 12.9 Cranfield University. (2025). Land Information System. Available at: https://www.landis.org.uk/ (Accessed 9 July 2025)

Ref 12.10 Soil Survey of England and Wales (1984). Soils and their Use in Eastern England and accompanying 1:250,000 map Sheet 4

Ref 12.11 Natural England. (2020). Likelihood of Best and Most Versatile (BMV) Agricultural Land - Strategic scale map Eastern Region (ALC020). Available at: https://publications.naturalengland.org.uk/publication/6205542189498368?category=5208993007403008 (Accessed 9 July 2025)

Ref 12.12 Natural England. (1989). Climatological Data for Agricultural Land Classification (ALC010). Retrieved from Natural England Publications. Available at: https://publications.naturalengland.org.uk/publication/6493605842649088 (Accessed 9 July 2025)

Ref 12.13 Cranfield University. (2015). Research to develop the evidence base on soil erosion and water use in agriculture: Final Technical Report. Available at: https://www.theccc.org.uk/wp-content/uploads/2015/06/Cranfield-University-for-the-ASC.pdf (Accessed 9 July 2025)

Ref 12.14 National Grid (2025) Corridor Preliminary Routeing and Siting Study, Weston Marsh to East Leicestershire. Available at: https://www.nationalgrid.com/the-great-grid-upgrade/weston-marsh-to-east-leicestershire/document-library (Accessed 9 July 2025)

13. Traffic and Transport

nationalgrid

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13. Traffic and Transport

13.1 Introduction

13.1.1 This chapter presents how the Traffic and Transport assessment will consider the potential likely significant effects on traffic and transport receptors that may arise from the construction, operation and maintenance of the Project (as described in **Chapter 4, Description of the Project**). It describes the methodology and datasets to be used within the assessment, presents an overview of the baseline conditions, and identifies the potential likely significant effects to be considered within the assessment, and how these will be assessed for the purpose of the Environmental Statement (ES). As detailed in **Chapter 4, Description of the Project**, the decommissioning of the Project has been scoped out of the environmental assessment.

13.1.2 The Scoping Boundary is illustrated on **Figure 1.2 Scoping Boundary**.

13.1.3 This chapter should be read in conjunction with the following chapters which provide the Project context and approach to EIA:

- **Chapter 2 Regulatory and Planning Policy Context**;
- **Chapter 3 Main Alternatives Considered**;
- **Chapter 4 Description of the Project**; and
- **Chapter 5 EIA Approach and Methodology**.

13.1.4 There may be interrelationships with other disciplines. Therefore, this chapter should also be read in conjunction with the following chapters:

- **Chapter 14 Air Quality** – which covers the air quality impacts associated with traffic as a result of the Project;
- **Chapter 15 Noise and Vibration** – which covers the noise and vibration impacts associated with traffic as a result of the Project;
- **Chapter 16 Socio-economics, Recreation and Tourism**: which considers potential disruption to users of recreational routes including public rights of way (PRoW);
- **Chapter 17 Health and Wellbeing** – which considers potential impact on residents' access to recreational routes and potential changes to neighbourhood quality as a result of noise, dust, air quality and amenity from traffic; and
- **Chapter 18 Climate Change** – which calculates greenhouse gas emissions from traffic.

13.1.5 This chapter is supported by the following figures and appendices:

- **Figure 13.1 Baseline Transport Network**; and
- **Figure 13.2 Strategic Road Network.**

13.2 Legislation, Policy and Guidance

13.2.1 **Chapter 2 Regulatory and Planning Policy Context** describes the overall regulatory and planning policy context for the Project. Key legislation, policy, and planning guidance relevant to the assessment of potential effects on traffic and transport associated with the construction, operation, and maintenance of the Project is provided in **Chapter 2 Regulatory and Planning Policy Context. Appendix 2A Key Legislation, Appendix 2B National and Regional Planning Policy** and **Appendix 2C Local Policy.**

13.2.2 Relevant principal guidance and standards that have informed the scoping process are listed below and will be taken into account as part of the assessment, along with other relevant material:

- Institute of Sustainability and Environmental Professionals (ISEP) 2023 Environmental Assessment of Traffic and Movement (Ref 13.1) - Guidance on examining the environmental impacts of developments in terms of traffic and movement. This guidance has been used to outline the scope of the assessment.
- Planning Practice Guidance: Travel Plans, Transport Assessments and Statements, 2014 (Ref 13.2) - Sets out ways of assessing and mitigating the negative transport impacts of developments that generate significant amounts of movement, in order to promote sustainable development.
- Department for Transport (DfT) Strategic Road Network and the Delivery of Sustainable Development, Circular 01/2022 (Ref 13.3) – Guidance explaining how National Highways will engage with the planning system and fulfil its remit to be a partner for sustainable economic growth, whilst maintaining, managing and operating a safe and efficient strategic road network, with an emphasis on encouraging measures to reduce the impact of traffic.
- Design Manual for Roads and Bridges (DMRB): LA103 Scoping for Environmental Assessment, 2020 (Ref 13.4) - Covers the requirement and procedures that should be followed when scoping a project, to reach a reasoned conclusion on the likely effects of a project on the environment in line with the requirements of the EIA Directive 2014/52/EU (Ref 13.5).
- DMRB: LA104 Environmental Assessment Monitoring, 2020 (Ref 13.6) – Covers the requirement and procedures that should be followed when assessing, reporting and monitoring the environmental effects of projects in line with the requirements of the EIA Directive 2014/52/EU (Ref 13.5).

13.3 Consultation and Engagement

13.3.1 The ES will be informed by consultation and engagement with stakeholders. This includes:

- Highway authorities responsible for the road network crossed by the Scoping Boundary - Lincolnshire Country Council, Leicestershire County Council, North Northamptonshire Council, West Northamptonshire Council and National Highways, as well as any neighbouring highway authorities that would be materially affected by construction traffic.
- Rail stakeholders including Network Rail and if appropriate, Train Operating Companies; and

- Water Authorities including the Environment Agency and Canal & Rivers Trust as appropriate for navigable waterways.

13.3.2 In addition, engagement will be undertaken with non-statutory stakeholders as required to ensure that specialist local views and expertise can be considered as part of the ES.

13.3.3 In preparing this Scoping Report chapter, consideration has been given to stakeholder feedback received following Non-Statutory Consultation held between 11 June and 6 August 2025, as set out in **Table 13.1**.

Table 13.1 Engagement with Stakeholders

Stakeholder	Summary of response	Consideration in the Scoping Report
Lincolnshire County Council	Impacts on PRoW need careful consideration including where they would cross haul roads. An appropriate management plan should be prepared.	**Appendix 4A Initial Outline Code of Construction Practice** (CoCP) includes measures relating to the management of PRoW during construction.
	No comments are made on highways at this stage. When the scheme is more developed, engagement can take place on Transport Assessment scope.	Changes in journey distance due to PRoW closures/diversions during construction have been considered as set out in Table 13.2.
	Concerns raised about the potential for significant transport related impacts during the construction phase due to multiple Nationally Significant Infrastructure Projects (NSIPs) being developed over a similar time period in an area that is rural in nature with limited network capacity.	The Applicant will engage with the highway authorities to agree the Transport Assessment scope. The Transport Assessment will consider other NSIP's which have planning consent, and traffic associated with these developments in the future baseline, see paragraph 13.5.103. A cumulative effects assessment will be undertaken and reported in the ES as described in **Chapter 5 EIA Approach and Methodology, which** will include consideration of other developments where relevant.
Leicestershire County Council	Confirms that the County Council intends to engage with the Project as further detail on highways emerge.	The Applicant will engage with the highway authorities to agree the Transport Assessment scope.

Stakeholder	Summary of response	Consideration in the Scoping Report
Network Rail	Network Rail's Asset Protection team in the eastern region must be consulted to ensure that all risks to the railway infrastructure are safely managed from all construction-related activities associated with the Project.	The Applicant will engage with Network Rail's Asset Protection team in developing the design of the Project.
South Holland District Council	The consequence of construction traffic on already narrow country roads will be severe. Construction traffic flows may cause delays and highway safety effects on some sections of the A16, A18, A1173, A158, A1104, A1111, and the A157.	The impact of construction traffic on road users, public transport users, pedestrians, and cyclists during construction would be considered, see Table 13.2. **Appendix 4A Initial Outline CoCP** sets out the initial measures for management of construction traffic. An Outline Construction Traffic Management Plan (CTMP) will be developed in consultation with the relevant highway authorities.
National Highways	The scale and nature of the Project is likely to have an impact on the Strategic Road Network. National Highways would be expected to be consulted on the Transport Assessment which would form a key submission of any forthcoming planning application. It is recommended that the Transport Assessment is undertaken in a staged approach with the contents and methodology scoped out with National Highways and Lincolnshire County Council in advance. In addition to a Transport Assessment and Staff Travel Plan, National Highways would expect to see a separate CTMP.	A Transport Assessment will be prepared and submitted with the application for development consent. The Applicant will consult the highway authorities on the scope of the Transport Assessment in in advance of undertaking it, and continue engagement throughout the development stages of the Project. **Appendix 4A Initial Outline CoCP** sets out the initial measures for management of construction traffic. An Outline CTMP will be developed in consultation with the relevant highway authorities.

13.4 Study Area

13.4.1 The Scoping Boundary is shown on **Figure 1.2 Scoping Boundary**.

13.4.2 The extent of the Study Area for the ES assessment of transport impacts and effects has not been defined at this stage. However, it is likely to include areas of the transport network that are beyond the Scoping Boundary. The Study Area will take account of likely access/delivery routes and will consider the extent of likely significant effects on the transport network.

13.4.3 To inform this EIA Scoping Report the baseline transport network in the vicinity of the Scoping Boundary has been used, as shown on **Figure 13.1 Baseline Transport Network**. This highlights the key infrastructure including highways, bus routes, railways, Public Rights of Way (PRoW), National Cycle Network and navigable waterways that are in and around the Scoping Boundary and which may be impacted by the Project depending on the evolving design. The baseline transport network is described in Section 13.5.

13.4.4 The Strategic Road Network (SRN), operated by National Highways, may be impacted by the Project and may form part of the Study Area for the ES. The strategic road network is shown on **Figure 13.2 Strategic Road Network**.

13.4.5 The Applicant will liaise with the relevant highway authorities to agree the Study Area.

13.5 Baseline Conditions

Data Sources

13.5.1 The baseline described in this chapter and associated appendices has been informed by the following data sources:

- Road network - Ordnance Survey open map, Google Earth Pro and FindMyStreet (National Street Gazetteer).
- Bus route information – local bus operators, highway authorities.
- Rail information – National Rail.
- Navigable Waterways - Environment Agency and Navigation Authority and The inland Waterways Association.
- Designated non-motorised user (NMU) routes – Sustrans/local authorities.
- PRoW – Local Authority Definitive maps.

Baseline

13.5.2 The Project has been divided into five Sections as described in **Chapter 4, Description of the Project** and shown on **Figure 1.2 Scoping Boundary**. The Sections are defined by the geographical alignment of the Scoping Boundary and the administrative boundaries of the local authorities. The baseline environment is reported for the strategic highway links and then by Section including substation

Siting Areas/Zone, from the east (Section 1) to the south (Section 5) along the Scoping Boundary.

Strategic highway links

13.5.3 **Figure 13.2 Strategic Road Network**, shows the Scoping Boundary in the context of the SRN.

13.5.4 The A1, A14 and A45 cross the Scoping Boundary, and the M1, A52 and A46 are in the vicinity of the Scoping Boundary.

13.5.5 The M1 provides a north-south route up to 20km west of the Scoping Boundary, while the A1 offers a north-south route between Bedford and Grantham, crossing the Scoping Boundary near South Witham in Section 2.

13.5.6 The A14 provides an east-west route between the M1 at Lutterworth and the A1(M) at Huntingdon, crossing Section 5 near Rothwell. The A45 provides a southwest-northeast route between the M1 at Northampton and Thrapston, crossing Section 5 near Wellingborough.

13.5.7 The A52 provides an east-west route between the M1, Nottingham and Boston to the north of the Scoping Boundary, and the A46 located to the west of the Scoping Boundary provides a north-south route between the M1 at Leicester and Bingham.

13.5.8 The M1, A1, A14, A45 and A46 are dual carriageways generally subject to the national speed limit (70mph). The A52 is a dual carriageway between the M1 and Nottingham and a two-lane single carriageway subject to the national speed limit, with a 40mph limit through urban areas.

13.5.9 Footways are generally only present where the non-motorway SRN passes through built-up areas.

Section 1

Overhead Line

Highway network

13.5.10 The SRN does not intersect with Section 1.

13.5.11 The following A and B roads intersect Section 1:

- the A16; and
- the B1356 Surfleet Road.

13.5.12 The A16 is generally a two-lane single carriageway, providing a north-south route between the A52 to the north (Boston) and the A47 to the south (Peterborough). The A16 provides a connection into the A152 which runs just to the north of Section 1 and the A151 towards Spalding, just to the south of Section 1. The B1356 Surfleet Road is a two-lane single carriageway providing a north-south route between Spalding and the A152. The A152 provides a route to the B1397 which runs east-west to the north of Section 1 and the A151 provides a route through Spalding to the B1180 which runs east-west to the south of Section 1.

13.5.13 In addition, the following unclassified roads are within Section 1: Wykeham Lane, The Chase, Stumps Lane, Marsh Road, West Marsh Road, Dunnegate Way, Herdgate

Lane, Ten Acre Lane, Old Hall Lane, White Cross Lane, Green Lane, Cuckoo Lane, Bacons Lane, Burtey Fen Lane, Beach Bank, Coward's Lane, Beach Lane, Cheal Lane, Cross Lane, Beck Bank, Parson Drove and Short Drove.

Walking and cycling

13.5.14 A network of PRoW cross Section 1. The Millennium Walk crosses Section 1 between Surfleet and Pinchbeck along the River Glen.

13.5.15 There are no National Cycle Network routes (NCN) that cross Section 1.

Public transport

13.5.16 Four bus services run through Pinchbeck and Surfleet along the B1356: service B3, service B9, service B13 and service G76. Services B3, B9 and B13 provide connections between Boston and Spalding. Services B3 and B9 operate on weekdays between 7 am and 6 pm, while the B13 offers five trips in each direction on Saturdays. Service G76 operates on schooldays, providing one morning and one evening trip between Gosberton Risegate and Spalding.

13.5.17 Additionally, one school bus service runs along the southern end of Beck Bank within Section 1: service G78. The route operates between Spalding and West Pinchbeck, offering one morning and one evening service.

13.5.18 An on-demand bus service, CallConnect, operates within and nearby Section 1.

13.5.19 The Peterborough to Lincoln Railway Line passes through Section 1 and provides approximately hourly services in each direction between Peterborough and Lincoln, stopping at Spalding, Sleaford, Ruskington, and Metheringham.

Navigable waterways

13.5.20 The River Welland, River Glen and Boston to Peterborough Wetland Corridor and Navigable Black Sluice (also known as the South Forty Foot Drain) are all navigable waterways that pass within Section 1.

Airports

13.5.21 There are no airports within or near Section 1.

Weston Marsh Substation Infrastructure Siting Zone

Highway network

13.5.22 The SRN does not intersect with the Weston Marsh Substation Infrastructure Siting Zone.

13.5.23 There are no A or B roads crossing the Weston Marsh Siting Zone. The following A and B roads are located nearby:

- The A17;
- the A151;
- the A16; and
- the B1357.

13.5.24 The A17 and the A16 are generally two-lane single carriageways. The A17 runs to the east of the Siting Zone and connects to the A16 to the north and the A151 to the south. The A16 runs to the west between the A52 at Boston to the north and the A47 at Peterborough to the south. The A16 also connects to the A17 and the A151. The A151 is a two-lane single carriageway that runs in an east-west direction just to the south of the Siting Zone. The B1357 runs to the east of the Weston Marsh Siting Zone and provides a north-south route between the A17 and the A151.

13.5.25 In addition, the following unclassified roads are within the Weston Marsh Substation Infrastructure Siting Zone: Stone Gate, Marsh Road and Wykeham Lane.

Walking and cycling

13.5.26 A network of PRoW cross the Weston Marsh Substation Infrastructure Siting Zone.

13.5.27 There are no National Cycle Network routes (NCN) that cross the Weston Marsh Siting Zone.

Public transport

13.5.28 There are no public transport services operating within the Weston Marsh Substation Infrastructure Siting Zone.

13.5.29 The nearest bus stops are on the A151 at Weston, and an on-demand bus service, CallConnect, operates near to the Siting Zone at Moulton Seas and Weston.

Navigable waterways

13.5.30 There are no navigable waterways that pass within the Weston Marsh Substation Infrastructure Siting Zone.

13.5.31 The nearest navigable waterway is the River Welland, which runs just to the west of the Weston Marsh Siting Zone.

Airports

13.5.32 There are no airports within or near Weston Marsh Substation Infrastructure Siting Zone.

Section 2

Overhead Line

Highway network

13.5.33 The A1 which is part of the SRN, crosses Section 2 near South Witham.

13.5.34 The following A and B roads intersect Section 2:

- the A15;
- the A151;
- the B1177 Main Road; and
- the B1176 Corby Road/Winstead Road/Bitchfield Road.

13.5.35 The A15 and A151 are two-lane single carriageways. The A15 provides a north–south route between Lincoln and Peterborough, while the A151 offers an east–west connection to the A1 to the west. The A15 bisects Section 2 and connects to the B1177 at its northern edge. Similarly, the A151 bisects Section 2, provides access to the B1176, and crosses the railway line. The B1177 Main Road is a two-lane single carriageway north–south route between the A52 and the A15. The B1176 Corby Road/Winstead Road/Bitchfield Road) is also a two-lane single carriageway, providing access from the A151.

13.5.36 The following unclassified roads are within Section 2: Haconby Drove, Hall Road, Haconby Lane, West Road, Stainfield Road, Kirkby Underwood Road, Hanthorpe Road, Hangmans Lane, Edenham Road (Bulby), Bulby Road (Elsthorpe), Bulby Road (Irnham), Main Street (Bulby), Forstedd Hill, Swinstead Road, Irnham Road (Corby Glen), Swayfield Road, Corby Road, Castle Bytham Road, Overgate Road, Ling Lane, Honey Pot Lane, Woolleys Lane, Water Lane, North Witham Road, South Witham Road, and Moor Lane.

Walking and cycling

13.5.37 A network of PRoW cross Section 2. The South Kesteven Round is a long distance walk route which crosses Section 2 along Kirkby Underwood Road and Hanthorpe Road between Hanthorpe and Kirkby Underwood. There is a nearby trail, the Mowbray Way, to the north of Section 2, which runs in an east-west direction between Buckminster and Scalford.

13.5.38 There are no NCN routes crossing Section 2.

Public transport

13.5.39 There is one bus service that runs along the A15 and B1177 within Section 2: Service 401 (Aslackby - Bourne). Service 401 generally offers a limited service during school days, college days, and Thursdays.

13.5.40 There are three bus services that run along the A1 within Section 2: Service 33 (Lincoln - Bourne), Service 101 (Morton - Peterborough), and Service 401 (Aslackby - Bourne). Service 33 provides one service in each direction on weekdays. Service 101 operates approximately two services per hour from Monday to Saturday and hourly services on Sundays and public holidays. Service 401 generally offers a limited service during school days, college days, and Thursdays.

13.5.41 There is one service that runs along the A151 and the B1176 Swinstead Road/Corby Glen Road: Service 404 (Bourne - Little Bytham), which provides one service in each direction on school days only. Service 183 (Great Casterton - Corby Glen) also provides one morning and one evening service on school days only via the A151 Station Road/Village Street/Bourne Road between the A1 and Corby Glen.

13.5.42 There are two bus services, Service 28 (Grantham - Stamford) and Service 183 (Corby Glen - Great Casterton), that pass through South Witham Road and North Witham Road, providing service on school days only.

13.5.43 An on-demand bus service, CallConnect operates within and nearby Section 2.

13.5.44 The East Coast Main Line passes through Section 2 which provides rail services running between London and Edinburgh via Peterborough and Grantham. The nearest station is Grantham approximately 12 km to the north of the Scoping Boundary.

Navigable waterways

13.5.45 There are no navigable waterways crossing Section 2.

Airports

13.5.46 There are no airports within or near Section 2.

New WMEL-A Substation

Highway network

13.5.47 The WMEL-A Substation is located in Section 2.

13.5.48 The nearest SRN route is the A1 located approximately 4km to the west of the Siting Area.

13.5.49 The A151 is a two-lane single carriageway providing an east-west route connecting with the A1 and passing close to the WMEL-A Substation Siting Area.

Walking and cycling

13.5.50 There is one PRoW – footpath (BurC/10/1) which crosses the WMEL-A Substation Siting Area. There are no NCN routes nearby.

Public transport

13.5.51 There are no bus routes passing the WMEL-A Substation Siting Area. The nearest railway is the East Coast Main Line which runs near the eastern boundary of the Siting Area.

Navigable waterways

13.5.52 There are no navigable waterways crossing the WMEL-A Siting Area.

Airports

13.5.53 There are no airports crossing the WMEL-A Siting Area.

Section 3

Overhead Line

Highway network

13.5.54 The SRN does not intersect with Section 3.

13.5.55 The following A and B roads intersect with Section 3:

- the A607;
- the A606;
- the A6006;
- the A607;

- the B676; and
- the B6047.

13.5.56 The A607 is a two-lane single carriageway providing a north–south route between Grantham and Melton Mowbray. The A606 and B6047 are two-lane single carriageways, running east–west and approximately north–south respectively. The A6006 and A47 are two-lane single carriageways providing east–west routes across Section 3. These A roads bisect Section 3, with the A606 providing access to the B6047 at the northern edge. The B676 is a two-lane single carriageway providing an east–west route between the A1 and the A606 (Melton Mowbray).

13.5.57 In addition, the following unclassified roads are within Section 3: Wymondham Road (Sewstern), Sewstern Road, Sewstern Lane, Garthorpe Road, Wymondham Road (Garthorpe), Garthorpe Road (Wymondham), Gipsy Nook, Jubilee Lane, Garthorpe Lane, Freeby Lane, Waltham Road, Woodfold Lane, Thorpe Side, Melton Spinney Road, Melton Road, Scalford Road, Holwell Lane, Gorse Lane, Stone Penn Lane, Nursery Lane, Clawson Lane, Clawson Road, Six Hills Road, Chapel Lane, Welby Lane, Wartnaby Road, Saxelby Road, Ostler Lane, Main Street (Grimston), Saxelbye Lane, Main Street (Saxelby), Saxelby Park Road, Shoby Lane, Main Street (Shoby), Thorpe Satchville Road, North Pasture Lane, Ashby Folville Road, Bakers Lane, Pasture Lane, Great Dalby Road, Gaddesby Lane, Foxville Street, Klondyke Lane, Ashby Road (Gaddesby/Barsby/Twyford), Gated Road, Main Street (Twyford), Burrough Road (Twyford and Thorpe), Station Road (John O Gaunt), Leicester Road and numbers of unnamed roads.

Walking and cycling

13.5.58 A network of PRoW cross Section 3, along with two walking routes. In the area of Section 3, the Jubilee Way passes through Burrough Jill Country Park and Woolsthorpe By Belvoir via PRoW between Melton Spinney Road and Melton Road/Scalford Road. Frisby on the Wreake Parish Walk is a circular walking route to the north of the A607 starting in Frisby on the Wreake and passing through Kirby Bellars, Priority Water Nature Reserve and Kirby Lake.

13.5.59 Two NCN routes cross Section 3. Route 64 runs primarily as a north-south route between Scalford and Melton Mowbray, to the west of the A607. Route 48 provides a general north-south route between Nether Broughton and Rotherby via Saxelbye, Asfordby, and Frisby on the Wreake.

Public transport

13.5.60 There are ten bus services that operate within Section 3.

13.5.61 Nine bus services are routed along the A607, where it crosses Section 3.

13.5.62 Two bus services operate on the section north of Melton Mowbray. Service 8 (Melton Mowbray - Grantham), which crosses the A607 twice, provides daily services on Monday to Saturday with a two-hour frequency. Service 19 (Melton Mowbray - Nottingham) operates on the A607 between Nottingham and Melton Mowbray, providing daily services with a two-hour frequency on Monday to Saturday .

13.5.63 Seven bus services operate on the section south of Melton Mowbray. These include Service 5 (Leicester - Melton Mowbray), Service 5A (Leicester - Melton Mowbray), Service X5 (Leicester - Melton Mowbray), Service R29 (Essendine - Brooksby College), Service LC2 (Bottesford - Melton Mowbray), Service LCC2 (Bottesford -

Melton Mowbray), and Service LC8 (Melton Mowbray - Loughborough). Some of these bus routes also run through local roads within Section 3, such as Station Lane (Kirby Bellars) and Saxelbye Lane.

13.5.64 Bus service LC1 (Oakham - Melton Mowbray), operates on the A47 and the A6047.

13.5.65 The Birmingham to Peterborough rail line and Old Dalby Test Track pass through Section 3 to the west of Melton Mowbray. The nearest station on the Birmingham to Peterborough line is Melton Mowbray, which is just outside Section 3. The Old Dalby Test Track runs between Melton Mowbray and Nottingham.

13.5.66 The Birmingham to Peterborough Line is a cross-country railway connecting Birmingham, Leicester and Peterborough which provides hourly rail services daily.

Navigable waterways

13.5.67 The Melton Mowbray Navigation (also known as the River Wreake) is a navigable waterway that crosses Section 3 between Melton Mowbray and East Goscote, to the north of the A607.

Airports

13.5.68 There are no airports within the Section 3.

New WMEL-B Substation

Highway network

13.5.69 The WMEL-B Substation is located in Section 3.

13.5.70 The nearest SRN route is the A46 located approximately 6.5km to the west of the Siting Area.

13.5.71 The nearest A road is the A606 located approximately 1.5km to the east of the siting area. Six Hills Lane, which is approximately 0.6km north of the Siting Area connects between the A46 and the A606 and provides access to Ostler Lane. Ostler Lane, which is a narrow rural road is approximately 200m from the Siting Area.

Walking and cycling

13.5.72 There is one PRoW – bridleway (G67) that crosses the WMEL-B Siting Area.

13.5.73 NCN route 48 crosses Six Hills Lane to the west of the WMEL-B Siting Area.

Public transport

13.5.74 There are no bus services operating along the nearby the WMEL-B Siting Area. The nearest railway line is the Old Dalby Test Track that runs to the west of the Siting Area.

Navigable waterways

13.5.75 There are no navigable waterways crossing the Siting Area.

Airports

13.5.76 There are no airports within the Siting Area.

Section 4

Overhead Line

Highway network

13.5.77 The SRN does not cross Section 4.

13.5.78 The following A and B roads cross Section 4:

- the A47;
- the A6;
- the A4304;
- the A508; and
- the B6047.

13.5.79 The A47 is generally a two-lane single carriageway providing an east–west route between the A563 at Leicester and the A6003. The A47 connects to the B6047, which generally runs in a north–south direction both within and adjacent to Section 4. The B6047 extends northward within Section 4 and westward beyond it, linking to the A6 in the south. The A6 is generally a two-lane single carriageway and provides a route to the A47 via the B6047, and to the A14 in the south, facilitating access to the southern edge of Section 4. The A4304 is a two-lane single carriageway that provides a route to the A508; however, it is subject to a height restriction at the crossing over the Midland Main Line railway.

13.5.80 In addition, the following unclassified roads are within Section 4: Park Road, Marefield Lane, Twyford Road (John O Gaunt/Owston and Newbold/Marefield/Lowesby/South Croxton), Marefield Road, Lowesby Road, Church Hill, Skeg Hill, Skeg Hill Road, Main Street (Cold Newton), Hungarton Road, Endersbys Lane, Sludge Hall Hill, Marefield Lane (Tilton on the Hill), Main Street (Tilton on the Hill), Oakham Road, Tilton Lane, Back Road, Skeffington Glebe Road, Loddington Road, Green Lane, Skeffington Wood Road, Wood Lane, Main Street (Tugby), Hallaton Road, Crackbottle Road, Palmers Lane, The Avenue, Rolleston Road, Skeffington Road, Illston Road, Three Fates Road, Langton Road/ Cranoe Road (Stonton Wyville/Tur Langton), Church Hill Street (Slawston), Welham Lane (Cranoe), Cranoe Road (Welham), Welham Road (Slawston), Slawston Road (Welham), Main Street (Welham), Bowden Lane (Welham), Thorpe Langton Road, Welham Road (Thorpe Langton), Main Street (Thorpe Langton), Church Lane, Green Lane, Weston Road, Bowden Lane, Welham Lane, Bowden Road, Langton Road.

Walking and cycling

13.5.81 A network of PRoW cross Section 4. There are also ten promoted walking routes within Section 4, which are summarised below:

- Hungarton Parish Walks – Walk 2 is a circular walking route that starts from Hungarton and crosses the western edge of the Scoping Boundary at Cold Newton.

- Tilton on the Hill Parish Walks are two promoted circular walking routes between Tilton on the Hill and Cold Newton, and between Tilton on the Hill and Skeffington Wood.
- Skeffington Parish Walks are two promoted circular walking routes. Walk 1 is routed from Skeffington via Skeffington Wood Road and several PRoW before returning to the trailhead. Walk 2 starts from Skeffington, runs to the south to Rolleston and then east towards Turby before returning to the trailhead via a network of PRoW.
- There are five promoted short walks around Market Harborough. These are Route 1 - Rectory Lane, Little Bowden; Route 2 - Little Bowden Recreation Ground; Route 5 - Views from the edge; Route 9 - Great Bowden Village; Route 10 - The big one: Market Harborough and Great Bowden,.

13.5.82 Two NCN routes cross Section 4. Route 63 runs approximately north-south from Owston and Stoughton via Tugby and Goadby, crossing the A47 and the B6047. Route 64 provides a north-south route between Goadby and Market Harborough via Glooston, Cranoe, Welham, and Great Bowden.

Public transport

13.5.83 There is one bus service that crosses Section 4 on the A47. Service LC7 (Leicester to Uppingham) provides daily services with a 2-hour frequency on Monday to Saturday.

13.5.84 There are three bus services that run along the A1304: Service HC1 (Market Harborough - Rail Station and Little Bowden), Service LC11 (Market Harborough - Corby), and Service WW (Market Harborough - Cottingham). Service HC1 provides hourly services on Monday to Sunday. Service LC11 provides two services in each direction on Wednesdays and Saturdays only. Service WW runs between Market Harborough and Cottingham once a week on Tuesdays only.

13.5.85 The Midland Main Line railway connects London, Leicester, Nottingham and Shefield and passes through the southern end of Section 4 near Market Harborough.

Navigable waterways

13.5.86 There are no navigable waterways crossing Section 4.

Airports

13.5.87 There are no airports within Section 4.

Section 5

Overhead Line

Highway network

13.5.88 The A14 and A45 which are part of the SRN cross Section 5 near Kettering and Wellingborough respectively.

13.5.89 The following A and B roads cross Section 5:

- the A427,

- the A6;
- the A43;
- the A509;
- the A4500;
- the B664;
- the B574; and
- the B573.

13.5.90 The A427, A6, A43, A509, and A4500 are generally two-lane single carriageways. The A427 provides an east–west route between the A6 at Market Harborough and the A43 at Corby, and connects to the B664, which provides access to the northern edge of Section 5. The A6 provides access to the area north of the Midland Main Line railway, which bisects Section 5, and connects to the A14. The A43 provides a north–south route between the A14 and the A45. The A45 also connects to the B573, which runs within and along the western edge of Earls Barton, to the north of the A45. The A509 provides a north-south route connecting the A14, A4500 and A45, which are east-west routes. The B664 is a two-lane single carriageway providing a northeast–southwest route between the A427 and Weston-by-Welland. The B574 is a two-lane single carriageway forming a circular route with the A509. The B573 is a two-lane single carriageway providing connections between the A45 and A4500, and links to Station Road, which leads to the existing Grendon Substation.

13.5.91 In addition, the following unclassified roads are within Section 5: Green Lane (Weston by Welland), Welham Road (Weston by Welland), Valley Road (Weston by Welland), Dingley Road, Sutton Lane, Desborough Road (Braybrooke, Arthingworth and Harrington), Harborough Road, Harrington Road, Griffin Road, Braybrooke Road (Braybrooke and Arthingworth), Arthingworth Road, Church Lane (Harrington), Thorpe Under Wood Road, Harrington Road (Rothwell), Rothwell Road (Harrington and Draughton), High Street (Harrington), Loddington Road (Harrington), Lamport Road (Rothwell), Old Orton Road, Orton Road, Rothwell Road, Main Street (Orton), Lamport Road (Orton), Harrington Road (Orton, Lamport and Loddington), Old Road (Lamport and Broughton), Loddington Road (Old), Broughton Road (Walgrave), Wellingborough Road, Broughton Road (Pytchley), High Street (Pytchley), Isham Road, Pytchley Road, Isham Road (Orlingbury), Harrowden Road, Orlingbury Road, Hardwick Road, Moonshine Gap, Sywell Road, Meers Ashby Road, Wilby Road, Doddington Road, Cut Throat Lane, Hardwater Road, Station Road and Main Road

Walking and cycling

13.5.92 A network of PRoW cross Section 5, along with one promoted walking route - Castle Ashby Circular. This circular route passes through the village of Castle Ashby and crosses the southern end of Section 5.

13.5.93 NCN Route 6 crosses Section 5 to the south of Market Harborough.

Public transport

13.5.94 Two bus services operate along the A427 in Section 5. Service LC11 (Market Hall - George Street) provides two daily services in each direction on Wednesdays and Saturdays only. The Welland Wanderer West bus service runs along the A4505,

A427 and B664 between Market Harborough and Corby, providing one service per direction daily.

13.5.95 Service 18 (Ise Lodge - Market Harborough) and Service 78 (Walgrave - Kettering) run along Braybrooke Road and Harborough Road within Section 5. Service 18 provides broadly an hourly service on Mondays to Saturdays, while Service 78 offers one service per direction on Fridays only.

13.5.96 There are three bus services that are routed along the A45 and local roads at Mawsley, Broughton, and Pytchley. Service 10 (Northampton - Kettering), Service X10 (Northampton - Kettering), and Service 78D (Kettering - Weston Favell Centre), The combined operation of services 10 and X10 provides an approximate hourly frequency throughout the week (Monday to Sunday), with enhanced service levels during weekday morning peak periods. Service 78D provides a pre-booked service only. Additionally, Service 80P (Mawsley - Northampton) runs along the local roads at Mawsley.

13.5.97 Service 78C (Kettering (Venture Park) - Pytchley) provides one service from Kettering to Pytchley on Fridays and bank holidays only, running through local roads between Pytchley and Kettering via Broughton, Great Cransley, Loddington, and Thorpe Malsor. Service ChattyBus2 provides one service per direction daily, passing through local roads between Kettering and Wellingborough via Pytchley, Orlingbury, Little Harrowden, and Great Harrowden.

13.5.98 There are three bus services - Service X4 (Northampton - Corby - Peterborough), Service X46 (Northampton - Rushden), and Service VH11 (Stanwick Lakes - Northampton) - that run through the A509 and A4500. Service X47 (Northampton - Raunds) also runs through the A4500 and the A573. Service X46 and Service VH11 provide frequent daily services on Mondays to Saturdays, while Service X4 and Service X47 also offer frequent daily services on Sundays.

13.5.99 The Midland Main Line railway connects London, Leicester, Nottingham and Shefield and passes through the northern end of Section 5 near Market Harborough.

Navigable waterways

13.5.100 There are no navigable waterways in Section 5.

Airports

13.5.101 There are no airports within Section 5.

Future Baseline

13.5.102 A Transport Assessment (TA) will be prepared to assess the transport impacts of the Project, establishing the basis from which the effects on transport receptors would be assessed in the ES. The impacts from the Project will be measured from a future baseline.

13.5.103 The future baseline relates to known or anticipated changes to the current baseline in the future that are predicted to occur in the absence of the Project. The future baseline for the TA would take account of committed developments (with planning consent in this case) and transport schemes, along with background growth (general growth in traffic due to changes in population, employment, housing, car ownership for example).

13.5.104 There is no anticipated impact on traffic and transport during the operational phase of the Project that will require assessment or necessitate the development of a future baseline. Therefore, a future baseline will be only considered to assess construction activity that is likely to have a material impact and may require mitigation works.

13.5.105 The ISEP Guidance (Ref 13.1) suggests that future baseline and cumulative assessment are two different considerations within the environmental assessment process. The ISEP Guidance (Ref 13.1) states that:

"*Derived forecast traffic growth (e.g. TEMPro) should be utilised to derive future year baseline traffic conditions. However, discrete projects within the agreed study area that are existing, approved or likely to come forward (where sufficient certainty and relevant information about the project exists) should not be added to the baseline scenario and should be considered in the cumulative scenario.*"

13.5.106 The inference is that this avoids double counting of growth from forecast growth factors and committed developments.

13.5.107 The future baseline will comprise the same Study Area and receptors as the existing baseline (once confirmed). For the Project, it is proposed to use a single scenario that combines forecast growth and committed developments whilst minimising double counting. The future baseline will be produced by factoring the baseline traffic flows using TEMPro, and then adding any extra trips generated by committed developments where they exceed the TEMPro growth i.e. the difference between the committed development trip generation and the TEMPro growth that would be added to the future baseline. Additional traffic from committed developments will be discussed with the relevant highway authorities.

13.5.108 Construction traffic generated from the TA for use in the ES will include future growth and those other developments which have planning consent, in the future baseline scenario described above. Therefore, to avoid the double counting identified above, the cumulative assessment using traffic data in the ES will only consider those additional other developments identified as described **Chapter 5 EIA Approach and Methodology**.

13.5.109 The future baseline traffic volumes will be established for a single year during the construction period, which for the Project, is anticipated to take place between 2030 and 2034. The future baseline year for assessment will be taken as the year when the peak month of construction traffic movements are forecast to occur but for the purpose of this Scoping Report, the future baseline year is assumed to be 2032.

13.5.110 The construction assessment will consider the single year future baseline, in conjunction with the peak month construction activities from the overall construction programme (whenever these may occur) to ensure a reasonable worst case is assessed. The peak construction period(s) will be identified within the ES when more detailed construction information is available.

13.5.111 It is difficult to forecast how public transport services may change in the future; therefore, unless information on future services is available, it would be assumed that public transport services for the future year of assessment would be the same as those currently operating (baseline). Similarly, pedestrian and cycle demand and facilities would be assumed to remain unchanged from the base year.

13.6 Design and Control Measures

Design Measures

13.6.1 The emerging preferred corridor on which the Scoping Boundary is based has been designed to avoid, as far as reasonably practicable, sensitive traffic and transport features identified through the Corridor Preliminary Routing and Siting Study (CPRSS) (Ref 13.7) and design development which is summarised in **Chapter 3 Main Alternatives Considered**.

13.6.2 As part of the Project design process, a number of embedded measures will be proposed to reduce the potential impacts and likely significant effects for traffic and transport. These measures will evolve as the design and EIA progresses develop and in response to consultation. Examples of such design measures include:

- The construction strategy would seek to route construction vehicles along A and B classified roads as far as reasonably practicable.
- Site haul roads would be designed into the Project to run alongside the overhead lines to move construction materials/equipment and reduce HGV movements on less suitable public roads and through local communities.
- Highway improvements potentially including junction modifications, passing places and carriageway widening would be designed as required, to manage the safe passing of construction vehicles on construction HGV routes.

13.6.3 The embedded measures would be developed and secured appropriately as part of the Project through Requirements(s) of the Development Consent Order.

Control and Management Measures

13.6.4 A range of standard measures for the Project would be adopted throughout the duration of the construction phase. An **Initial Outline Code of Construction Practice** (CoCP) is provided in **Appendix 4A**. Measures relevant to the control and management of impacts that could be relevant to traffic and transport are (refer to **Appendix 4A** for the full description of each measure):

- GG07 - setting out the documents (including CTMP) collectively referred to as ‘the Environmental Control Plans (ECPs)’ that will be produced prior to construction.
- GG14 - on maintenance and operation of plant and vehicles.
- GG15 - on materials and equipment handling.
- TT01 - on the CTMP measures to manage and control construction vehicle movements. The Outline CTMP will be provided with the application for development consent and the final CTMP secured through the draft DCO.
- TT02 - on monitoring and reporting to check compliance with the measures set out within the CTMP.
- TT03 - on management of affected PRoW.
- W04 - on measures to cross navigable waterways.
- AS03 - on maintaining access to residential, commercial, community and agricultural land uses.

13.7 Potential for Significant Effects

13.7.1 The traffic and transport assessment in the ES will consider the construction, and operation and maintenance of the Project. A description of each of these stages is set out in **Chapter 4 Description of the Project**. The proposed scope of the ES assessment is set out below and has been determined using the approach described in **Chapter 5 EIA Approach and Methodology.**

13.7.2 The potential for the Project to result in likely significant effects has been determined taking into account the embedded design, and control and management measures described in Section 13.6.

13.7.3 **Table 13.2** identifies the sources of potential impacts on receptors identified in the baseline transport network that could result in a significant effect. Where an impact could give rise to potentially significant effects on receptors, these are scoped into the ES. Impact pathways that are unlikely to give rise to significant effects on receptors are proposed to be scoped out of the ES.

Table 13.2 Impacts, receptors and the potential for significant effect

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
Construction	Construction traffic volumes and routes	Increased traffic or Heavy Goods Vehicle (HGV) volumes and congestion due to construction traffic and increased journey times/distance due to road closures/diversions.	Road users	**Yes** - whilst short-term and temporary in nature, it is considered that there is still potential for significant effects on road users as a result of construction traffic and road closures/diversions leading to potential Severance, Driver Delay and Highway Safety effects (as defined in Section 13.8).	**Scoped in**
Construction	Construction traffic volumes and routes	Increased traffic volumes and congestion due to construction traffic and increased journey times/distance due to road closures/diversions.	Public transport users (bus)	**Yes** - whilst short-term and temporary in nature, it is considered that there is still potential for significant effects on public transport users as a result of construction traffic and road closures/diversions leading to potential Public Transport Delays.	**Scoped in**
Construction	Construction traffic volumes and routes	Increased traffic volumes due to construction traffic, increased journey times/distance due to PRoW closures/diversions and construction works in general.	Pedestrians and cyclists	**Yes** - whilst short-term and temporary in nature, it is considered that there is still potential for significant effects on pedestrians and cyclists as a result of construction traffic leading to Traffic Severance, Pedestrian Delay, Pedestrian and Cycle Amenity effects, and Fear and Intimidation. There is also PRoW or designated pedestrian and cycle route closures/diversions potentially leading to Increased Journey Time.	**Scoped in**

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
Construction	Abnormal loads	Increased congestion and increased journey times/distance due to road closures/diversions for abnormal load access.	Road users	**Yes** – whilst short-term and temporary in nature, and generally planned for off peak times when the road network is less busy; the frequency of abnormal load deliveries, construction routes and traffic management requirements are not defined at this stage, and it is therefore considered that effects on road users should be scoped in at this stage.	**Scoped in**
Construction	Hazardous loads	Increased number of vehicles transporting hazardous loads as a result of construction.	General public	**No** - there is low potential for significant effects on the general public as a result of a road traffic accident leading to a Hazardous Load spill. The only bulk hazardous material expected to be delivered during construction is fuel for construction plant. These are likely to be infrequent and delivered to several construction sites along the route rather than a single central site. Therefore, in addition to the low numbers, deliveries are also spread over a large area of the network resulting in a likely very low increase in loads on any one route. No likely significant effect is anticipated therefore this matter is scoped out.	Scoped out
Construction	Methods to construct overhead line.	Closure of a railway line to enable construction of the overhead line.	Railway users	**No** – methods will be employed when installing overhead line to avoid any potential impacts on the railway. This	Scoped out

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
				may include overnight blockades/temporary closures to install protection/temporary works. The new overhead line would cross the rail network in only 2 locations, once over the Peterborough to Lincoln Railway Line (in Section 1 near Pinchbeck) and once over the East Coast Mainline (in Section 2 near Corby Glen). Tower locations will be designed to avoid the rail line meaning that only short-term temporary scaffolding over the rail line would be required while the conductors are pulled into place over them, this would be undertaken using overnight blockades/closures when passenger rail services are not fully operational. Extensive works or permanent structures would not be required on or over the rail line. The proposed method and timing would be developed in consultation with Network Rail to ensure significant effects on the rail network are avoided. A similar approach would be employed for reconductoring where the existing overhead line crosses rail infrastructure at two further locations, and one test track. Significant effects are not likely to occur.	

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
Construction	Methods to construct overhead line	Closure of navigable waterways to enable construction of the overhead line.	Navigable waterway users	**No** – there are four navigable waterways that could potentially be crossed by the new overhead lines and one navigable waterway that is crossed by the existing overhead line. Where navigable waterways 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. Specific detailed designs for each navigable waterway crossing, consistent with the principles set out in **Appendix 4A Initial Outline Code of Construction Practice** will be subject to appropriate consent by the relevant regulatory body. Significant effects are not likely to occur.	Scoped out
Operation and Maintenance	Operational/ maintenance vehicles	Increased traffic volumes due to operational staff trips.	Road users, public transport users (Bus), pedestrians and cyclists,	**No** - during operation (inc. maintenance) of the Project, traffic generated would be associated with routine maintenance and occasional repair, inspection activities, and a small number of operational staff. The impact of operational traffic from OHL projects would be expected to be substantially	Scoped out

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
				lower than 10% of existing traffic and movements are not anticipated to have a material effect on the transport network and receptors. This approach has been successfully undertaken by National Grid on similar OHL projects, and is also suitable for this Project. Traffic and transport effects during operation (inc. maintenance) are therefore proposed to be scoped out.	
Operation and Maintenance	PRoW closures/diversions	Increased journey times/distance due to permanent PRoW closures/diversions associated with the substations.	Pedestrians and cyclists	**Yes** - there is potential for significant effects on pedestrians and cyclists as a result of permanent PRoW closures/diversions leading to potential Increased Journey Time.	**Scoped in**
Operation and Maintenance	Operational/ maintenance vehicles	Vehicle crossing points (if required).	Railway users	**No** – maintenance vehicles would only cross railway lines using existing highway crossing points e.g. bridges, underpasses or level crossings, therefore no impacts are anticipated. Traffic and transport effects during operation (inc. maintenance) are therefore proposed to be scoped out.	Scoped out

13.8 Proposed Assessment Methodology

13.8.1 The following section summarises the methodology proposed to be used for the traffic and transport assessment in the ES, which builds on the general assessment methodology presented in **Chapter 5 EIA Approach and Methodology.**

Proposed Data Sources

13.8.2 In addition to the data sources listed in Section 13.5, the following data sources are proposed to be used as appropriate to inform the traffic and transport assessment:

- historic traffic count data from local Councils and/or the Department for Transport (DfT);
- traffic counts and speed survey data;
- non-motorised user (NMU) counts;
- highway boundary information from relevant highway authorities;
- census travel mode share;
- Personal Injury Collision (PIC) data for the latest five years; and
- OS/GIS mapping.

Surveys

13.8.3 Traffic data will be obtained to determine the baseline traffic flow through various sources, including existing DfT and local authority data (where appropriate data is available). Traffic surveys will be commissioned by the Applicant where data is not available and at required locations to support the baseline information.

13.8.4 This will also apply to NMU flows on key routes and PRoW where surveys are required to establish baseline flows.

13.8.5 Where a navigable waterway is likely to be impacted by the construction works, the Applicant will consider the need for surveys to establish baseline usage.

13.8.6 The locations and types of surveys will be discussed with the relevant highway authorities.

Proposed Assessment Methodology

13.8.7 The following section summarises the methodology proposed to be used for the traffic and transport assessment in the ES, which builds on the general assessment methodology presented in **Chapter 5 EIA Approach and Methodology**.

13.8.8 In accordance with the 2023 ISEP Guidance (Ref 13.1), the following matters will be considered in the assessment.

- severance of communities;
- road vehicle driver and passenger delay;
- non-motorised user delay;
- non-motorised amenity;

- fear and intimidation on and by road users;
- road user and pedestrian safety; and
- hazardous/large loads (Note: hazardous loads are scoped out, see **Table 13.2**).

13.8.9 The ISEP Guidance (Ref 13.1) 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.

13.8.10 Highway links would therefore be assessed 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 sensitive.

13.8.11 The ISEP Guidance (Ref 13.1) suggests that the rules may not be appropriate for road safety and driver delay. Safety can be assessed by a competent independent auditor/professional in accordance with DMRB guidance GG 119 (Ref 13.8) and driver delay by undertaking highway/junction modelling if these aspects require further consideration.

13.8.12 In addition to the above, potential traffic-related effects will also be considered by other topics (see section 13.1.4).

13.8.13 The type of traffic which is anticipated to be generated by the Project will comprise general traffic, light good vehicles (LGVs), HGVs and Abnormal Indivisible Loads (AILs). It is intended that the proposed routeing and movement of construction traffic would be discussed with the relevant highway authorities.

13.8.14 Once the routeing and estimated volumes of construction traffic have been established, these will be compared to the future baseline flow (Without Development) to establish whether the increase in traffic would meet either of ISEP Rules 1 or 2 (as described above).

13.8.15 For those locations where there is an increase in traffic of at least 10 per cent, the receptors that would be impacted by the increase in vehicle movements will be identified. Historic data or Automatic Traffic Counts (ATCs) would be used to derive 24 hour Annual Average Daily Traffic (AADT) for individual links, subdivided for total traffic and HGVs.

13.8.16 The methodology for assessing the impact of construction traffic from the Project will be based on that outlined in the ISEP Guidance (Ref 13.1).

13.8.17 Sensitive receptor locations will inform the assessment of likely significant effects when development traffic is assigned to the network. The ISEP Guidance (Ref 13.1) identifies the following list of ‘special interests’ which will be considered when defining sensitive receptor locations:

- people at home/people at work;
- sensitive and/or vulnerable groups (including younger and older age groups; lower income; poor health status; social disadvantage; and access and geographic factors);

- locations with concentrations of vulnerable users (e.g. hospitals, places of worship, schools, care/retirement homes);
- retail areas;
- recreational areas/tourist attractions;
- collision clusters and routes with road safety concerns; and
- junctions and highway links already at (or over) capacity.

13.8.18 All of the affected parties are considered to be potentially exposed to changes in traffic volume due to their proximity to a construction traffic route. It is important to note that the ISEP methodology does not consider the duration of effect, especially whether it is temporary (construction) or permanent (operational traffic). Therefore the assessment of likely significant effects will also consider the duration or frequency of impact during construction.

13.8.19 The traffic and transport assessment in the ES will include consideration of potential cumulative effects of the Project in relation to other similar existing, consented and proposed developments, as outlined in **Chapter 5 EIA Approach and Methodology** and in line with Planning Inspectorate Advice (Ref 13.9).

Assessment Scenarios

13.8.20 The following scenarios would be assessed in the Transport Assessment to determine the impact of the Project:

- 2032* Future Baseline ('Without Development') – AM, PM and daily flows; and
- 2032 Future Baseline plus Construction ('With Development') – AM, PM and daily flows.

* 2032 assumed future baseline year (see paragraph 13.5.109)

13.8.21 A Baseline scenario (2025) would be used from which to develop the future baseline traffic flows, taking account of committed developments and transport schemes, along with background traffic growth. The future baseline traffic flows would form the basis for assessing the impacts and effects of the Project.

13.8.22 The 'With Development' scenario would consider the 2032 future baseline, in conjunction with the peak construction traffic movements from the overall construction programme (whenever these may occur).

13.8.23 The peak construction traffic flows will be derived from the construction activities and programme of works. Construction HGVs would be assigned to designated routes. A simple gravity model would be used to assign worker trips to and from the proposed construction compounds. The result of the assignment of construction traffic to the highway network and the impact of any road diversions will be used to calculate the resultant percentage change in traffic flow on each road link.

13.8.24 The scope of the TA will be discussed with the relevant Highway Authorities, and effort will be made to reach agreement. In the event that junction capacity analysis is required, this will be discussed with the relevant highway authorities.

Sensitivity

13.8.25 The general criteria for defining the importance or sensitivity of receptors for Traffic and Transport are set out in **Table 13.3**. Key factors influencing this include:

- the value of the receptor or resource based upon empirical and/or intrinsic factors, for example, considering any legal or policy protection afforded which is indicative of the receptor or resources' value internationally, nationally or locally; and
- the sensitivity of the receptor or resource to change, for example is the receptor likely to acclimatise to the change. This will consider legal and policy thresholds which are indicative of the ability of the resources to absorb change.

Table 13.3 Sensitivity of receptors

Value/Sensitivity	Description
Very High	Highway links and junctions: more than two sensitive users' locations present (e.g. schools, care/retirement homes, disabled parking bays, hospitals, places of worship, recreational/tourist and retail areas, routes with poor safety and congestion). Walk/cycle/bridleway links including PRoW: heavily trafficked highways with on-road pedestrian/cycle/bridleway routes.
High	Highway links and junctions: two sensitive users' locations present (e.g. schools, care/retirement homes, disabled parking bays, hospitals, places of worship, recreational/tourist and retail areas, routes with poor safety and congestion). Walk/cycle/bridleway links including PRoW: lightly trafficked highway with on-road pedestrian/cycle/bridleway routes.
Medium	Highway links and junctions, at least one of the following: • one sensitive users' location present (e.g. schools, care/retirement homes, disabled parking bays, hospitals, places of worship, recreational/tourist and retail areas, routes with poor safety and congestion); • many residential properties with direct frontage to the highway link being used for construction traffic; • pedestrians using footways, PRoW and/or crossings on highway link; and • cyclists using on-road designated cycle routes along highway link. Walk/cycle/bridleway links including PRoW: heavily trafficked highway with off-road pedestrian/cycle/bridleway routes.
Low	Highway links and junctions: at least one of the following:

Value/Sensitivity	Description
	• few residential properties with direct frontage to the highway link being used for construction traffic; • workplaces with direct frontage to the highway link being used for construction traffic; and • cyclists using off-road designated cycle routes along highway link. Walk/cycle/bridleway links including PRoW: lightly trafficked highway with off-road pedestrian/cycle/bridleway route.
Negligible	Highway links and junctions: no receptors on link. Walk/cycle/bridleway links including PRoW: pedestrian/cycle/bridleway route not running alongside carriageway.

13.8.26 The sensitivity of links within the Study Area will be assigned based on the above criteria. The link sensitivity will be based on an average sensitivity of the whole link with no separate assessment of high/very high receptors. Some links will be broken down into sensible sections where appropriate, for example, between junctions or villages.

Magnitude

13.8.27 The ISEP Guidance (Ref 13.1) states in paragraph 1.27 that the magnitude of each impact should be determined as the predicted deviation from the baseline conditions.

13.8.28 The ISEP Guidance (Ref 13.1) sets out a number of criteria by which the magnitude of impact can be measured. These are outlined below. Many of the criteria do not provide specific thresholds by which such impacts can be measured, and as a result will be measured qualitatively using professional judgement and experience on similar projects where necessary.

13.8.29 **Severance** – severance is the perceived division that can occur within a community when it becomes separated by major transport infrastructure. The term is used to describe a complex series of factors that separate people from places and other people. Severance may result from the difficulty of crossing a heavily trafficked road or a physical barrier created by infrastructure. As set out in paragraph 3.16 of the ISEP Guidance (Ref 13.1), changes in traffic flow of 30 per cent, 60 per cent and 90 per cent are regarded as producing ‘slight’, ‘moderate’ and ‘substantial’ changes in severance, respectively, although caution should be applied to very low baseline flows.

13.8.30 **Road vehicle driver and passenger delay** – traffic delays to non-development traffic can occur as a result of development. The ISEP Guidance (Ref 13.1) indicates that these are only likely to be significant when the traffic on the network is already at, or close to capacity. The Project could result in changes which could significantly affect perceptions of driver delay during construction because of increased vehicle travel demand on the local network. In addition, where any temporary road closures or traffic management is likely to be in place to enable construction of the Project, any additional potential delay caused by resultant diversion routes will be reported. The

assessment of delay will be based on technical work reported in the TA (i.e. junction modelling outputs) using professional judgement.

13.8.31 **Non-Motorised User delay** - Drawing upon the ISEP Guidance (Ref 13.1), the assessment of pedestrian delay serves as a proxy for the delay that other modes of NMU may experience when crossing roads. In general, increases in traffic levels and/or traffic speeds are likely to lead to greater increases in NMU delay. The ISEP Guidance (Ref 13.1) advises against definitive thresholds and recommends the use of professional judgement to determine the significance.

13.8.32 **Public transport delay** occurs due to a temporary closure or diversion of a highway. The effect would depend on whether a temporary closure or diversion is proposed, any increases in bus journey length as a result and how long any potential disruption would last. The assessment will consider indicative thresholds which have been derived based on professional judgement.

13.8.33 **Non-Motorised User amenity** - Pedestrian amenity is broadly defined as the relative pleasantness of a journey, and is affected by traffic flow, traffic composition and pavement width/separation from traffic. Drawing upon the ISEP guidance (Ref 13.1), with regard to amenity, there are no set thresholds, but the following is stated, "*a tentative threshold for judging the significance of changes in pedestrian amenity would be where the traffic flow (or HGV component) is halved or doubled*" and that: *"thresholds… should be used cautiously in any assessment. The assessment of amenity should pay full regard to specific local conditions*."

13.8.34 **Fear and intimidation** – The ISEP Guidance (Ref 13.1) indicate the extent of fear and intimidation is dependent on the volume of traffic, heavy vehicle composition speed of vehicles, proximity of traffic to people and the perception of protection/lack of protection. The guidance sets out thresholds to define the degree of hazard based on average traffic flow, 18 hour heavy vehicle flow and average speed over an 18 hour day, the level of fear and intimidation from combining the hazard scores and the magnitude of impact based on the change in level from baseline conditions.

13.8.35 **Highway safety** – Highway safety considers personal injury collision data for the most recent five year period on the local highway to include links and junctions along proposed construction traffic routes. These will be used to assess whether the additional traffic during construction of the Project would be likely to have a detrimental effect on road safety. The ISEP Guidance (Ref 13.1) references collision rates and collision clusters. Links where traffic flows increase by more than 30 per cent (Rule 1) will be considered.

13.8.36 **Hazardous and dangerous loads** – The ISEP Guidance (Ref 13.1) states the assessment should estimate the number and composition of such loads and if significant should "*include a risk or catastrophe analysis to illustrate the potential for an accident to happen"*. There may be a requirement to transport some hazardous loads during construction of the Project. However, hazardous loads have been scoped out of the assessment due to the low potential for a significant effect, see **Table 13.2**. Abnormal load deliveries will be identified as the Project progresses and the impacts of such loads will be considered as a qualitative risk assessment. The Outline CTMP submitted with the ES will include details of measures that will be employed to ensure the safe vehicular transport of components to and from the Project.

13.8.37 **Table 13.4** and **Table 13.5** summarise the criteria that will be used to assess the magnitude of impact, along with the thresholds that will be used to determine whether

the impacts are considered large, medium, small or negligible. Depending on the baseline information available, the various thresholds identified for the proportional increase in traffic flow relate to peak hour and daily flows. Within these tables, neither the sensitivity of receptors, nor the duration of effects is taken into consideration. These tables are formed using the ISEP Guidance (Ref 13.1) and professional judgement.

Table 13.4 Magnitude of impact

Impact	Negligible	Small	Medium	Large
Severance	Increase in total flows of 29% or under	Increase in total flows of 30-59%	Increase in total flows of 60-89%	Increase in total flows of 90% and above
Driver delay	Professional judgement – informed by analysis of junction modelling outputs where available and/or length and duration of diversions.			
NMU delay	Professional judgement based on changes in journey time.			
NMU amenity	Increase in total flows of 49% or under	Increase in total traffic flows of 50-69%	Increase in total traffic flows of 70-99%	Increase in total traffic flows of 100% or above
Fear and intimidation	No change in calculated level of fear and intimidation	One step change in level with <400 vehicle increase in average 18hr flow and/or <500 HGV in total 18hr flow	One step change in level with >400 vehicle increase in average 18hr flow and/or >500 HGV in total 18hr flow	Two step change in calculated level of fear and intimidation
Public Transport Delay (diversion)	Percentage change in total bus journey distance less than 10%	Percentage change in total bus journey distance between 10% and 20%	Percentage change in total bus journey distance between 20% and 40%	Percentage change in total bus journey distance 40% or more
Highway safety	Increase in total flows of 29% or under (or increase in HGV flows under 10%)	All links with increase in traffic flows over 30% (or HGVs 10%) and which have an average of more than three accidents per year in the most recent five year period would be assessed on case by case basis using professional judgement.		
Hazardous/dangerous loads	Probability of personal injury collision occurring – resulting in a serious or fatal incident.			

13.8.38 The above table gives indicative thresholds only where guidance is available. Throughout the assessment professional judgment will be applied taking account of local conditions.

13.8.39 An assessment of national/regional walking and cycling routes as well as PRoW will also be carried out where these are directly affected by construction works in terms of diversions. **Table 13.5** shows the magnitude of impact thresholds for PRoW diversions and/or closures.

Table 13.5 Magnitude of impact of a PRoW diversion and/or closure

Impact	Negligible	Small	Medium	Large
PRoW diversion and/or closure	A diversion and/or closure with less than 100 m increase in journey length or an increase in journey length for less than 7 days	A diversion and/or closure with an increase in journey length of 100- 250 m or an increase in journey length for a period of 1-4 weeks	A diversion and/or closure of 250-500 m or an increase in journey length for 4-8 weeks	A diversion and/or closure of 500 m or more or an increase in journey length for 8 weeks or more

13.8.40 The tables above set out the proposed magnitude thresholds for the respective environmental impacts that will be considered in the assessment. With the exception of PRoW diversion and closure effects, all effects have a proposed magnitude that does not initially consider the duration over which an effect is likely to be experienced.

13.8.41 Duration is considered when assessing the overall significance of residual effects, recognising that permanent impacts will be more significant than those of a temporary nature and reversibility of the change, as set out in DMRB guidance LA 104 (Ref 13.6).

13.8.42 The majority of traffic and transport effects will be associated with the construction of the Project and therefore would be temporary effects. Some temporary effects are likely to last longer than others, which will be clearly explained and reported in the ES. The permanent closure or diversion of PRoW or changes to the road network would be permanent effects and will be reported in the ES. Following the quantified assessment, residual effects will be reported taking into account professional judgement on the duration over which effects are likely to be experienced.

Significance of effects

13.8.43 The general approach adopted for evaluating the significance of effects considering the sensitivity of the receptor and the magnitude of impacts is outlined in **Table 13.6.**

Table 13.6 Determination of significance matrix

		Value/Sensitivity of Receptor				
		Very high	**High**	**Medium**	**Low**	**Negligible**
Magnitude of Impact	**Large**	Major	Major/ Moderate	Major/ Moderate/ Minor	Moderate/ Minor	Minor/ Negligible
	Medium	Major/ Moderate	Major/ Moderate	Moderate/ Minor	Minor/ Negligible	Negligible
	Small	Major/ Moderate/ Minor	Moderate/ Minor	Moderate/ Minor	Minor/ Negligible	Negligible
	Negligible	Minor/ Negligible	Minor/ Negligible	Minor/ Negligible	Negligible	Negligible

13.8.45 An impact is considered significant if the resultant effect is Major or Moderate and a resultant effect of Minor or Negligible is considered not significant. This matrix approach provides a guide to authors, however professional judgement can be used in concluding the significance of an effect.

Transport Assessment

13.8.46 The ability of the highway network to accommodate the construction traffic will be assessed and reported in a TA, which will form a separate assessment document to support the application for development consent. The findings from the TA will be used to inform the ES assessment. The TA will include information on:

- relevant national, regional and local policies;
- the existing baseline conditions including a description of the roads, bus routes, railway lines, footpaths, bridleways, cycle paths and navigable waterways crossed by the route and/or impacted by the works;
- personal injury collision data for the most recent five-year period within the proposed Study Area;
- details of the Project including a description of the proposed works, the construction programme, compound locations, access routes to compounds, potential road or PRoW closures/diversions and construction methods for individual railway, road and navigable waterway crossings (where appropriate);
- future baseline including committed developments and transport schemes;
- trip generation during construction including worker trips and HGV traffic to/from compounds. Trip generation associated with the operation of the substations and overhead lines;
- the distribution and assignment of construction trips on the road network;

- the impact of the construction works and operation of the Project (where applicable) on the transport network;
- mitigation measures; and
- summary and conclusions.

13.9 Assumptions and limitations

13.9.1 At this stage the extent of the traffic and transport Study Area for the ES assessment has not been defined as the predicted construction traffic volumes and routings have not been determined. The Applicant will liaise with the relevant highway authorities to agree the Study Area.

13.10 Conclusion

13.10.1 This Scoping Report chapter has outlined the proposed scope of the assessment in relation to traffic and transport for the Project. The data sources that will be used to define the current and future baselines have been presented, and the impact control and management measures that will be implemented. The potential for significant effects has been identified, as well as the associated source, impact and receptors in **Table 13.2**.

13.10.2 A summary of the proposed scope of the assessment is provided in **Chapter 20 Summary**.

References

Ref 13.1 Institute of Sustainability and Environmental Professionals (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 14 July 2025.

Ref 13.2 Ministry of Housing, Communities & Local Government and Department for Levelling Up, Housing and Communities (2014). Travel Plans, Transport Assessments and Statements [online]. Available at: https://www.gov.uk/guidance/travel-plans-transport-assessments-and-statements [Accessed 26 September 2025].

Ref 13.3 Department for Transport and National Highways (2022). Strategic road network and the delivery of sustainable development [online]. Available at: https://www.gov.uk/government/publications/strategic-road-network-and-the-delivery-of-sustainable-development [Accessed 26 September 2025].

Ref 13.4 Standards for Highways (2020). LA 103 Scoping projects for environmental assessment [online]. Available at: https://www.standardsforhighways.co.uk/tses/attachments/fb43a062-65ad-48d3-8c06-374cfd3b8c23?inline=true [Accessed 26 September 2025].

Ref 13.5 Directive 2014/52/eu of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment, L 124/1 25.4.2014. [Online] Available at: Directive - 2014/52 - EN - EIA - EUR-Lex [Accessed 01 October 2025].

Ref 13.6 Standards for Highways (2020). LA 104 Environmental assessment and monitoring [online]. Available at: https://www.standardsforhighways.co.uk/tses/attachments/0f6e0b6a-d08e-4673-8691-cab564d4a60a?inline=true. Accessed 26 September 2025.

Ref 13.7 National Grid (2025). WMEL Corridor Preliminary Routeing and Siting Study (CPRSS) [online]. Available at: https://www.nationalgrid.com/document/561431/download. Accessed 14 July 2025.

Ref 13.8 DMRB GG119 – Road safety audit [online]. Available at: https://standardsforhighways.co.uk/search/html/69517ebd-ed8d-4558-b101-c1e80611000a?standard=DMRB. Accessed 26 September 2025.

Ref 13.9 Planning Inspectorate (2024). Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment. [online] Available at: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-17/ Accessed: 21 August 2025.

14. Air Quality

nationalgrid

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14. Air Quality

14.1 Introduction

14.1.1 This chapter presents how the air quality assessment will consider the potential likely significant effects on air quality sensitive receptors that may arise from the construction, operation and maintenance of the Project (as described in **Chapter 4, Description of the Project**). It describes the methodology and datasets to be used within the assessment, presents an overview of the baseline conditions, and identifies the potential likely significant effects to be considered within the assessment, and how these will be assessed in the Environmental Statement (ES). As detailed in **Chapter 4, Description of the Project**, the decommissioning of the Project has been scoped out of the environmental assessment.

14.1.2 The Scoping Boundary is illustrated on **Figure 1.2 Scoping Boundary**.

14.1.3 This chapter should be read in conjunction with the following chapters which provide the Project context and approach to EIA:

- **Chapter 2 Regulatory and Planning Policy Context;**
- **Chapter 3 Main Alternatives Considered;**
- **Chapter 4 Description of the Project; and**
- **Chapter 5 EIA Approach and Methodology.**

14.1.4 In addition, there may be interrelationships with other disciplines. Therefore, this chapter should also be read in conjunction with the following chapters:

- **Chapter 8 Ecology and Biodiversity** includes details of the potential for air quality effects on ecological receptors;
- **Chapter 13 Traffic and Movement** includes details the potential change in traffic movements hence a difference in air quality pollutant emissions;
- **Chapter 17 Health and Wellbeing** includes details the potential for air quality effects on health and wellbeing; and
- **Chapter 18 Climate Change** includes details the potential effect on climate from changes in air quality.

14.1.5 This chapter is supported by **Figure 14.1 Air Quality Monitoring Locations**.

14.2 Legislation, Policy and Guidance

14.2.1 **Chapter 2 Regulatory and Planning Policy Context** describes the overall regulatory and planning policy context for the Project. Key legislation, policy, and planning guidance relevant to the assessment of potential effects on air quality associated with the construction, operation, and maintenance of the Project is provided in **Chapter 2 Regulatory and Planning Policy Context, Appendix 2A**

Key Legislation, Appendix 2B National and Regional Planning Policy and **Appendix 2C Local Policy.**

14.2.2 Relevant air quality guidance and standards, along with other relevant material, that have informed the scoping process are listed below and will also be taken into account as part of the ES assessment:

- Environment Act 2021 (Ref 14.1);
- Environmental Protection Act (EPA) 1990 (Ref 14.2);
- Air Quality Standards Regulations 2010 (amended 2016) (Ref 14.3);
- The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023) (Ref 14.4);
- The Non-Road Mobile Machinery (Type-Approval and Emission of Gaseous and Particulate Pollutants) Regulations 2018 (Ref 14.5);
- Institute of Air Quality Management (IAQM) Dust Guidance (Ref 14.6);
- Air Quality Monitoring in the Vicinity of Demolition and Construction Sites (Ref 14.7);
- Environmental Protection UK(EPUK) and Institute of Air Quality Management (IAQM) Land-Use Planning & Development Control (Ref 14.8); and
- European Council Directive 92/43/EEC (Habitats Directive) (The Council of the European Communities, 2013) (Ref 14.10).

14.3 Consultation and Engagement

14.3.1 The ES will be informed by consultation and engagement with stakeholders, including local authorities along the Project. In addition, engagement will be undertaken with non-statutory stakeholders as required to ensure that specialist local views and expertise can be considered as part of the ES.

14.3.2 In preparing this Scoping Report chapter, consideration has been given to stakeholder feedback received following Non-Statutory Consultation held between 11 June and 6 August 2025, as set out in **Table 14.1**.

Table 14.1 Engagement with Stakeholders

Stakeholder	Summary of response	Consideration in the Scoping Report
The Forestry Commission	Identification of Ancient Semi Natural Woodlands (ASNW) and Plantations on Ancient Woodland (PAWS) they consider relevant to the Project.	Sensitive receptors relevant to the air quality assessment will be identified and considered for assessment using the air quality study area discussed in **Section 14.4** and the methodology summarised in **Section 14.8**.

14.4 Study Area

14.4.1 The key sources for consideration in the air quality assessment are dust and emissions from construction, traffic emissions during construction and generator use/ non-road mobile machinery emissions during construction. No operational study area is identified as no significant operational effects are expected. Further detail on matters proposed to be scoped in and out of further assessment is provided in Section 14.7.

14.4.2 Construction routes, site entrances and the location of source activities are not currently defined, so will be considered as part of the assessment within the ES. Therefore, to establish the baseline for scoping, the Scoping Boundary has been used as the Study Area. This is based on professional judgement and knowledge of similar projects.

14.4.3 The ES will present refined Study Areas for dust and traffic emissions determined from construction traffic routes, predicted traffic numbers and locations where generators/Non-Road Mobile Machinery (NRMM) may be used, based on relevant guidance. The Study Areas in the ES would comprise:

- **Dust** - The air quality Study Area would be defined in the assessment by the screening criteria within the IAQM guidance (Ref 14.6):
  - Human receptors within the Order Limits plus a 250 m buffer, or within 50 m of the proposed routes used by construction traffic on the public highway up to 500 m from a construction site entrance; and
  - Any ecological designated site within the draft Order Limits plus a 50 m buffer, or within 50 m of the proposed routes used by construction traffic on the public highway up to 500 m from a construction site entrance.
- **Traffic emissions** - The Study Area for construction phase road traffic impacts will be defined with reference to Environmental Protection UK/IAQM Planning Guidance (Ref 14.8). The Affected Road Network (ARN) would also be defined according to the predicted changes in traffic volumes with reference to the EPUK/IAQM guidance (Ref 14.8):
  - A change in Light Duty Vehicles (LDVs) of 100 Annual Average Daily Traffic (AADT) within or adjacent to an Air Quality Management Area (AQMA) or 500 AADT elsewhere, and/or
  - A change in Heavy Duty Vehicles (HDVs) >3.5 tonnes of 25 AADT within or adjacent to an AQMA or 100 AADT elsewhere.
- **Generator Use/Non-Road Mobile Machinery (NRMM)** - no specific guidance exists on the definition of a Study Area for NRMM and generator emissions due to the large variation in potential effects from different types of sources. For the purposes of this assessment, a Study Area of up to a 100 m radius from the temporary construction areas/compounds is considered appropriate given the potential size and duration of the operations to be undertaken and the likely size of plant required.

14.4.4 Sensitive receptors would be chosen at worst case locations depending on the relevant source and following best practice guidance from the EPUK/IAQM guidance (Ref 14.8 and Ref 14.2). It is noted that the EPUK/IAQM guidance is under review (Ref 14.9) and it is being updated. Any updates to the guidance will be reflected in

the ES once published. Consultation will be undertaken with relevant consultation bodies in an effort to agree the sensitive human and ecological receptors.

14.5 Baseline Conditions

Data Sources

14.5.1 The known or predicted current and future baseline environment described in this section has been informed by the following data sources:

- Department for Environment, Food and Rural Affairs (Defra) Background Air Quality (Ref 14.11);
- Defra AQMA dataset (Ref 14.12);
- Local Air Quality Management Reports (various Ref 14.13 to Ref 14.17); and
- Environment Agency (EA) register on industrial installations (Ref 14.18); and
- Air Pollution Information System (APIS) (Ref 14.19).

Baseline

Industrial Processes

14.5.2 Industrial air pollution sources are regulated through a system of operating permits or authorisations, requiring stringent emission limits to be met and ensuring that any releases to the environment are minimised or rendered harmless. Regulated (or prescribed) industrial processes are classified as Part A or Part B processes, regulated through the Environmental Permitting regime. The larger more-polluting processes (Part A) are regulated by the Environment Agency, and the smaller less-polluting ones (Part B) by the local authorities. Local authorities tend also to regulate only for emissions to air, whereas the Environment Agency (Ref 14.18) regulates emissions to air, water and land.

14.5.3 The EA register (Ref 14.18) shows there are no Part A processes, with any activities that release emissions to the air within the Scoping Boundary. The closest industrial site with release of emissions to the air is Spalding Energy Expansion Limited (permission number EPR/AP3732KC), located approximately 600 m south of the Scoping Boundary near Spalding, South Holland.

14.5.4 The contribution of industrial processes to local air quality is included in the background concentrations presented in the Background Pollutant Concentrations section below, based on Defra's modelled background pollution maps (Ref 14.11). These maps incorporate emissions from a range of sectors, including industrial sources. However, it is acknowledged that industrial processes, particularly those that are new, or atypical, may not be fully represented in the background data.

Road Traffic

14.5.5 In recent decades, atmospheric emissions from transport on a national basis have grown to match or exceed other sources in respect of many pollutants, particularly in urban areas. The main sources of traffic emissions surrounding the Scoping Boundary are the A15, A1, A606, A607, A427, A6, A47, A13, A45, A43, A4500 and

the A14. Although the total length of these roads within the Scoping Boundary is relatively short, vehicle emissions will still have a contribution to air pollution both within and around the Study Area.

Local Air Quality

14.5.6 The Environment Act 2021 (Ref 14.1Ref 14.18) requires local authorities to report to Defra on local air quality and local air quality management within their local authority area. This also requires an assessment of compliance with the relevant limit or objective values.

14.5.7 The Project has been divided into five Sections as described in **Chapter 4, Description of the Project** and shown in **Figure 1.2 Scoping Boundary**. The Sections are defined by the geographical alignment of the Scoping Boundary and the administrative boundaries of the local authorities. The baseline environment is reported for the Sections along the Scoping Boundary in the respective sections below.

14.5.8 Where compliance objectives are not predicted to be met, local authorities must declare the area as an AQMA. In addition, local authorities are required to produce an Air Quality Action Plan (AQAP) which includes measures to improve air quality in the AQMA. No AQMAs have been identified within the Scoping Boundary.

Section 1: South Holland

14.5.9 South Holland District Council operates automatic and diffusion tube monitoring sites (Ref 14.13). However, none of these sites are located within the Scoping Boundary.

Section 2: South Kesteven

14.5.10 South Kesteven District Council operates automatic and diffusion tube monitoring sites (Ref 14.14), however, none of these sites are located within the Scoping Boundary.

Section 3: Melton

14.5.11 Melton Borough Council operates automatic and diffusion tube monitoring sites (Ref 14.15), however, none of these sites are located within the Scoping Boundary.

Section 4: Harborough

14.5.12 Harborough District Council operates automatic and diffusion tube monitoring sites (Ref 14.16) however, none of these sites are located within the Scoping Boundary.

Section 5: Northamptonshire

14.5.13 North Northamptonshire Council does not have any automatic monitoring sites (Ref 14.17), but it undertakes diffusion tube monitoring of nitrogen dioxide (NO_2). There are six diffusion tube monitoring sites in North Northamptonshire Council in the Scoping Boundary. The diffusion tube monitoring sites in Northamptonshire (Section 5) are operated by Wellingborough Town Council at the locations shown on **Figure 14.1**. **Table 14.2** presents the results of the diffusion tube monitoring sites in 2023 (the only year for which North Northamptonshire Council has undertaken monitoring to date).

Table 14.2 2023 Annual Mean NO_2 Concentrations at Diffusion Tube Monitoring Sites in Northamptonshire Section

Monitoring Sites ID	X	Y	Type	NO_2 (µg/m^3)
W12	485058	264690	Suburban	10.3
W13	485419	262904	Suburban	8.9
W21	486999	268577	Kerbside	15.0
W22	486508	267322	Roadside	13.2
W23	486800	266864	Roadside	15.3
W24	487872	269656	Suburban	17.8

Background Pollutant Concentrations

14.5.14 Background concentrations refer to the existing levels of pollution in the atmosphere, produced by a variety of stationary and non-stationary sources, such as roads and - industrial processes. The Defra website (Ref 14.11) includes estimated background pollutant concentrations for nitrogen oxides (NO_x), NO_2, particulate matter (PM_{10} and $PM_{2.5}$) for each 1 km by 1 km Ordnance Survey (OS) Grid square in the UK.

14.5.15 The 2023 Defra background concentrations of NO_2 are found to be well below the Air Quality Objective (AQO) within the Scoping Boundary. The Defra website includes estimated background pollutant concentrations for NO_2, PM_{10} and $PM_{2.5}$ for more recent years (2024), however, the year 2023 is used as the baseline to align with the 2023 local monitoring data. The highest background NO_2 concentration is 9.7 µg/m^3 in Section 5, well below the AQO of 40 µg/m^3. The lowest NO_2 background concentration is 5.0 µg/m^3 in Section 3.

14.5.16 The background concentrations of NO_x (relevant to ecological receptors) are low within the Scoping Boundary, and there are no exceedances of the AQO for the protection of vegetation of 30 µg/m^3. The highest background concentration of NO_x is 12.7 µg/m^3 in Section 5, the lowest concentration is 6.3 µg/m^3, in Section 3.

14.5.17 The background concentrations of PM_{10} are not exceeding the annual mean AQO (40 µg/m^3). The highest concentration within the Scoping Boundary is 15.8 µg/m^3 in Section 2 and the lowest is 10.2 µg/m^3 in Section 4. Background concentrations of $PM_{2.5}$ are also not exceeding the relevant AQO, in this case 10 µg/m^3, where the highest concentration within the Scoping Boundary is 8.7 µg/m^3 in Section 5 and the lowest concentration is 5.8 µg/m^3 in Section 2.

14.5.18 The 2023 background pollutant concentrations within the Scoping Boundary for each Section are presented in **Table 14.3.**

Table 14.3 Average 2023 Defra projected background concentrations (µg/m^3) within the Scoping Boundary for each Section

Sections	2023			
	NO_2	NO_x	PM_{10}	$PM_{2.5}$
South Holland	5.9	10.1	14.4	6.4

Sections	2023			
	NO_2	NO_x	PM_{10}	$PM_{2.5}$
South Kesteven	5.6	8.5	15.8	7.4
Melton	5.8	8.9	13.7	6.8
Harborough	5.6	11.5	12.9	8.0
Northamptonshire	7.9	11.5	14.6	7.8

Note: The Scoping Boundary covers multiple OS grid squares. Therefore, the result presented above is the average taken from the grid square for each Section in 2023 as this is consistent with the latest year of local authority monitoring.

Receptors

14.5.19 The presence of human and ecological receptors has been identified for the baseline assessment within the Scoping Boundary.

Human Receptors

14.5.20 Sensitive receptors include:

- residential receptors;
- commercial receptors, e.g., places of work;
- community receptors, e.g., community centres or parks; and
- ecological receptors (designated and non-designated sites).

14.5.21 Receptors that merit particular attention due to the relative vulnerability of people who may occupy them include:

- areas where people would expect a high level of personal amenity[1];
- medical facilities;
- residential care homes or sheltered accommodation; and
- schools, nurseries, and other places of education where children or young people are present.

14.5.22 Relevant receptors that may be affected by dust (Ref 14.1) during demolition/ construction have also been considered.

14.5.23 The Project is located to avoid large residential and urban areas, as far as practicable, and therefore avoids likely areas of poor air quality. Full details of human receptors will be provided in the ES once the Study Areas have been refined.

14.5.24 The main communities identified within the Scoping Boundary include settlements at Corby Glen, Haconby, Swayfield, Garthorpe, Ab Kettleby, Asforby, Frisby on the Werake, Twyford, Lowesby, Cold Newton, Marefield, Tilton on the Hill, Skeffington, Tugby, Rolleston, Noseley, Geabdy, Glosston, Stonton Wyville, Glooston, Cranoe,

[1] indicative examples include dwellings, museums and other culturally important collections, medium and long term car parks and car showrooms.

Welham, Weston by Wekkand, Sutton Basset, Great Bowden, Dingley, Braybrooke, Harrington, Orton, Loddington, Great Cransley, Mawsley, Broughton, Orilingbury, Little Harrowden, Hardwick, Earls Barton and Grendon.

Ecological Receptors

14.5.25 There are both designated and non-designated ecological receptors within the Scoping Boundary. These include one Ancient Tree (AT), 16 Veteran Trees (VT), 30 Ancient Woodlands (AW), seven Sites of Special Scientific Interest (SSSI), one Special Protection Area (SPA) and one Ramsar site. The internationally and nationally designated sites (SSSIs, and SPA and Ramsar) are listed below:

- SPA/Ramsar - Upper Nene Valley Gravel Pits;
- SSSI Badsaddle, Withmale Park and Bush Walk Woods;
- SSSI Frisby Marsh;
- SSSI Holwell Mouth;
- SSSI Leighfield Forest;
- SSSI Great Bowden Borrowpit;
- SSSI Upper Nene Valley Gravel Pits; and
- SSSI Birch Spinney and Mawsley Marsh.

Future Baseline

14.5.26 The future baseline relates to known or anticipated changes to the current baseline in the future which are predicted to occur in the absence of the Project.

14.5.27 The air quality chapter within the ES will consider changes which may affect the future air quality environment in the absence of the Project. The future baseline will also take into account any committed developments that are likely to be present in the future baseline. At the time of writing, the opening year of the Project is estimated as 2034. For the air quality assessment, 2030 will be used as the future baseline year as it presents a slightly conservative estimate for the future year compared to 2034, as background concentrations would be expected to reduce with technology improvements and take up of electric vehicles.

14.5.28 The Defra background air pollutant concentrations are currently available using 2021 base year for projections, up to 2030 (Ref 14.11). These are predicted to improve over time due to reductions in emissions resulting from:

- reductions in transport emissions resulting from improvements in fuel efficiency and uptake in low emission vehicles;
- general reduction in the use of fossil fuels;
- reductions in pollutant emissions from agricultural sources due to improvements in management envisaged in the 2019 Clean Air Strategy (Ref 14.20); and
- improved emission standards for NRMM and static generators.

14.5.29 The predicted concentrations for the year 2030, as shown in **Table 14.4**, show reductions in both NO_2 and NO_x levels within the Scoping Boundary compared to the 2023 baseline year, shown in **Table 14.3**.

Table 14.4 Average 2030 Defra projected background concentrations for Scoping Boundary

Sections	2030			
	NO_2	NO_x	PM_{10}	$PM_{2.5}$
South Holland	6.6	8.3	13.8	5.9
South Kesteven	5.6	7.0	15.2	7.0
Melton	5.8	7.3	13.1	6.3
Harborough	7.4	9.5	12.4	7.4
Northamptonshire	7.3	9.4	13.9	7.2

Note: The Scoping Boundary covers multiple OS grid squares. Therefore, the result presented above is the average taken from the grid square for each Section in 2023 as this is consistent with the latest year of local authority monitoring.

14.5.30 The air quality assessment for the ES will also consider the relevant rate of nitrogen deposition, ammonia concentrations and critical load ranges for the identified sensitive ecological receptors, based on the data from Air Pollution Information System (APIS) (Ref 14.19).

14.6 Design and Control Measures

Design Measures

14.6.1 The Project has been designed to avoid as far as practicable sensitive air quality features such as built-up residential areas and ecologically designated sites, as described in **Chapter 3 Main Alternatives Considered** and **Chapter 4, Description of the Project**. Further embedded measures would be developed as the Project design evolves.

Control and Management Measures

14.6.2 A range of standard measures for the Project would be adopted throughout the duration of the construction phase. An Initial Outline Code of Construction Practice is provided in **Appendix 4A: Initial Outline Code of Construction Practice (CoCP).** Measures relevant to the control and management of impacts that could affect air quality include but are not limited to (refer to **Appendix 4A** for the full description of each measure):

- GG12: on locating potential nuisance activities away from sensitive receptors.
- GG14: on maintenance and operation of plant and vehicles.
- GG15: on materials and equipment handling.
- GG20: on earthworks and soil stockpiling.
- GG21/AQ06: on prohibiting burning of materials.
- AQ01 to AQ05: requiring the preparation of a Dust Management Plan and measures to reduce and manage dust.

- TT01: on construction traffic management.

14.6.3 All of these standard measures would reduce impacts from air quality on identified receptors.

14.7 Potential for Significant Effects

14.7.1 The air quality assessment in the ES will consider the construction, operation and maintenance of the Project. A description of each of these stages is set out in **Chapter 4 Description of the Project**. The potential for significant effects and inclusion (Scoped in) and exclusion (Scoped out) of matters in the scope of the air quality ES assessment is set out below and has been determined using the approach described in **Chapter 5 EIA Approach and Methodology.**

14.7.2 The potential for the Project to result in the likely significant effects identified below takes into account the embedded design, and control and management measures described in Section 14.6.

14.7.3 **Table 14.5** identifies the sources of potential impacts on receptors identified in the baseline that could result in a significant effect. Where an impact could give rise to potentially significant effects on receptors identified in the Study Areas, these are then scoped into the assessment. Impact pathways that are unlikely to give rise to significant effects on receptors identified in the Study Areas are proposed to be scoped out of the assessment.

14.7.4 The likely effects of the Project have been split into:

- Construction – dust emissions, pollutant emissions from generators/NRMM, and construction phase traffic; and
- Operation and maintenance – Pollutant emissions from traffic and activities associated with operation and maintenance.

Table 14.5 Impacts, receptors and the potential for significant effect

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
Construction	Construction dust	Dust impacts from construction activities such as earthworks has the potential to impact local air quality	Ecological and human receptors	**Yes** - potential for significant effects at ecological and human receptors, from deterioration in local air quality (PM_{10} and $PM_{2.5}$), caused by dust, due to proximity of proposed construction activities to sensitive receptors.	Scoped in
	Generators and NRMM	Use of generators and NRMM can have the potential to temporarily deteriorate local air quality during this phase	Ecological and human receptors	**Yes** - potential for temporary deterioration in local air quality (NO_2, NO_x, PM_{10} and $PM_{2.5}$) at local human and ecological receptors, when the use of NRMM including generators occurs.	Scoped in
	Construction traffic	Increase in traffic from construction activity and the increase of vehicle movement in the area during this	Ecological and human receptors	**Yes** - potential for deterioration in local air quality (NO_2, NO_x, PM_{10} and $PM_{2.5}$) at local human and ecological receptors.	Scoped in (if the EPUK/IAQM indicative criteria (Ref 14.3) are met or exceeded)

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
		phase may impact receptors		This will be **scoped out** if the EPUK/IAQM indicative criteria (Ref 14.8) are not met, as there would be no potential for significant effects. It will be **scoped in** if the EPUK/IAQM indicative criteria (Ref 14.8) are met or exceeded. The assessment of emissions from diverted traffic and road closures would also be **scoped out** if the EPUK/IAQM indicative criteria (Ref 14.3) are not met, as there would be no potential for significant effects**.** It will be **scoped in** if the EPUK/IAQM indicative criteria (Ref 14.3) are met or exceeded.	

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
Operation and Maintenance	Dust, vehicle emissions, generators and NRMM	Pollutant emissions from traffic and activities associated with operation and maintenance may impact receptors.	Ecological and human receptors	**No** - significant effects are not likely to occur. The only vehicle trips associated with the operational phase will be for maintenance and these would be minimal across an annual period. The predicted volumes of traffic would not meet the EPUK/IAQM indicative criteria (Ref 14.8). Therefore, vehicle emissions during operation and maintenance are proposed to be **scoped out.** No significant effects are likely to occur from dust sources, generators and NRMM, due to the infrequent, temporary and transient nature of any maintenance	Scoped out

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
				works and incorporation of best practice measures (akin to those for construction as outlined within **Appendix 4A Initial Outline CoCP**) and NRMM standards. Therefore, no significant operation or maintenance effects are predicted.	

14.8 Proposed Assessment Methodology

Proposed Data Sources

14.8.1 In addition to the data sources listed in Section 14.5, the following data sources are proposed to be used to inform the ES air quality assessment:

- AddressBase dataset points;
- construction programmes, locations, and methodologies;
- details of human receptors;
- APIS database and information on pollutants and their impacts on habitats and species;
- project design information ; and
- construction traffic data developed for the Project as a result of the iterative design process.

Proposed Assessment Methodology

14.8.2 The following section summarises the methodology proposed to be used for the air quality ES assessment, which differs from the general assessment methodology presented in **Chapter 5 EIA Approach and Methodology** as more suitable industry specific methods are available. For example, following IAQM guidance (Ref 14.9) for dust assessment, risk would be identified and mitigation recommended with the conclusion of a dust assessment assuming that mitigation is suitably implemented and embedded. For traffic, the EPUK/IAQM guidance (Ref 14.8) would be followed as this represents industry best practice.

Construction Dust

14.8.3 The construction dust assessment will be undertaken following the risk-based approach outlined in the IAQM guidance (Ref 14.1) for the assessment of dust from demolition and construction activities.

14.8.4 The IAQM guidance (Ref 14.1) considers the potential for dust emissions from the following activities:

- demolition;
- earthworks i.e. soil stripping, ground levelling, excavation and land;
- construction; and
- trackout i.e. incidental movement of dust and dirt from the construction or demolition site onto the public road network.

14.8.5 For each of the above activities, the guidance considers three separate dust effects:

- annoyance due to dust soiling;
- harm to ecological receptors; and
- the risk of health effects due to a significant increase in PM_{10} exposure.

14.8.6 The methodology takes into account the scale at which the above effects are likely to be generated (classed as small, medium or large). The distance of the closest receptors and background PM_{10} concentrations are also considered in order to determine the sensitivity of the surrounding area.

14.8.7 An overall site risk is then derived and suitable mitigation measures identified. Receptors can be either human or ecological and are chosen based on their sensitivity to dust soiling and PM_{10} exposure. A detailed, individual construction dust risk assessment for each of the five Sections would also be provided for the ES.

Construction Traffic

14.8.8 Predicted traffic flows using the public highway as a result of construction of the Project could potentially meet the assessment criteria from the EPUK/IAQM guidance (Ref 14.8). It is noted that the EPUK/IAQM guidance (Ref 14.8) is under review and it is being updated. This updated guidance will have a focus on emissions reduction, with consideration of screening thresholds, and a method for defining impact descriptors. These updates are likely to be published in time to be reflected in the ES, If they are not published in time for the ES, the current EPUK/IAQM guidance (Ref 14.8) will be used.

14.8.9 Where traffic flows meet the criteria for assessment, detailed dispersion modelling would be undertaken on the relevant road links to assess the changes in concentrations of air pollutants. The screening criteria are:

- A change in LDV flows of more than 100 AADT within or adjacent to an AQMA or more than 500 AADT elsewhere.
- A change in HDV (>3.5 tonnes) flows of more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere.

14.8.10 The above screening criteria would be used to identify the ARN which would define the extent of highway network to be included in the assessment. Road links that do not meet the criteria would not be subject to assessment. Where applicable, diverted traffic and road closures would also be considered as part of the assessment if these are reflected in the highway network extent.

14.8.11 Sensitive receptors within 200 m of the ARN would be considered. Beyond this distance concentrations are expected to have dispersed to concentrations equivalent to background levels and would not be assessed.

14.8.12 If the screening criteria is not met, an assessment of construction traffic emissions is proposed to be scoped out as detailed in **Table 14.5** above. If the screening criteria is met or exceeded, then calculation of emissions from construction traffic would be undertaken using the latest available version of the Defra Emissions Factor Toolkit (EFT) (currently v13.1) (Ref 14.21). Dispersion modelling would be undertaken using the Air Dispersion Modelling System-Roads (ADMS) dispersion modelling program.

14.8.13 The conversion of road NO_x to NO_2 would be undertaken using the latest version of the Defra Local Air Quality Management NO_x to NO_2 Calculator (currently v9.1) (Ref 14.22).

Generators / NRMM

14.8.14 No specific guidance exists on the definition of a Study Area for NRMM and generator emissions due to the large variation in potential effects from different types of sources.

14.8.15 For the purposes of the ES assessment, a Study Area of up to a 100 m radius from the temporary construction areas/compounds is considered appropriate given the potential size and duration of the operations to be undertaken and the likely size of plant required. This Study Area also follows precedent set on other National Grid projects such as the Bramford to Twinstead Reinforcement project (National Grid, 2023) and Norwich to Tilbury (National Grid, 2025). Beyond this distance it is considered that the effect of any emissions on local air quality would be very limited due to dispersion and influence of other pollution sources.

14.8.16 A conservative assessment of emissions taking into consideration the plant operating times and likely pollutant dispersion would be undertaken to determine the impact of generators/NRMM on sensitive receptors within a 100 m radius from the relevant construction areas/compounds. Where a potential impact is identified additional mitigation will be recommended to minimise the effect from NRMM.

Sensitivity

14.8.17 Sensitive receptors include locations where people are likely to be exposed to air pollutants for an averaging time commensurate with the pollutant objective or limit value being assessed against. Sensitive receptors are identified in Section 14.5.

14.8.18 While the legal limit and objective values for air pollutants are established in law, it is widely recognised that the air pollutants identified in the Air Quality Standards Regulations 2010 (amended in 2016) (Ref 14.3) are considered to be non-threshold pollutants (i.e., there is no safe exposure limit below which there are no health impacts). Therefore, all receptors that are exposed to air pollutants for a time period relevant to the limit or objective value for a given pollutant are considered to be highly sensitive receptors.

14.8.19 The criteria used to determine the value and sensitivity of the receiving environment to air quality effects can be found in Tables 4 and 5 of Section 7 of the Dust Risk Assessment Guidance (Ref 14.6). These tables take account of the number of receptors within a given distance of construction works, the sensitivity of receptors and the background pollutant concentration through a semi-quantitative method to establish the sensitivity according to dust soiling impacts, human health impacts and ecological impacts.

Magnitude

14.8.20 The terminology for describing the magnitude of impact for construction traffic emissions would be assigned based on the criteria from EPUK/IAQM guidance (Ref 14.8) which is presented in

14.8.21 **Table** 14.6**.**

Table 14.6 Criteria for quantifying the magnitude of impact (IAQM 2024)

Long-term Average Concentration at Receptor in Assessment Year	% Change in Concentration Relative to the Air Quality Assessment Level (AQAL)			
	1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Substantial
103-109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

Significance of effects

14.8.22 The impact descriptors at each of the assessed receptors would be used as a starting point to make a judgement on the overall significance of effect of the Project, however other influences would also be accounted for, such as:

- the existing future air quality in the absence of the Project;
- the extent of current and future population exposure to the impacts; and
- the influence and validity of any assumptions adopted when undertaking the prediction of impacts.

14.8.23 Professional judgement would be used to determine the overall significance of effects of the Project, however, in circumstances where the Project can be judged in isolation, the guidance suggests that a ‘moderate’ or ‘substantial’ impact is likely to give rise to a significant effect and a ‘negligible’ or ‘minor’ is not likely to result in a significant effect.

14.8.24 The air quality results for the ecological receptors will be presented in the air quality chapter of the ES. The significance of any air quality impacts on ecological receptors would require the evaluation of impacts by an ecologist, the conclusions of which will be reported in the ecology chapter of the ES.

14.9 Assumptions and limitations

14.9.1 This EIA Scoping Report has been collated based on a range of publicly available data and information only. It is assumed that the data collated is accurate. The data will be supplemented with additional data as part of the EIA process.

14.9.2 In the absence of data, a precautionary approach has been taken and professional judgement, based on experience of similar linear schemes, has been used where required to inform the scope of the assessment.

14.10 Conclusion

14.10.1 This Scoping Report chapter has outlined the proposed scope for further assessment for the Project in relation to the air quality ES chapter.

14.10.2 The data sources that will be used to define the current and future baselines have been presented, along with the impact control and management measures that will be implemented. The potential for significant effects has been identified, as well as the associated source, impact and receptors.

14.10.3 The assessment of the risk of impacts from construction dust has been scoped into the assessment on the basis that there is potential for significant effects on receptors in close proximity to the Project. This will be completed using the IAQM guidance (Ref 14.6) on the assessment of dust from demolition and construction.

14.10.4 If the EPUK/IAQM guidance (Ref 14.8) screening criteria are met or exceeded for construction vehicles, then an assessment of the effects of the emissions of construction traffic using the public highway will be scoped into the assessment. The same approach is proposed for emissions from diverted traffic and road closures.

14.10.5 The assessment of potential emissions from generators and NRMM during construction has been scoped into the ES on the basis that there is a potential for localised air quality effects associated with NRMM use.

14.10.6 In the operational phase, it is predicted that there will be infrequent and temporary dust generating activities or generator/NRMM use, such as maintenance and repair works or inspection and monitoring activities, which will not lead to significant effects. Therefore, dust generation and generator/NRMM use has been scoped out for operation and maintenance.

14.10.7 During the operational phase vehicle numbers associated with the maintenance of the project are expected to be small and as such operational effects are scoped out of the assessment.

14.10.8 A summary of the proposed scope of the assessment is provided in **Chapter 20 Summary.**

References

Ref 14.1 Environment Act 2021 [online]. Available at: https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted [Accessed 7 July 2025].

Ref 14.2 Environment Protection Act 1990 [online]. Available at: Environmental Protection Act 1990 [Accessed 7 July 2025].

Ref 14.3 Air Quality Standards Regulations 2010 (amended in 2016) [online]. Available at: https://www.legislation.gov.uk/uksi/2010/1001/contents [Accessed 7 July 2025].

Ref 14.4 Department of Environment Food and Rural Affairs (Defra) (2023) The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 [online] Available at: https://www.legislation.gov.uk/uksi/2023/96/contents/made [Accessed 7 July 2025].

Ref 14.5 Department of Environment Food and Rural Affairs (Defra) (2018) The Non-Road Mobile Machinery (Type-Approval and Emission of Gaseous and Particulate Pollutants) Regulations 2018 [online] Available at: https://www.legislation.gov.uk/uksi/2018/764 [Accessed 7 July 2025]

Ref 14.6 Institute of Air Quality Management (2024). Guidance on the Assessment of Dust from Demolition and Construction [online]. Available at: https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf [Accessed 7 July 2025].

Ref 14.7 Institute of Air Quality Management (IAQM) (2018) Guidance on Monitoring in the Vicinity of Demolition and Construction Sites [online] Available at: https://iaqm.co.uk/text/guidance/guidance_monitoring_dust_2018.pdf. [Accessed 7 July 2025].

Ref 14.8 Environmental Protection UK and Institute of Air Quality Dust Management (2017). Land Use Planning & Development Control: Planning for Air Quality [online]. Available at: https://www.iaqm.co.uk/text/guidance/air-quality-planning- guidance.pdf [Accessed 7 July 2025]

Ref 14.9 Environmental Protection UK and Institute of Air Quality Dust Management Update. Land Use Planning & Development Control: Planning for Air Quality [online]. Available at: https://iaqm.co.uk/wp-content/uploads/2025/02/IAQM_Briefing_Land-use_Guidance_25.pdf. [Accessed 7 July 2025]

Ref 14.10 The Council of the European Communities (2013) European Council Directive 92/43/EEC(Habitats Directive).

Ref 14.11 Department for Environment, Food and Rural Affairs (2024). Background Mapping data for local authorities - 2021 [online]. Available at: https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2021 [Accessed 7 July 2025].

Ref 14.12 Department for Environment, Food and Rural Affairs (2024). AQMAs Interactive Map. Retrieved from UK Air Information Resources [online]. Available at: https://uk-air.defra.gov.uk/aqma/ [Accessed 7 July 2025].

Ref 14.13 South Holland District Council (2024). South Holland District Council Annual Progress Report 2023 [online]. Available at: https://www.sholland.gov.uk/article/25397/Air-Quality-Monitoring-Annual-Status-Reports [Accessed 7 July 2025].

Ref 14.14 South Kesteven District Council (2024). South Kesteven District Council Annual Progress Report 2023 [online]. Available at: https://laqm.defra.gov.uk/wp-content/uploads/2025/02/South-Kesteven-ASR-2024.pdf [Accessed 7 July 2025].

Ref 14.15 Melton Borough Council (2023). Melton Borough Council Annual Progress Report 2022 [online]. Available at: https://www.melton.gov.uk/media/gxonbljy/2023-air-quality-annual-status-report-accessible-template.pdf [Accessed 7 July 2025].

Ref 14.16 Harborough District Council (2024). Harborough District Council Annual Progress Report 2023 [online]. Available at: https://www.harborough.gov.uk/downloads/download/30/air_quality_review_and_assessment_reports [Accessed 7 July 2025].

Ref 14.17 North Northamptonshire Council (2024). North Northamptonshire Council Annual Progress Report 2023 [online]. Available at: https://www.northnorthants.gov.uk/environment/air-quality [Accessed 7 July 2025].

Ref 14.18 Environment Agency Industrial Processes (2025) [online]. Available at: https://environment.data.gov.uk/public-register/view/search-industrial-installations [Accessed July 2025].

Ref 14.19 Air Pollution Information System (2025) Critical level (NO_x and NH_3) and load (nitrogen deposition rates) data for designated ecological sites [online]. Available at: https://www.apis.ac.uk/ [Accessed 7 July 2025].

Ref 14.20 Clean Air Strategy 2019, sites [online]. Available at: Clean Air Strategy 2019 - GOV.UK [Accessed 7 July 2025].

Ref 14.21 Department of Environment Food and Rural Affairs (Defra), Emissions Factors Toolkit (EFT) v13.1 sites [online]. Available at: https://laqm.defra.gov.uk/air-quality/air-quality-assessment/emissions-factors-toolkit/ [Accessed 7 July 2025].

Ref 14.22 Department of Environment Food and Rural (Defra) Local Air Quality Management NOx to NO2 Calculator (currently v9.1). sites [online]. Available at: https://laqm.defra.gov.uk/air-quality/air-quality-assessment/nox-to-no2-calculator/ [Accessed 7 July 2025].

15. Noise and Vibration

nationalgrid

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15. Noise and Vibration

15.1 Introduction

15.1.1 This chapter presents how the Noise and Vibration assessment will consider the potential likely significant effects on Noise and/or Vibration sensitive receptors (NSRs) that may arise from the construction, operation and maintenance of the Project (as described in **Chapter 4 Description of the Project**). The NSR receptor types are listed in **Section 15.8.** This chapter describes the methodology and datasets to be used within the assessment, presents an overview of the baseline conditions, and identifies the potential likely significant effects to be considered within the assessment, and how these will be assessed for the purpose of the Environmental Statement (ES). As detailed in **Chapter 4 Description of the Project**, the decommissioning of the Project has been scoped out of the environmental assessment.

15.1.2 The Scoping Boundary is illustrated on **Figure 1.2 Scoping Boundary**, and the Noise and Vibration Study areas are illustrated on **Figure 15.1 Noise and vibration Study Areas.**

15.1.3 This chapter should be read in conjunction with the following chapters which provide the Project context and approach to EIA:

- **Chapter 2 Regulatory and Planning Policy Context**;
- **Chapter 3 Main Alternatives Considered**;
- **Chapter 4 Description of the Project**; and
- **Chapter 5 EIA Approach and Methodology**.

15.1.4 There may be interrelationships with other disciplines. Therefore, this chapter should also be read in conjunction with the following chapters:

- **Chapter 8 Ecology and Biodiversity** – considers noise impacts on ecology receptors;
- **Chapter 9 Historic Environment** – considers noise impacts on heritage assets, including vibration;
- **Chapter 13 Traffic and Transport** – considers impacts of construction traffic;
- **Chapter 16 Socio-economics, Recreation and** Tourism – considers impacts on communities; and
- **Chapter 17 Health and Wellbeing** – considers noise amenity impacts on the population.

15.1.5 This chapter primarily considers human receptors. Ecological and heritage assets are considered in other chapters as listed above.

15.1.6 This chapter is supported by the following figures and appendices:

- **Figure 15.1 Noise and Vibration Study Areas**; and

- **Figure 15.2 Noise and Vibration Baseline**.

15.2 Legislation, Policy and Guidance

15.2.1 **Chapter 2 Regulatory and Planning Policy Context** describes the overall regulatory and planning policy context for the Project. Key legislation, policy, and planning guidance relevant to the assessment of potential effects on Noise and Vibration associated with the construction, operation and maintenance of the Project is provided in **Chapter 2 Regulatory and Planning Policy Context, Appendix 2A Key Legislation, Appendix 2B National and Regional Planning Policy** and **Appendix 2C Local Policy.**

15.2.2 Relevant guidance and standards that have informed the scoping process are listed below:

- Annex E of British Standard 5228-1 (Ref 15.1);
- Annex B of British Standard 5228-2 (Ref 15.2);
- Design Manual for Roads and Bridges LA 111 (Ref 15.4);
- British Standard 7385-2 (Ref 15.5);
- British Standard 4142 (Ref 15.6); and
- British Standard 7445-1 (Ref 15.7).

15.3 Consultation and Engagement

15.3.1 The ES will be informed by consultation and engagement with stakeholders, including local planning authorities within the Study Areas i.e. the environmental health officers at Lincolnshire County Council, South Holland District Council, South Kesteven District Council, Leicestershire County Council, Melton District Council, Harborough District Council, North Northamptonshire Council and West Northamptonshire Council. In addition, engagement will be undertaken with non-statutory stakeholders as required to ensure that specialist local views and expertise can be considered as part of the ES.

15.3.2 In preparing this Scoping Report chapter, consideration has been given to stakeholder feedback received following Non-Statutory Consultation held between 11 June and 6 August 2025, as set out in **Table 15.1**.

Table 15.1 Engagement with Stakeholders

Stakeholder	Summary of response	Consideration in the Scoping Report
Lincolnshire County Council	Concern about amenity.	Potential impacts during construction and operation are described in **Section 15.7**. **Section 15.8** describes the noise and vibration assessment proposed and the findings will be reported in the ES.
South Kesteven District Council	Concern regarding residential amenity, including nose from	Potential impacts during the construction and operation phases have been considered in **Section 15.7**. **Section 15.8** describes the

Stakeholder	Summary of response	Consideration in the Scoping Report
	construction and operational activities.	noise and vibration assessment proposed and the findings will be reported in the ES.
South Holland District Council	Highlighting local policy and agreeing that noise and vibration should be assessed, and requesting a detailed construction and environmental management plan.	Potential impacts during the construction and operation phases have been considered in **Section 15.7**. **Section 15.8** describes the noise and vibration assessment proposed and the findings will be reported in the ES. **Chapter 2 Regulatory and Planning Policy Context** and associated appendices list the policy considered in this report, which will also be considered in the ES. **Appendix 4A Initial Outline Code of Construction Practice** described measures proposed to manage environmental impacts during construction, this will be updated and submitted with the application for development consent.

15.4 Study Area

15.4.1 The Study Areas adopted for the purposes of this Scoping Report are illustrated in **Figure 15.1 Noise and Vibration Study Area**. These are defined as distance buffers from the Scoping Boundary and encompass the possible locations of proposed infrastructure and construction working areas. Once the Order Limits have been defined, the Study Areas for the purposes of the ES assessment will be refined as described in the following paragraphs.

15.4.2 For construction site noise the Study Area will be 300m from potential locations of noisy construction works, including the use of handheld, mobile or static plant.

15.4.3 For construction traffic noise the Study Area will be 50m around proposed haulage routes i.e. public roads with the potential for an increase in basic noise level of 1 dB(A) or more as a result of the addition of construction traffic to existing traffic levels.

15.4.4 For construction vibration, the Study Area will be 100m from vibratory construction works.

15.4.5 For operational noise, a Study Area of 500m from substations and 200m from overhead lines, is considered sufficient to capture operational noise impacts. Sound levels are expected to be below those likely to cause a risk of a significant effect at, or beyond, these distances.

15.5 Baseline Conditions

Data Sources

15.5.1 The known or predicted current and future baseline environment described in this section has been informed by the following data sources:

- Ordnance Survey (OS) AddressBase® Plus data, as presented **in Figure 15.1 Noise and Vibration Study Areas**;
- other potentially sensitive receptors (e.g. ecological or heritage) informed by relevant topic specialists;
- Department for Environment, Food and Rural Affairs (Defra) Strategic Noise Mapping Round[1] 4 2022, presented as noise contours within **Figure 15.2 Noise and Vibration Baseline**, represents the daytime ambient noise levels from road and rail sources;
- Department for Environment, Food and Rural Affairs (Defra) Noise Action Planning Important Areas Round 3 2019 England - Noise Important Areas (NIAs), presented as polygons within **Figure 15.2 Noise and Vibration Baseline**; and
- current OS mapping.

15.5.2 Noise surveys are planned to be undertaken to supplement the above data sources for the EIA.

Baseline

15.5.3 The emerging preferred corridor on which the Scoping Boundary is based has been designed as far as reasonably practicable to avoid NSRs. This includes avoiding settlements and residential areas, passing predominantly through rural areas, with the majority of NSRs being isolated dwellings or part of small settlements. **Figure 15.1 Noise and Vibration Study Areas** also shows NSR locations, including residential and noise sensitive non-residential receptors.

15.5.4 The noise environment is expected to vary across the Study Areas depending on the nature of the surroundings. For example, close to noise sources, such as roads and railways and in built-up areas, ambient noise levels are expected to be higher. Further away from road and rail sources and in rural areas, ambient and background noise levels would be expected to be lower. Daytime noise level contours from existing road and railway sources are presented in **Figure 15.2 Noise and Vibration Baseline**, showing how existing noise levels vary across the Study Area. These noise level contours are from the Defra Strategic Noise Mapping Round 4 2022 which are the latest available at the time of writing (the Defra Strategic Noise Mapping is updated every five years). Areas outside of the contours are generally considered to have low ambient and background noise levels. Areas where road and rail contours overlap are considered to experience noise effects from both sources.

15.5.5 The Defra Noise Action Planning Noise Important Areas (NIAs) Round 3 2019 highlight the residential areas experiencing the highest one percent of noise levels from road and rail sources in England and are shown in **Figure 15.2 Noise and Vibration Baseline**. NIAs have been determined via the previous round of the strategic noise maps (Defra Strategic Noise Mapping Round 3 2017). NIAs are not yet available for the Defra Strategic Noise Mapping Round 4 2022. NIAs are primarily relevant to transportation projects but are considered in this project for completeness, as the future baseline could change in these areas if the NIAs are mitigated.

[1] "Round" refers to the cycle of strategic noise mapping conducted under the Environmental Noise Directive and published by Defra. For example, Round 4 represents the fourth iteration of the cycle of publishing strategy noise maps.

15.5.6 Vibration impacts are typically assessed against fixed thresholds, rather than relative thresholds. It is assumed that the existing vibration levels within the Study Area are negligible compared with vibration impact threshold values, which is likely to be the case even close to railways or busy main roads.

15.5.7 The Project has been divided into five Sections as described in **Chapter 4 Description of the Project** and shown on **Figure 1.2 Scoping Boundary**. The Sections are defined by the geographical alignment of the Scoping Boundary and the administrative boundaries of the local authorities. The baseline environment is reported for the Sections within the Study Areas in the respective sections below.

Section 1

15.5.8 This Section 1 includes receptors in South Holland. This Section is predominantly rural, passing through agricultural land with isolated dwellings and villages within the Study Areas. The villages in this part of the Study Area include Surfleet, Crossgate and Northgate.

15.5.9 The main sources of environmental noise in this Section include the A16 and B1356 roads, Peterborough to Lincoln railway line, and traffic on local roads. The main source of industrial noise in this Section is likely to be agricultural activity. There are no NIAs in this part of the Study Area.

Section 2

15.5.10 This Section includes receptors in South Kesteven. The Section is predominantly rural with agricultural land, villages and dispersed dwellings. The villages in this part of the Study Areas include Haconby, Stainfield, Corby Glen, Swayfield, Birkholme, Dunsby, Morton, Hanthorpe, Bulby, Irnham, Swinstead, North Witham and South Witham.

15.5.11 The main sources of environmental noise in this Section include the A15, A151, A1, B1176 and B1177, the East Coast Main Line (ECML) railway line and traffic on local roads. The main source of industrial noise in this Section is likely to be agricultural activity. There is one NIA in this part of the Study Area (NIA 7888, on the A1 road).

Section 3

15.5.12 This Section includes receptors in Melton. The Section is predominantly rural with agricultural land, villages and dispersed dwellings. The villages in this part of the Study Areas include Coston, Garthorpe, Ab Kettleby, Wartnaby, Grimston, Saxelbye, Shoby, Ashfordby, Frisby on the Wreake, Kirby Bellars, Ashby Folville, Barsby, Thorpe Satchville and Twyford.

15.5.13 The main sources of environmental noise in this Section include the A607, A606, A6006, A1, B676, B674, B6047, the Melton Mowbray to Nottingham railway line, the Melton Mowbray to Leicester railway line, and traffic on local roads. The main source of industrial noise in this Section is likely to be agricultural activity. There is one NIA in this part of the Study Areas (NIA 11677, on the A607 road).

Section 4

15.5.14 This Section includes receptors in Harborough. The Section is predominantly rural with agricultural land, some villages and isolated dwellings. The villages in this part of the Study Area include Lowesby, Marefiled, Cold Newton, Tilton on The Hill,

Halstead, Skeffington, Tugby, Rolleston, Noseley, Goadby, Glooston, Stonton Wyville, Cranoe, Slawston, Thorpe Langton, Welham, Great Bowden and Little Bowden

15.5.15 The main sources of environmental noise in this Section include the A47, A6, A4304, A508 and B6047, the Leicester to Melton Mowbray to Kettering railway line and traffic on local roads. The main source of industrial noise in this Section is likely to be agricultural activity. There are several NIAs in this part of the Study Area, including NIA 11689, NIA 11691 and NIA 11692 on the A47 road.

Section 5

15.5.16 This Section includes receptors in North Northamptonshire and West Northamptonshire. The Section is a mix of rural and urban environments. There is agricultural land, towns, villages, and dispersed dwellings. This part of the Study Areas includes the towns of Market Harborough and Wellingborough, and the villages of Weston By Welland, Sutton Bassett, Dingley, Braybrooke, Arthingworth, Harrington, Thorpe Underwood, Orton, Foxhall, Loddington, Mawsley Village, Great Cransley, Broughton, Pytchley, Orlingbury Little Harrowden, Great Harrowden, Hardwick, Mers Ashby, Wilby, Great Doddington, Earls Barton, Whiston, Grendon and Castle Ashby.

15.5.17 The main sources of environmental noise in this Section include the A427, A6, A14, A43, A508, A509, A4500 and A45, B664, B574, B573, the Market Harborough to Kettering railway line and traffic on local roads. The main source of industrial noise in this Section is likely to be agricultural activity. There is one NIA in this part of the Study Areas (NIA 11716 on the A509 road).

Future Baseline

15.5.18 The future baseline relates to known or anticipated changes to the current baseline in the future which would develop in the absence of the Project and should be considered as part of the assessment and described in the **Chapter 5 EIA Approach and Methodology**. The introduction of new infrastructure, development consented under permitted development, or changes to existing road or rail sources as a result of mitigating noise associated with a NIAs could result in changes to the future baseline noise levels.

15.5.19 Other developments proposed in proximity to the Project would be identified as these projects have the potential to affect the future baseline. The other developments that are likely to be completed before commencement of construction of the Project would be considered in the future baseline, whereas, those that would be delivered during the same period as the Project would be considered in the cumulative effects assessment, as described in **Chapter 5 EIA Approach and Methodology**. Changes to the future baseline are not expected to affect the assessment of operational noise, however, should there be any changes, these would be assessed within the ES.

15.5.20 Any committed developments that would introduce NSRs within the Study Areas will be considered in the assessment. The final date for including receptors relating to other developments in the assessment will be the same as that used for the cumulative assessment.

15.6 Design and Control Measures

Design Measures

15.6.1 The Project has been routed to avoid designated sites and NSRs as far as reasonably practicable, considering overhead line routeing and substation Siting Areas, as set out in the Corridor Preliminary Routeing and Siting Study (CPRSS) (Ref 15.16). This will be further refined as the Project design evolves taking noise and other environmental and engineering constraints into account.

15.6.2 The proposed overhead line system is a 'triple Araucaria' conductor bundle, which is regarded as practically quiet during both typical dry and wet weather conditions and would not lead to significant adverse effects at nearby NSRs. In addition, tower fittings, such as insulators, dampers, spaces, and clamps, shall be designed and procured in accordance with a series of National Grid Technical Specifications and must be type registered (rigorously tested) to ensure the fitting conforms to the specification. These processes reduce the potential for audible noise and tones to occur from all types of fittings, including insulators. Where noise from fittings does occur which results in a complaint, appropriate action will be taken to seek to remedy the cause of the noise, usually through cleaning or replacing the relevant fitting.

15.6.3 At this stage, the proposed substations have not yet been designed in detail. However, appropriate noise mitigation measures will be identified through the EIA process to avoid or minimise significant adverse noise effects. This will include consideration of the equipment selected, site layout, hours of operation, screening, and enclosures, as may be considered appropriate.

15.6.4 Substation plant would also include vibration isolation measures as necessary. 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 impact levels at the nearest NSRs.

Control and Management Measures

15.6.5 Best practicable means (BPM), as defined under Section 72 of the Control of Pollution Act (CoPA) 1974 (Ref 15.17), will be applied during construction works to minimise noise (including vibration) at neighbouring residential properties and other NSRs arising from construction activities at all times. This will be secured through the Code of Construction Practice (CoCP) and management plans.

15.6.6 Standard measures comprising management activities and techniques, would be implemented during construction of the Project to limit impacts through adherence to good site practices and achieving legal compliance. This is captured within **Appendix 4A Initial Outline Code of Construction Practice** in accordance with the CoPA (Ref 15.17) and the Environmental Protection Act 1990 (Ref 15.18). An Initial Outline Code of Construction Practice (CoCP) is provided in **Appendix 4A Initial Outline Code of Construction Practice.** Measures relevant to the control and management of impacts that could affect noise and vibration are (refer to **Appendix 4A** for the full description of each measure):

- NV01 - on the use of BPM to minimise noise and vibration at neighbouring residential properties and other NSRs.
- NV02 - on the construction working hours.

Control of Pollution Act 1974

15.6.7 The CoPA (Ref 15.17) 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. The Act refers to approved Codes of Practice, which include British Standards 5228 Part 1 (Ref 15.1) and Part 2 (Ref 15.2), as being relevant for the purposes of determining the 'best practicable means'.

15.6.8 Section 61 of the Act 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.

15.7 Potential for Significant Effects

15.7.1 The Noise and Vibration assessment in the ES will consider the construction, operation and maintenance of the Project. A description of each of these stages are set out in **Chapter 4 Description of the Project**. The potential for significant effects and inclusion (Scoped in) and exclusion (Scoped out) of matters in the scope of the Noise and Vibration ES assessment is set out below**.**

15.7.2 **Table 15.2** identifies the sources of potential impacts on receptors identified in the baseline that could result in a significant effect, taking into account the embedded design, and control and management measures described in Section 15.6. Where an impact could give rise to potentially significant effects on receptors identified in the relevant Study Area, these are then scoped into the ES. Impact pathways that are unlikely to give risk to potentially significant effects on receptors identified in the relevant Study Area are proposed to be scoped out of the ES.

Table 15.2 Impacts, receptors and the potential for significant effect

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
Construction	Construction activities including general construction activities, such as construction of the overhead line, reconductoring and substations	Noise impact from construction activities	NSRs within the Study Area	Yes – there is the potential for effects due to construction noise within the Study Area. There is a greater likelihood of significant adverse effects from construction noise at static sites, such as construction compounds where the duration of works may be medium to long term. Furthermore, any activities required to be undertaken outside of normal working hours (for example, any night-time working associated with trenchless crossing locations), or where certain operations cannot be stopped once started.	**Scoped in**
		Vibration impact from construction activities	Structures within the Study Area	Yes – whilst construction vibration is not anticipated to result in damage to buildings or structures during the works, an assessment is required to ensure that appropriate mitigation measures are put in place should the potential for damage to structures be identified. This would be reviewed during the iterative design process and potential areas of concern would be highlighted.	**Scoped in**
		Vibration impact from construction activities	Humans within NSRs in the Study Area	Yes – there is the potential for effects on human receptors due to construction vibration at NSRs within the Study Area.	**Scoped in**

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
	Construction traffic	Noise impact from construction traffic	NSRs within the Study Area	Yes – there is the potential for significant effects at NSRs close to construction traffic routes.	**Scoped in**
		Vibration impact from construction traffic	NSRs within the Study Area	No – vibration from traffic on public highway is caused by irregularities in the road surface. Where the road surface is well maintained, as per TT01of **Appendix 4A Initial Outline Code of Construction Practice**, and free from irregularities, such as potholes, significant vibration effects would not be expected, even at relatively short distances.	Scoped out
Operation	Overhead lines	Noise impact from overhead lines	NSRs within the Study Area	No – the proposed overhead line system is a 'triple Araucaria' conductor bundle, which is regarded as practically quiet during both typical dry and wet weather conditions and would not lead to significant adverse effects at nearby Noise and/or Vibration Sensitive Receptors. In addition, tower fittings, such as insulators, dampers, spaces, and clamps, shall be designed and procured in accordance with a series of National Grid Technical Specifications and must be type registered (rigorously tested) to ensure the fitting conforms to the specification. These processes reduce the potential for audible noise and tones to occur from all types of fittings, including insulators. Therefore, operational noise from the overhead lines and towers is not likely to be significant at	Scoped out

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
				nearby Noise Sensitive Receptors under any weather conditions. If an alternative type of conductor is considered later in developing the design the potential for significant noise effects will be considered appropriately in the ES.	
	Substation reactive plant (e.g. transformers) and associated cooling plant	Noise from substation reactive plant (e.g. transformers) and associated cooling plant	NSRs within the Study Area	Yes – there is the potential for significant effects at NSRs close to substations, particularly from those elements which operate on a 24-hour basis (for example, transformers generally run continuously).	**Scoped in**
	Substation switchgear and auxiliary plant	Noise from substation switchgear and auxiliary plant	NSRs within the Study Area	No – Switchgear noise is generated, in the main, by the operation of circuit breakers, for which the noise emissions are 'impulsive' in character (i.e. of short duration.) Modern switchgear operates with a dull 'thud'. Switchgear would operate infrequently and is therefore proposed to be scoped out. Auxiliary plant may comprise standby diesel generators and air compressors to provide emergency back-up power to cooling plant. When present and operating, these would generate noise. However, they do not run continuously and would be housed in a building or outdoor acoustic enclosure. Noise from such assets is therefore not considered significant,	Scoped out

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
				given its emergency function and as such is proposed to be scoped out.	
	Operational vibration	Vibration impact at Vibration Sensitive Receptors	NSRs within the Study Area	No – Substation plant would include vibration isolation measures within the design (see Section 15.6). With these measures in place, operational vibration due to substation plant is not expected to result in any vibration impact at NSRs. There are no other sources of operational vibration proposed as part of the Project and as such, this matter is proposed to be scoped out.	Scoped out
Maintenance	Maintenance for overhead lines, and/or substations	Noise or vibration impact from maintenance activities	NSRs within the Study Area	No – maintenance of the overhead lines, and substations would be infrequent, localised and short term in duration. Maintenance activities would follow standard measures to reduce noise and vibration where required and as such, this matter is proposed to be scoped out.	Scoped out

15.8 Proposed Assessment Methodology

Proposed Data Sources

15.8.1 In addition to the data sources listed in paragraph 15.5.1, the following data sources are proposed to be used to inform the Noise and Vibration assessment to be presented in the ES:

- planning information for future developments which include NSRs;
- noise survey data (survey procedures will follow the guidance in British Standard BS 7445-1 (Ref 15.7) and BS 4142 (Ref 15.6) with survey locations being identified in consultation with Local Planning Authorities;
- project design information;
- construction programme, schedule, and plant data (if available);
- locations of construction activities;
- construction haulage routes;
- baseline and construction traffic data;
- topography data; and
- substation plant noise and/or specification data.

Proposed Assessment Methodology

15.8.2 The following section summarises the methodology proposed to be used for the Noise and Vibration assessment. This differs from the generic assessment methodology set out in **Chapter 5 EIA Approach and Methodology** and instead employs noise assessment methods accepted across the profession.

Sensitive receptors

15.8.3 The following receptors are considered NSRs and will therefore be included in the assessment:

- residential receptors (including buildings used for residential purposes e.g. care homes);
- education facilities;
- medical facilities;
- community facilities;
- places of worship;
- landscapes/parks and gardens prized for their tranquillity;
- Hotels; and
- Offices.

15.8.4 Public Rights of Way (PRoW) are by their nature transitory in their use, with users not staying in any one location for any length of time. Levels of noise from the

construction and operation of the Project will vary as the PRoW moves closer to, and further from, the Project. Noise effects would generally be reduced by the control measures defined in the CoCP during construction and the embedded mitigation during operation. Significant noise effects are therefore considered unlikely on PRoW during either construction or operation.

15.8.5 Public open spaces and outdoor sports/recreation community facilities (e.g. football pitches, golf courses) are, by their nature, transitory in their use. Outdoor sport activities are unlikely to be significantly affected by noise at the levels associated with construction or operation of the Project, outside the Order Limits. Increases in noise due to construction and operation of the Project may adversely affect the acoustic character of the area around such facilities. However, as users will not be exposed to any increased noise for long periods the adverse noise effects on users are not considered significant.

Impact assessment and significance criteria

15.8.6 This section describes the impact thresholds and significance criteria for the various noise and vibration impact pathways associated with the Project. Reference is made to 'lowest observed adverse effect levels' (LOAEL) and significant observed adverse effect levels' (SOAEL) when describing the thresholds of impact for various sources. LOAELs and SOAELs are defined based on applicable guidance with reference to the Noise Policy Statement for England (Ref 15.20) and Planning Practice Guidance (PPG) for Noise (Ref 15.21).

15.8.7 The final significance of effect will be determined based on the predicted levels of noise and vibration at sensitive receptors in relation to the impact thresholds and the context of the impact (see further detail for each impact pathway below).

Construction Noise

15.8.8 Construction noise impacts at residential receptors will be assessed in accordance with BS 5228-1 (Ref 15.1).

15.8.9 Annex E of BS 5228-1 describes the 'ABC' method for determining construction noise significance. This method involves defining a threshold of potential significant effect (Category A, B or C) for each dwelling, or group of dwellings, based on the pre-existing ambient noise levels. For each time period, the ambient noise level is determined and rounded to the nearest 5dB, then compared with the Category A values in **Table 15.3**.

Table 15.3 BS5228 Part 1 – ABC method for determining the threshold of potential significant construction effects at dwellings

Assessment category and threshold value period	**Threshold value, in decibels dB $L_{Aeq,T}$ (measured or predicted 1 m in front of most exposed façade)**		
	Category A(1)	**Category B(2)**	**Category C(3)**
Daytime (07:00 – 19:00) Saturdays (07:00 – 13:00)	65	70	75
Weekday evenings (19:00 – 23:00)	55	60	65

Assessment category and threshold value period	Threshold value, in decibels dB $L_{Aeq,T}$ (measured or predicted 1 m in front of most exposed façade)		
	Category A(1)	Category B(2)	Category C(3)
Saturdays (13:00 – 23:00) Sundays (07:00 – 23:00)			
Night-time (23:00 – 07:00)	45	50	55
(1) Category A: threshold value to use when ambient noise levels (rounded to the nearest 5 dB) are less than these values (2) Category B: threshold value to use when ambient noise levels (rounded to the nearest 5 dB) are the same as Category A values (3) Category C: threshold value to use when ambient noise levels (rounded to the nearest 5 dB) are higher than Category A values			

15.8.10 A potential significant effect is indicated where the construction site noise level ($L_{Aeq,T}$) exceeds the threshold level for the category appropriate to the ambient noise level. If the ambient sound level exceeds the Category C threshold values given in **Table 15.3**, i.e. the ambient sound level is higher than the Category C values, then a potential significant effect is identified if the total $L_{Aeq,T}$ level for the period increases by more than 3dB due to site noise.

15.8.11 Having established whether there is a potential significant effect using the 'ABC' method, the final assessment of significance is made by considering the following:

- exceedance over the established thresholds of potential significant effect;
- the levels of noise exposure and character of existing sound environment;
- combined exposure to construction noise and vibration;
- effectiveness of mitigation measures that may be provided;
- the duration of the construction impact; and
- professional judgement.

15.8.12 In terms of duration, a significant effect will be considered for the Project where the identified threshold levels are exceeded for the following minimum periods:

- 10 or more days or nights in any 15 consecutive days or nights; or
- a total number of days exceeding 40 in any six consecutive months.

15.8.13 Additionally, the effect levels have been defined in Government policy terms, that is the LOAEL and the SOAEL. These are based upon the 'ABC' method described above and are presented in **Table 15.4**.

Table 15.4 Construction noise LOAEL and SOAEL

Time period	LOAEL	SOAEL
Day (0700-1900 weekday and 0700-1200 Saturdays)	65 dB $L_{Aeq,T}$	75 dB $L_{Aeq,T}$
Night (2300-0700)	45 dB $L_{Aeq,T}$	55 dB $L_{Aeq,T}$
Evening and weekends (time periods not covered above)	55 dB $L_{Aeq,T}$	65 dB $L_{Aeq,T}$

Construction traffic noise

15.8.14 Noise from construction traffic on the public highway would be calculated in accordance with the Calculation of Road Traffic Noise (CRTN) (Ref 15.3) and assessed against the criteria detailed in the Design Manual for Roads and Bridges (DMRB) LA 111 (Ref 15.4). The Basic Noise Level (BNL) from roads within the construction traffic Study Area would be calculated in accordance with CRTN for the with and without the Project construction traffic scenarios in the construction year.

15.8.15 The calculated BNL values for the with and without construction noise scenarios, throughout the construction period, would be compared to determine the magnitude of the impact in accordance with criteria specified by DMRB LA 111 as detailed in **Table 15.5**.

Table 15.5 Magnitude of impact from construction traffic noise at residential receptors

Magnitude	Increase in BNL of closest public road used for construction traffic (dB)
Major	Greater than or equal to 5.0
Moderate	Greater than or equal to 3.0 and less than 5.0
Minor	Greater than or equal to 1.0 and less than 3.0
Negligible	Less than 1.0

15.8.16 Receptors close to roads experiencing a major or moderate magnitude of impact for the following minimum durations will be determined to experience a significant effect:

- 10 or more days or nights in any 15 consecutive days or nights; or
- a total number of days exceeding 40 in any six consecutive months.

Construction vibration on human receptors

15.8.17 Construction vibration levels would be calculated and assessed in accordance with the methodologies described in BS 5228-2 (Ref 15.2). Since the vibration impact depends on the absolute vibration level instead of comparing against baseline vibration level, no vibration baseline study is proposed within the assessment and construction vibration levels will be compared against fixed appropriate assessment criteria detailed in BS 5228-2.

15.8.18 Vibration levels from key vibratory construction activities would be calculated in accordance with the methodology described in Annex E of BS 5228-2. Construction vibration effect threshold levels, including applicable LOAEL and SOAEL, are presented in **Table 15.6**.

Table 15.6 Construction vibration effect levels at residential receptors

Vibration Level mm/s PPV(*)	Effect
0.14	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.
0.3	Vibration might be just perceptible in residential environments **(LOAEL)**.
1.0	It is likely that vibration of this level in residential environments will cause complaint but can be tolerated if prior warning and explanation has been given to residents **(SOAEL)**.
10	Vibration is likely to be intolerable for any more than a very brief exposure to this level in most building environments

(*) Peak Particle Velocity

15.8.19 The overall significance of the effect is assessed using professional judgement by considering not only the criteria above but also other factors, such as the duration of exposure and the particular characteristics of the source and the receptor.

Construction vibration on structures

15.8.20 Risk of damage to buildings from ground-borne vibration is assessed using the criteria in **Table 15.7**. The criteria are derived from BS 7385-2 (Ref 15.5). This ensures there is no risk of the lowest damage category (cosmetic) being exceeded. However, minimising disturbance to people will generally control damage risk since the effects in terms of even cosmetic damage to buildings would occur only for vibration exposures much higher than perceptible levels.

Table 15.7 Vibration impact criteria for buildings (conservative criteria below which there is no risk of cosmetic damage)

Category of building	Peak particle velocity[1] (mm/s)	
	Transient vibration[2]	Continuous vibration[3]
Potentially vulnerable building	6	3
Structurally sound buildings	12	6

Notes:
(1) At the building foundation
(2) Transient relative to building response e.g. from impulsive plant
(3) Continuous relative to building response e.g. from vibrating rollers

Operational noise

15.8.21 The assessment of operational noise will follow the methodology stated in BS 4142 (Ref 15.6).

15.8.22 Noise limits will be determined based on background sound level surveys at locations representative of nearby NSRs. Sound level surveys will be conducted in accordance with the requirements of BS 4142 and in general accordance with the methodology detailed in BS 7445 (Ref 15.7).

15.8.23 BS 4142 assesses the potential significance of effects by comparing the 'rating sound level' of an industrial source to the typically representative ‘background sound level’ at the location of nearby receptors. The sound rating is a combination of the specific sound level at the NSR and any applicable penalties that may be required for acoustic character, such as tonality or impulsivity.

15.8.24 The specific sound level at nearby NSRs will be predicted by incorporating the available design information in a computer noise model, based on the methodology detailed in International Organization for Standardization (ISO) 9613 (Ref 15.9).

15.8.25 The predicted sound rating levels will be compared against the relevant noise limits determined from the baseline sound level survey data. The lower the rating level is relative to the measured background sound level, the less likely it is that there will be an adverse impact, depending on context. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context. The guidance from BS 4142 for operational noise are detailed in **Table 15.8**.

15.8.26 When considering context, BS 4142 references BS 8233 (Ref 15.8) as providing context where background and rating noise levels are low. BS 8233 provides recommended noise levels for a variety of situations and locations, including in habitable spaces such as living rooms and bedrooms, and external amenity areas. Guidance may also be sought from the Association of Noise Consultants (ANC) BS 4142 guidance (Ref 15.10).

15.8.27 It is anticipated that specific mitigation measures for operational noise from substations, if required, would be secured via an appropriate Requirement of the Development Consent Order, if granted. For example, the assessment may include noise limits such that adverse impacts are avoided.

15.8.28 In UK Government policy terms, depending on the absolute sound levels in consideration, the SOAEL is defined for this assessment as a rating level of 10dB above the representative background sound level. The LOAEL is defined as 5 dB above the representative background sound level.

Table 15.8 Magnitude of impact from operational substation noise at residential receptors along with LOAEL and SOAEL thresholds

Comparison of sound rating level and background sound level	BS 4142 Impact Guidance
Rating level ≥ 10 dB above the background sound level **SOAEL**	Likely to be an indication of a significant adverse impact, depending on context
Rating level of 5 dB above the background sound level **LOAEL**	Likely to be an indication of an adverse impact, depending on context
Rating level below background sound level	Likely to be an indication of a low impact, depending on context. The lower the rating level is relative to the measured background sound level, the less likely it is to be an adverse or significant adverse impact

Non-residential receptors (construction and operational noise)

15.8.29 Impacts of noise from construction or operation at non-residential receptors will be compared with the screening criteria set out in **Table 15.9**. Where the predicted noise levels exceed the criteria, an assessment of the potential for significant effects will be undertaken for each impacted receptor, taking into account other factors such as the:

- use and sensitivity of the receptor or land use;
- design of the receptor or land use;
- existing sound environment at and within the receptor, or land use;
- magnitude of the predicted impact (noise change);
- potential combined impacts of noise and vibration;
- frequency and duration over which temporary impacts may occur; and
- effectiveness of mitigation through design or other means.

Table 15.9 Noise impact screening criteria at non-residential receptors (construction and operation)

Description	Impact (screening) criteria		Outcome	Reference
	Day (0700-2300)	Night (2300-0700)		
Place of meeting for religious worship, courts, cinemas, lecture theatres, museums, outdoor space receptors such as public rights of way (PRoW), and small auditoria or halls	50dB$L_{pAeq,T}$ and a change >3 dB	-	Disturbance	BS8233 (Ref 15.8) BB93 (Ref 15.11), HTM08-01 (Ref 15.12), WHO guidelines (Ref 15.13, Ref 15.14, Ref 15.15)
Schools; colleges; hospitals*; hotels*; and libraries	50dB$L_{pAeq,T}$ and a change >3 dB	(2)45dB$L_{pAeq,T}$ and a change > 3 dB	Disturbance and *sleep disturbance	
Offices	ABC(1) or 55dB$L_{pAeq,T}$ and a change >3dB	-	Disturbance	BS 8233 (Ref 15.8)

Notes:

(1) For construction asses using A and B categories from ABC Method

(2) The night-time criteria of 45 dB $L_{pAeq,T}$ for sleep disturbance applies to student residential accommodation, hospitals and hotels

15.9 Assumptions and limitations

15.9.1 The assessment of noise and vibration will be based on the best available data with regards to proposed construction methods at the time of assessment. Where there is uncertainty in the assessment, this will be stated and precautionary principles will be applied, such as assuming the shortest distance between construction noise sources and NSRs, typical worst-case plant selection, and high percentage ‘on-times’.

15.9.2 The assessment of operational noise will be based on available design information and/or National Grid noise specification data for operational plant. Proposed plant would be required to produce noise levels at or below the specification noise levels therefore the assessment would be expected to be relatively worst-case.

15.10 Conclusion

15.10.1 This Scoping Report chapter has outlined relevant legislation, policy and guidance in relation to the Noise and Vibration assessment for the Project. The data sources that will be used to define the current and future baselines, and the impact control and management measures that will be implemented have been presented. The potential for significant effects has been identified, as well as the associated source, impact and receptors in **Table 15.2.**

15.10.2 With regards to noise and vibration impacts associated with the Project a number of matters are scoped in. The assessment of both noise and vibration from construction activities (including general construction activities such as construction of the overhead line, reconductoring and substations) are scoped into the assessment. For construction traffic, only noise is scoped into the assessment. For operation, only noise from substation reactive plant (e.g. transformers) and noise from associated cooling plant are scoped into the assessment.

15.10.3 A number of matters are proposed to be scoped out of the Project with regards to noise and vibration impacts, due to the embedded measures applied as part of the Project design. Vibration from construction traffic is scoped out of the assessment. Operational noise from overhead lines, substation switchgear and auxiliary plant are scoped out of the assessment. Operational vibration is also scoped out. Finally, noise and vibration impacts associated with maintenance activities for overhead lines, and/or substations are scoped out of the assessment.

15.10.4 A summary of the proposed scope of the assessment is provided in **Chapter 20 Summary.**

References

Ref 15.1 BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise, British Standards Institution, 2014.

Ref 15.2 BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration, British Standards Institution, 2014.

Ref 15.3 Department of Transport. (1988). Calculation of Road Traffic Noise.

Ref 15.4 Highways England et al. (2020). Design Manual for Roads and Bridges LA 111 Noise and vibration Revision 2.

Ref 15.5 BS 7385-2:1993 Evaluation and measurement for vibration in buildings – Guide to damage levels from groundborne vibration, British Standards Institution, 1993

Ref 15.6 BS 4142:2014+A1:2019. Methods for rating and assessing industrial and commercial sound, British Standards Institution, 2019.

Ref 15.7 British Standard 7445-1:2003 – Description and measurement of environmental noise – Part 1: Guide to quantities and procedures, British Standards Institution, 2003.

Ref 15.8 BS 8233:2014 Guidance on sound insulation and noise reduction for buildings, British Standards Institution, 2014.

Ref 15.9 BS ISO 9613-2:2024 Acoustics – Attenuation of sound during propagation outdoors. Part 2: Engineering method for the prediction of sound pressure levels outdoors. International Organisation for Standardization. 2024.

Ref 15.10 BS 4142:2014+A1:2019 Technical Note Version 1.0. Association of Noise Consultants, 2020.

Ref 15.11 Department for Education/Education Funding Agency (2015). Acoustic design of schools: performance standards. Building bulletin (BB) 93.

Ref 15.12 Department of Health (2013). Health technical memorandum 08-01: Acoustics.

Ref 15.13 World Health Organization (1999). Guidelines for community noise.

Ref 15.14 World Health Organization (2009). Night noise guidelines for Europe.

Ref 15.15 World Health Organization (2018). Environmental noise guidelines for the European Region.

Ref 15.16 Weston Marsh to East Leicestershire Corridor Preliminary Routeing and Siting Study. June 2025 [online]. Available at: https://www.nationalgrid.com/document/561431/download [Accessed 16 July 2025]

Ref 15.17 Control of Pollution Act 1974 [online]. Available at: https://www.legislation.gov.uk/ukpga/1974/40/contents [Accessed 16 July 2025]

Ref 15.18 Environmental Protection Act 1990 [online]. Available at: https://www.legislation.gov.uk/ukpga/1990/43/contents [Accessed 16 July 2025]

Ref 15.19 Ministry of Housing, Communities & Local Government. (2024). National Planning Policy Framework.

Ref 15.20 Department for Environment, Food and Rural Affairs. (2010). Noise Policy Statement for England.

Ref 15.21 Planning Practice Guidance for Noise. 2019 [online]. Available at: https://www.gov.uk/guidance/noise--2 [Accessed 16 July 2025].

16. Socio-economics, Recreation and Tourism

nationalgrid

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16. Socio-economics, Recreation and Tourism

16.1 Introduction

16.1.1 This chapter presents how the socio-economic, recreation and tourism assessment will consider the potential likely significant effects on socio-economic, recreation and tourism receptors that may arise from the construction, operation and maintenance of the Project (as described in **Chapter 4 Description of the Project**). It describes the methodology and datasets to be used within the assessment, presents an overview of the baseline conditions, and identifies the potential likely significant effects to be considered within the assessment, and how these will be assessed for the purpose of the Environmental Statement (ES). As detailed in **Chapter 4 Description of the Project**, the decommissioning of the Project has been scoped out of the environmental assessment.

16.1.2 The Scoping Boundary is illustrated on **Figure 1.2 Scoping Boundary**.

16.1.3 This chapter should be read in conjunction with the following chapters which provide the Project context and approach to EIA:

- **Chapter 2 Regulatory and Planning Policy Context**;
- **Chapter 3 Main Alternatives Considered**;
- **Chapter 4 Description of the Project**; and
- **Chapter 5 EIA Approach and Methodology**.

16.1.4 It is important to note that there are interrelationships related to the potential effects on socio-economics, recreation and tourism and other environmental topics, for example the likely amenity impacts of these receptors are assessed within specific topic chapters, and the scope of the assessment seeks to avoid duplication or double counting the reporting of significant effects throughout the ES. The approach seeks to draw on findings of other topic chapters taking into account the potential for in-combination effects. Therefore, this assessment should be read in conjunction with the following chapters:

- **Chapter 7 Visual** – visual amenity effects on population and users of promoted recreational routes and Public Rights of Way (PRoW) of significance in the Study Area;
- **Chapter 12 Agriculture and Soils –** impacts on farm holdings;
- **Chapter 13 Traffic and Movement –** impacts on access and promoted recreational routes and PRoW of significance in the Study Area;
- **Chapter 14 Air Quality –** amenity effects on residential and community receptors, and local businesses in the Study Area;
- **Chapter 15 Noise and Vibration –** amenity effects on noise and vibration sensitive receptors, including residential and community receptors, local

businesses, and users of promoted recreational routes and PRoW in the Study Area; and

- **Chapter 17 Health and Wellbeing –** amenity effects on population and users of promoted recreational routes and PRoW of significance in the Study Area.

16.1.5 This chapter is supported by the following figures:

- **Figure 16.1 Indices of Multiple Deprivations**.
- **Figure 16.2 Socio-economic, Tourism and Recreation Receptors**.

16.2 Legislation, Policy and Guidance

16.2.1 **Chapter 2 Regulatory and Planning Policy Context** describes the overall regulatory and planning policy context for the Project. Key legislation and policy relevant to the assessment of potential effects on socio-economics, recreation and tourism associated with the construction, operation, and maintenance of the Project is provided in **Chapter 2 Regulatory and Planning Policy Context. Appendix 2A Key Legislation, Appendix 2B National and Regional Planning Policy** and **Appendix 2C Local Policy.**

16.2.2 There is no dedicated United Kingdom (UK) legislation that details the content required for a socio-economic assessment as part of an EIA. Instead, the scoping process has been informed by relevant guidance and standards. The principal guidance is listed below and will be taken into account as part of the assessment, along with other relevant material:

- Additionality Guide (4th Edition) (Ref 16.21);
- The Green Book – Appraisal and Evaluation in Central Government (Ref 16.22); and
- The Magenta Book – Guidance for Evaluation (Ref 16.23).

16.3 Consultation and Engagement

16.3.1 The ES will be informed by consultation and engagement with stakeholders including local authorities. In addition, engagement will be undertaken with non-statutory stakeholders as required to ensure that specialist local views and expertise can be considered as part of the ES.

16.3.2 In preparing this Scoping Report chapter, consideration has been given to stakeholder feedback received following Non-Statutory Consultation held between 11 June and 6 August 2025, as set out in **Table 16.1.**

Table 16.1 Engagement with Stakeholders

Stakeholder	Summary of response	Consideration in the Scoping Report
South Holland District Council, and Lincolnshire	Operational impact on local tourism/ local tourism business/ facilities.	Impacts on local tourism during the operation and maintenance phase have been considered as part of the “Tourism accommodation” and the “Affected communities, community facilities, visitor

Stakeholder	Summary of response	Consideration in the Scoping Report
County Council		attractions and businesses" receptor (both direct and indirect). **Table 16.15** sets out the proposed scope of assessment for these receptors, with reference to the management and mitigation measures described in **Section 16.6** where relevant. **Section 16.5** sets out the baseline conditions, including detail on local tourism and recreation within the Study Area, providing a robust basis for assessing potential effects and ensuring these impacts are fully considered within the socio-economic assessment. The Scoping Report ensures that effects are fully captured and appropriately considered for further assessment.

16.4 Study Area

16.4.1 The Study Area for the assessment of socio-economic, recreation and tourism effects varies depending on the likely spatial extent of the effect under consideration.

16.4.2 The Study Areas for this Scoping Report are shown on **Figure 1.2 Scoping Boundary** and **Figure 16.2 Socio-economic, Tourism and Recreation Receptors**. The Study Areas for the assessment will be defined using the same principles and areas applied to the Order Limits defined at that time.

16.4.3 **Table 16.2** summarises the Study Areas considered for each receptor type that are taken into account within this Chapter. Section 16.5 presents a baseline for each receptor type. The baseline describes the current conditions within the Study Area for direct effects i.e. within the Local Authorities of Harborough, Melton, North Northamptonshire, South Kesteven, South Holland, and West Northamptonshire.

Table 16.2 Study Areas

Receptor Type	Study Area for Direct Effects	Study Area for Indirect Effects
Population and deprivation	Receptors located within the Scoping Boundary	Receptors located within a regional and sub-regional level
Economy and employment	Receptors located within a regional and sub-regional level	Receptors located within a regional and sub-regional level
Tourism and recreation	Receptors located within the Scoping Boundary	Receptors located within 5 km of the Scoping Boundary
Local business and community receptors	Receptors located within the Scoping Boundary	Receptors located within 500 m of the Scoping Boundary

Receptor Type	Study Area for Direct Effects	Study Area for Indirect Effects
Development land, utilities and renewable infrastructure	Receptors located within the Scoping Boundary	Receptors located within 500 m of the Scoping Boundary
Strategic housing land allocations	Receptors located within the Scoping Boundary	Receptors located within 500 m of the Scoping Boundary
Recreational routes and PRoW of significance in the local area	Receptors located within the Scoping Boundary	Receptors located within 500 m of the Scoping Boundary
Open space	Receptors located within the Scoping Boundary	Receptors located within 500 m of the Scoping Boundary
Aviation and defence infrastructure	Receptors located within the Scoping Boundary	Receptors located within up to 5 km of the Scoping Boundary

16.5 Baseline Conditions

Data Sources

16.5.1 The known or predicted current and future baseline environment described in this section has been informed by the following data sources:

- Office for National Statistics (ONS), Census 2021 (Ref 16.1);
- ONS (2024) Mid-year population estimates (Ref 16.2);
- Ministry of Housing, Community and Local Government (now Department for Levelling Up, Housing and Communities), (2019), English Indices of Deprivation (Ref 16.3);
- ONS (2023), Regional Gross Value Added (balanced) per head and income components (Ref 16.4);
- ONS (2022), UK Business Register and Employment Survey (Ref 16.5);
- ONS (2018) Population projections (Ref 16.6);
- Ordnance Survey Open Greenspace (Ref 16.7);
- OS Local Important Buildings (Ref 16.8);
- OS AddressBase (Ref 16.9);
- Visit Britain (2025), England domestic tourism: regional and subregional data (Ref 16.10);
- Visit Britain (2024), England Hotel Occupancy (Ref 16.11);
- Visit Britain (2024), Annual Attractions Survey 2024 (Ref 16.12); and
- CoStar (2025) (Ref 16.13).

16.5.2 The baseline for private assets is based on desk-based research to identify locations of residential properties, businesses, community and recreational facilities.

16.5.3 The baseline for development land allocations will be provided in the Preliminary Environmental Information Report (PEIR) and ES. Development land allocations will be identified based on the adopted Local Plans for each Local Planning Authority (LPA) within the Study Area, and, where relevant, any emerging or replacement Local Plans (and acknowledging their status). Development land allocation polygons will be mapped using Geographic Information Systems (GIS) and cross-referenced with the Study Area to understand the potential interface of any strategic site allocations with the Project.

Baseline

16.5.4 The Project has been divided into five Sections as described in **Chapter 4, Description of the Project** and shown in **Figure 1.2 Scoping Boundary**. The Sections are defined by the geographical alignment of the Scoping Boundary and the administrative boundaries of the local authorities.

16.5.5 For the purposes of this chapter, taking into account the multiple receptor types and the nature of their features (e.g. long-distance recreational routes that span geographical boundaries), a route-wide approach to present the baseline has been taken in order to avoid unnecessary duplication and assist legibility for the reader, and the baseline is described by receptor type in the sections below. The baseline describes the current conditions within the Study Areas for direct effects i.e. within the Local Authorities of Harborough, Melton, North Northamptonshire, South Kesteven, South Holland, and West Northamptonshire (see **Table 16.2**).

16.5.6 The potential impacts arising from the Project are assessed relative to the baseline conditions and benchmarked against regional and national standards where appropriate. The key indicators and measures of the areas will be established for:

- population and deprivation;
- an overview of the local economy; and
- the local labour market.

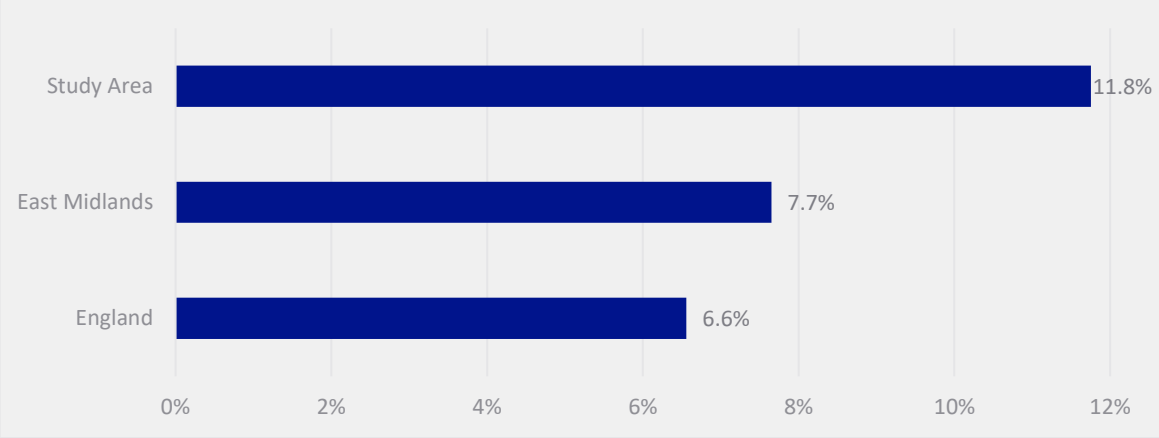
16.5.7 This section provides the baseline conditions for the following geographical areas:

- the local authorities of South Holland, South Kesteven, Melton, Harborough, North Northamptonshire; and West Northamptonshire (collectively as the ‘Study Area’);
- the East Midlands region; and
- England.

Population and deprivation

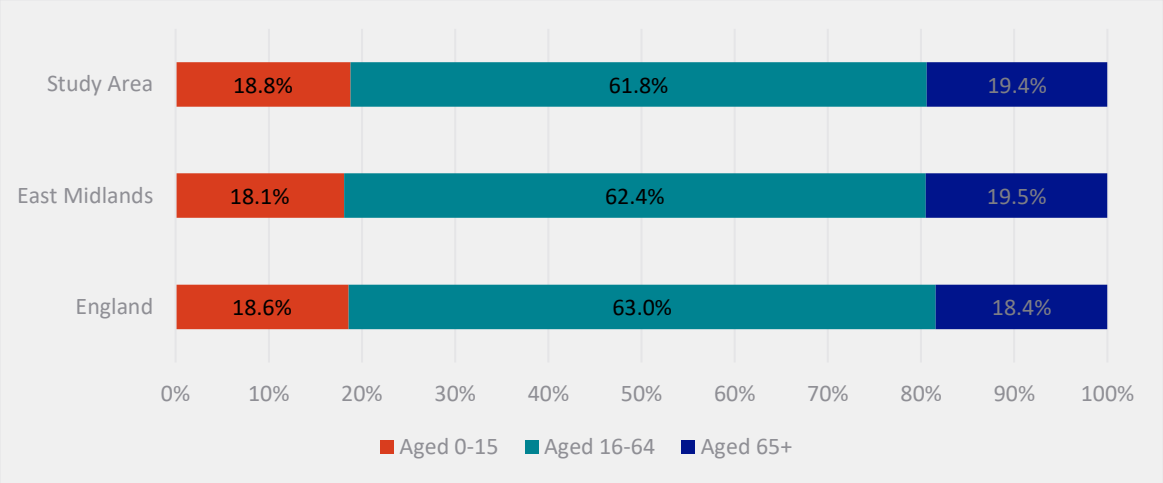
16.5.8 In 2021, the total population across the Study Area (as defined in **Table 16.2**) was 1,173,155. **Image 16.1** illustrates the population change in the Study Area, the East Midlands and across England. The Study Area recorded a population increase of 11.8% between 2011 and 2021. At the regional level, the East Midlands region recorded a population growth rate of 7.7% between 2011 and 2021, and nationally England recorded a growth rate of 6.6%.

Image 16.1 Population change by geographical area, 2011-2021 (Ref 16.1)



16.5.9 **Image 16.2** shows the age profile of the geographical areas within the Study Area. The proportion of the population of working age (aged between 16 and 64) in the Study Area is 61.8% which is slightly lower than the regional and national averages of 62.4% and 63.0%. At 19.4%, the Study Area has a similar proportion of elderly (aged 65+) people to the East Midlands (19.5%), but slightly higher than in England as a whole (18.4%).

Image 16.2 Population age profile by geographical area (Ref 16.1)



16.5.10 **Table 16.3** presents the local authorities in the Study Area by the average Index of Multiple Deprivation (IMD) score rank, as set out in the English Indices of Deprivation 2019 (Ref 16.2). Corby (now part of North Northamptonshire) was the most deprived local authority in 2019, ranking 70th of 317 district-tier local authorities in England by average IMD score. By contrast, South Northamptonshire (now part of West Northamptonshire) was the least deprived local authority within the Study Area.

Table 16.3 Local authorities within the Study Area by average IMD score rank (Ref 16.3)

Local Authority	IMD Score Rank
Harborough	308
Melton	248

Local Authority	IMD Score Rank
South Holland	144
South Kesteven	234
Corby*	70
East Northamptonshire*	226
Kettering*	161
Wellingborough*	124
Daventry*	243
Northampton*	105
South Northamptonshire*	312

**In April 2021 Corby, East Northamptonshire, Kettering and Wellingborough merged to form North Northamptonshire, and Daventry, Northampton, and South Northamptonshire merged to form West Northamptonshire. As the IMD was last updated in 2019, data is presented for the former local authority districts.*

16.5.11 **Table 16.4** below identifies the key urban areas, based on towns identified within the first tier of the settlement hierarchy in each of the respective Local Plans for each local authority within the Study Area.

Table 16.4 Key settlements within the Study Area

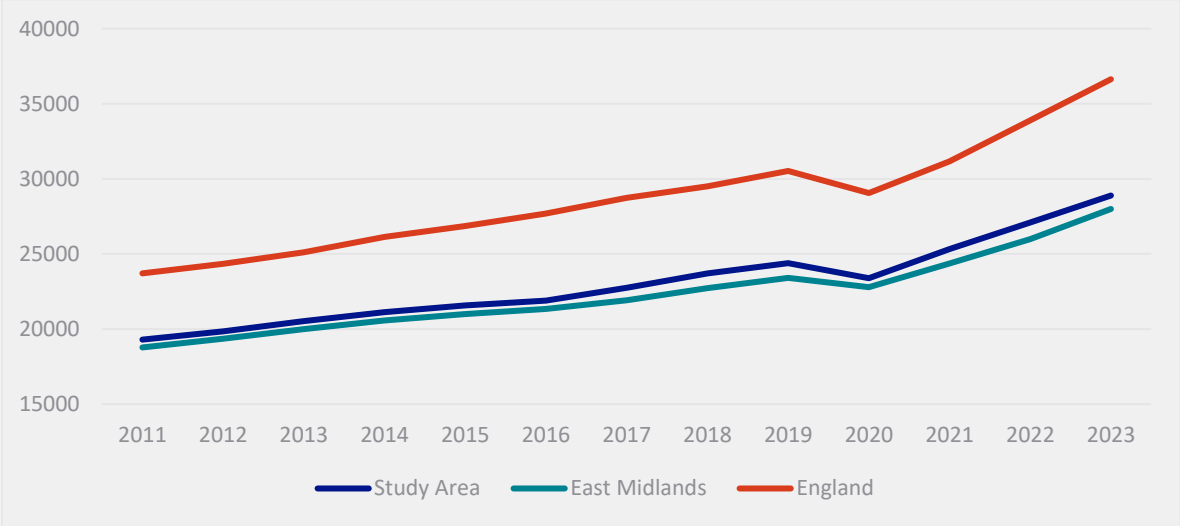
Local Planning Authority	First tier of settlement hierarchy	Key settlements in first tier of settlement hierarchy
Harborough District Council (Ref 16.15)	Tier 1: Adjoining Leicester Urban Area	Scraptoft, Thurnby, Bushby and land adjoining the built-up areas of Leicester City and the Borough of Oadby and Wigston
Melton Borough Council (Ref 16.16)	Service Centres	Asfordby, Bottesford, Croxton Kerrial, Harby, Hose, Long Clawson, Old Dalby, Scalford, Somerby, Stathern, Waltham, Wymondham
South Holland District Council (Ref 16.17)	Sub-Regional Centres	Spalding
South Kesteven District Council (Ref 16.18)	Sub-Regional Centres	Grantham
North Northamptonshire Council (Ref 16.19)	The Growth Towns	Corby, Kettering, Wellingborough and Rushden

Local Planning Authority	First tier of settlement hierarchy	Key settlements in first tier of settlement hierarchy
West Northamptonshire Council (Ref 16.20)	Principal Urban Area	Northampton

Economy and employment

16.5.12 Gross Value Added (GVA) is a way to measure how much economic value a sector produces in goods and services, calculated as the difference between outputs and inputs. **Image 16.3** presents GVA per head in the economy and employment Study Area (as defined in **Table 16.2**) compared to the regional and national averages for 2011-2023. As of 2023, GVA per head across the Study Area is £28,900, similar to the regional average of £28,000 but lower than the national average of £36,600. Since 2011, GVA per capita has increased across all geographies, and all geographies have now returned to their pre-pandemic levels.

Image 16.3 Gross Value Added per capita by geographical location (Ref 16.4)



16.5.13 **Table 16.5** shows the economic activity and unemployment rate among the population aged 16 years and over across the geographies. The Study Area has an economic activity rate of 63.8% which is higher than the East Midlands (59.9%) and England (60.9%). The Study Area also has a lower unemployment rate at 2.7% compared to 3.0% regionally and 3.5% nationally.

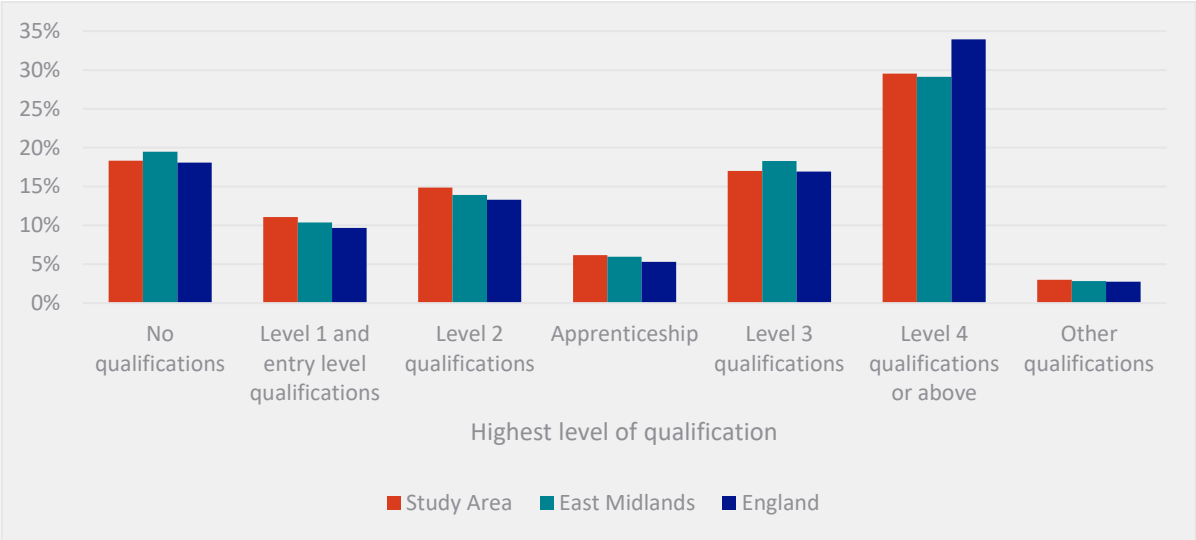
Table 16.5 Economic activity and unemployment rate by geographical area (Ref 16.1)

Area	Economic activity rate (%)	Unemployment rate (%)
Study Area	63.8	2.7
East Midlands	59.9	3.0

Area	Economic activity rate (%)	Unemployment rate (%)
England	60.9	3.5

16.5.14 **Image 16.4** illustrates the highest level of qualification attained across the Study Area and comparator geographies. It shows that in the Study Area, 29.5% of residents have a degree-level qualification (National Vocational Qualification (NVQ) Level 4) or above. This is similar to the East Midlands (29.1%) but lower than across England (33.9%). The proportion of residents with no qualifications is 18.3% which is lower than the regional level (19.5%) and in line with the national level (18.1%).

Image 16.4 Highest level of qualification by geographical area (Ref 16.1)



16.5.15 Across the Study Area, **Table 16.6** shows that health is the largest employment sector, making up 13.1% employment. This is followed by the manufacturing sector in which 12.0% of people are employed in, and the transport and storage sector in which 10.4% of people are employed in. In contrast, the largest employment sectors in the East Midlands are health (13.5%), professional, scientific and technical (9.6%) and business administration and defence (8.9%), and the largest employment sectors in England are health (14.6%), manufacturing (12.3%) and education (9.0%).

16.5.16 The baseline in the PEIR and ES reports will use a lower level of geographic administrative area, such as wards, which may reveal further trends in employment data that are not highlighted here.

Table 16.6 Employment by industry by geographical area (Ref 16.5)

Employment sector	Study Area	East Midlands	England
Agriculture, forestry & fishing (A)	1.0%	0.7%	0.5%
Mining, quarrying & utilities (B, D and E)	1.0%	1.4%	1.1%

Employment sector	Study Area	East Midlands	England
Manufacturing (C)	12.0%	12.3%	7.4%
Construction (F)	4.2%	4.3%	4.7%
Motor trades (Part G)	2.4%	2.3%	1.7%
Wholesale (Part G)	7.1%	4.9%	3.8%
Retail (Part G)	7.5%	8.0%	8.2%
Transport & storage (inc. postal) (H)	10.4%	7.0%	5.1%
Accommodation & food services (I)	5.9%	7.0%	7.8%
Information & communication (J)	2.4%	2.7%	4.8%
Financial & insurance (K)	1.9%	1.4%	3.4%
Property (L)	1.7%	1.7%	1.9%
Professional, scientific & technical (M)	7.3%	7.4%	9.6%
Business administration & support services (N)	8.3%	7.6%	8.9%
Public administration & defence (O)	2.5%	4.1%	4.4%
Education (P)	7.6%	9.0%	8.6%
Health (Q)	13.1%	14.6%	13.5%
Arts, entertainment, recreation & other services (R, S, T and U)	3.7%	3.8%	4.5%

Tourism and recreation

16.5.17 **Table 16.7** presents the tourism value for each county[1] within the Study Area as of 2024. This includes Northamptonshire (encompassing local authorities North and West Northamptonshire), Leicestershire (encompassing local authorities Harborough and Melton), and Lincolnshire (encompassing local authorities South Holland and South Kesteven), as well as the broader East Midlands region.

16.5.18 Data indicates that Leicestershire records higher volumes and spend for day visits compared to Northamptonshire and Lincolnshire. On average, Leicestershire receives 15.6 million day visits annually, with associated spending of £834 million,

[1] Data is presented at county level as current data is not available at the local authority level.

while Northamptonshire sees 8.1 million day visits and £333 million in spend, and Lincolnshire sees 13.1 million day visits and £450 million in spend.

16.5.19 Lincolnshire records higher numbers of overnight trips and volume of overnight spend compared to Leicestershire and Northamptonshire, hosting 1.7 million overnight trips per year compared to 1.4 million and 1.1 million respectively. In terms of overnight spend, Lincolnshire sees average £408 million, compared to £382 million in Leicestershire and £236 million in Northamptonshire. Data for the East Midlands indicates the region attracts 79.4 million day visits and 7.7 million overnight stays annually.

Table 16.7 Tourism Visits and Spend (Ref 16.10)

Area	Day visits volume, annual average (millions)	Day visits spend, annual average (£millions)	Overnight trips, annual average (millions)	Overnight spend, annual average (£millions)
County				
Leicestershire	15.6	834.0	1.4	382.0
Lincolnshire	13.1	450.0	1.7	408.0
Northamptonshire	8.1	333.0	1.1	236.0
Region				
East Midlands	79.4	3,091.0	7.7	1,838.4

16.5.20 **Table 16.8** shows the number and proportion of jobs in the tourism sector as of 2024 (composed of employment in accommodation, food and beverage services, and travel and tour agency related activities) in the Study Area. The tourism sector supports approximately 31,430 jobs in the Study Area, accounting for 6.1% of all employment, a lower proportion than in the East Midlands (7.1%) and England overall (8.1%).

Table 16.8 Employment in the Tourism Industry (Ref 16.5)

Employment sector	Study Area	East Midlands	England
Tourism Sector (number)	31,430	152,500	2,237,000
Tourism Sector (% of total)	6.1%	7.1%	8.1%

16.5.21 **Table 16.9** summarises the number of inventory rooms available in the serviced accommodation sector, which includes hotels and similar establishments, such as bed and breakfasts (B&Bs) using 2025 data gathered from CoStar (Ref 16.13). In total, there are 11,018 serviced accommodation inventory rooms among the local

authorities within the Study Area. West Northamptonshire accounts for the highest proportion of inventory rooms, followed by North Northamptonshire. Occupancy data from VisitBritain 2024 survey indicates a hotel occupancy rate of 83% over the peak month (July) in the East Midlands region. Applying this 17% spare capacity rate indicates that there could be 1,873 spare inventory rooms within the Study Area over the peak tourist season. Analysis on the regional level indicates there could be c. 5,285 inventory rooms available in peak occupancy seasons. This analysis will be reviewed further at PEIR and ES stages.

Table 16.9 Inventory Rooms in Serviced Accommodation (Ref 16.13; Ref 16.11)

	Total inventory rooms	**Total spare inventory rooms (17% capacity)**
North Northamptonshire	1,575	268
West Northamptonshire	7,483	1,272
Harborough	475	81
Melton	290	49
South Holland	232	39
South Kesteven	963	164
Study Area Total	**11,018**	**1,873**
East Midlands	31,086	5,285

16.5.22 The baseline for strategic visitor attractions is considered over a wider geography, i.e. the Study Area includes a 5 km buffer beyond the Scoping Boundary, as strategic visitor attractions of importance to the local and regional economy that could be sensitive to indirect effects in relation to access, such as temporary disruption during construction, or in-combination effects on amenity.

16.5.23 No strategic visitor attractions are within 5 km of the Project Scoping Boundary. Therefore, **Table 16.10** shows the closest strategic visitor attractions identified within each county[2] within the Study Area as of 2024. This includes Northamptonshire (encompassing local authorities North and West Northamptonshire), Leicestershire (encompassing local authorities Harborough and Melton), and Lincolnshire (encompassing local authorities South Holland and South Kesteven) using data from the Visit Britain Annual Attractions Survey 2024 report. For the purposes of the baseline study, strategic visitor attractions are defined as tourism attractions that are considered to be of importance to the regional economy, and, where data is available, record over 50,000 visitors per year. Five of the strategic visitor attractions identified in the baseline study are located in Lincolnshire, showing the importance of the tourism sector for the local economy in this area.

[2] Data is presented at county level in the absence of current data at the local authority level.

Table 16.10 Strategic Visitor Attractions (Ref 16.12)

Tourist Attraction	County	Category	Visitor Numbers	Distance from Scoping Boundary
Bradgate Park	Leicestershire	Country Park	Over 200,000	15 km
Canons Ashby	Northamptonshire	Historic Monument / Archaeological Site	50,001-100,000	28 km
Forestry England Salcey	Northamptonshire	Country Park	Over 200,000	3 km
Leicester Guildhall	Leicestershire	Museum and/or Art Gallery	50,001-100,000	12 km
Leicester Museum & Art Gallery (formerly New Walk Museum)	Leicestershire	Museum and/or Art Gallery	Over 200,000	13 km
National Space Centre	Leicestershire	Science / Technology Centre	Over 200,000	13 km
Belton House	Lincolnshire	Historic House / House and Garden / Palace	Over 200,000	14 km
International Bomber Command Centre	Lincolnshire	Heritage / Visitor Centre	100,001-200,000	43 km
Rand Farm Park	Lincolnshire	Farm / Rare Breeds / Farm Animals	100,001-200,000	50 km
Skegness Natureland Seal Sanctuary	Lincolnshire	Safari Park / Zoo / Aquarium / Aviary	100,001-200,000	42 km
The Ropewalk	Lincolnshire	Museum and/or Art Gallery	50,001-100,000	95 km

Local businesses and community receptors

16.5.24 The Study Area includes numerous towns and villages, including those identified in **Table 16.4**.

16.5.25 Businesses tend to be clustered in town and village centres, with farms and other businesses such as farm shops located in more rural areas. Clusters of commercial properties have been identified using the OS AddressBase dataset (Ref 16.9).

16.5.26 Community receptors, such as schools, medical facilities, sports and recreational facilities, and places of worship tend to be located centrally within the settlements, remaining accessible to the local residents. These have been identified using the OS Local Important Buildings dataset (Ref 16.8).

16.5.27 Using desk-top research, the PEIR and ES will identify businesses and community receptors within the local Study Area.

Development land, utilities and renewables infrastructure

Development Land

16.5.28 Each Local Plan within the Study Area (as defined in **Table 16.2**) includes strategic land allocations for future development. These will be identified using latest information available for the assessment and shown on a figure at PEIR and ES stage.

Renewables Infrastructure

16.5.29 Within the Study Area there is a range of renewable energy infrastructure including solar farms, battery storage facilities and anaerobic digestion plants. **Table 16.11** provides a summary of those within the Scoping Boundary and within 500m of the Scoping Boundary. Some of these receptors may operate as businesses and engagement is ongoing to understand how the infrastructure operates, including needs and requirements. Relevant receptors will be identified and shown in a figure at PEIR and ES stages.

Table 16.11 Renewable energy infrastructure within the Study Area

Renewable energy infrastructure	Status	Within Scoping Boundary?	Within 500 m of Scoping Boundary?
Wardentree Lane Battery Storage	Application submitted	N	Y
Sewstern Road Anaerobic Digestion Facility	Application submitted	N	Y
Hall Farm, Wymondham Road - Solar PV Panels	Planning permission granted	Y	Y

Renewable energy infrastructure	Status	Within Scoping Boundary?	Within 500 m of Scoping Boundary?
Ashfordby Solar Farm	Operational	Y	Y
Twyford Solar Farm	Planning permission granted	Y	Y
Eckland Lodge Solar Farm	Operational	N	Y
Land at Meadow Farm Solar	Operational	N	Y
Sywell Solar Farm	Operational	N	Y
Beckworth Emporium Anaerobic Digester Plant	Application submitted	N	Y

Aviation and Defence Infrastructure

16.5.30 National Grid guidance (Ref 16.24) considers impacts to aviation and defence receptors that are within a 5 km buffer of an infrastructure development. **Table 16.12** below details the aviation and defence infrastructure located within 5 km of the Scoping Boundary. The nature of the receptors will be analysed further at PEIR and ES stage.

16.5.31 The nearest significant aviation infrastructure is East Midlands Airport, located around 23 km to the west of the Wartnaby area of the Scoping Boundary. This is well in excess of National Grid guidance (Ref 16.24) on the study area of aviation assets of this nature (15 km for passenger airports).

16.5.32 It is recognised that there are aerodromes and airfields outside of the Study Area and any potential impact of the Project on flight paths will be considered through ongoing stakeholder engagement.

Table 16.12 Aviation and defence infrastructure within the Study Area

Aviation and defence infrastructure receptor	Distance from Scoping Boundary
Former RAF Melton Mowbray	1.5 km
Sywell Aerodrome EGBK	0.8 km
Castle Bytham/Black Spring Farm Private Airstrip	0.6 km
Buckminster Gliding Club	3.9 km

Aviation and defence infrastructure receptor	Distance from Scoping Boundary
Aslackby Decoy Farm Private Airstrip	3.4 km
Kendrew Barracks	2.5 km
Ministry of Defence Animal Centre	0.6 km
Government Pipelines and Storage System Stonesby	0.7 km

Recreational Routes and PRoW

16.5.33 National cycle routes, the local cycle network, long-distance paths and national trails have been identified in the Study Area. These are shown on **Figure 16.2 Socio-economic, tourism and recreation receptors,** and **Figure 13.1 Proposed Traffic and Transport Study Area.** Information about these routes can be found in **Chapter 13 Traffic and Transport**, which includes a baseline of PRoW, National Cycle Networks, and recreational routes within the Study Area. The traffic and movement assessment will identify PRoW of significance in the local area.

Open Space

16.5.34 The Study Area comprises large areas of agricultural land or open countryside interspersed by settlements. Open spaces within the Study Area are shown in **Figure 16.2 Socio-economic, tourism and recreation receptors.**

16.5.35 Open spaces have been identified using the OS Open Greenspace dataset (Ref 16.7), which is a vector polygon dataset of open greenspaces in urban and rural areas including playing fields, sports' facilities, play areas and allotments. **Table 16.13** lists open greenspaces within 500 m of the Scoping Boundary.

16.5.36 Whilst the OS Open Greenspace dataset provides a useful indication of the level of green space provision, it does not provide a comprehensive dataset of areas of open access and common land to which there is a right of access under the Countryside and Rights of Way Act 2000 (Ref 16.14). Those areas will be identified in the assessment through further desk-based study. The Project crosses numerous fields and open spaces, and engagement is ongoing to understand how these open spaces are used to inform the socio-economic, recreation, and tourism assessment.

Table 16.13 Open Space within the Study Area

Open Space	Within Scoping Boundary?	Within 500 m of Scoping Boundary?
Spalding Golf Club	Y	Y
Greenspace adjacent to St Andrew's Church, Haconby	Y	Y
Morton Cemetery	N	Y

Open Space	Within Scoping Boundary?	Within 500 m of Scoping Boundary?
Greenspace adjacent to St John the Baptist's Church, Morton	N	Y
Morton Field and Play Park	N	Y
Greenspace adjacent to All Saint's Church, Dunsby	N	Y
Irnham Park	N	Y
Greenspace adjacent to St Andrew's Church, Irnham	N	Y
Swinstead Allotments	N	Y
Greenspace adjacent to St Mary's Church, Swinstead	N	Y
Corby Glen Playing Field	Y	Y
Corby Glen Bowling Green	Y	Y
Corby Glen Allotments	Y	Y
Greenspace adjacent to St John's Church, Corby Glen	Y	Y
Greenspace adjacent to St Nicholas' Church, Swayfield	Y	Y
Swayfield Bowling Green	Y	Y
Greenspace adjacent to St Mary's Church, North Witham	N	Y
South Witham Playing Field	N	Y
South Witham Allotments	Y	Y
Sewstern Allotments	N	Y
Greenspace adjacent to St Andrew's Church, Coston	Y	Y
Greenspace adjacent to St Mary's Church, Garthorpe	Y	Y
Greenspace adjacent to St Peter's Church, Stonesby	N	Y
Melton Mowbray Golf Club	Y	Y
Scalford Allotments	N	Y
Melton Country Park	N	Y
Wartnaby Playing Field	Y	Y
Greenspace adjacent to St Michael's Church, Wartnaby	Y	Y
Mowbray Rangers Football Club	N	Y
Asfordby Allotments	Y	Y
Asfordby Playing Fields	Y	Y
Greenspace adjacent to St Peter's Church, Asfordby	Y	Y

Open Space	Within Scoping Boundary?	Within 500 m of Scoping Boundary?
Greenspace adjacent to St Luke's Church, Gaddesby	N	Y
Ashby Folville Playing Field	Y	Y
Greenspace adjacent to St Michael's Church, Thorpe Satchville	Y	Y
The Willows Natural Burial Ground	N	Y
Twyford Allotments	Y	Y
Twyford Playing Field	Y	Y
Greenspace adjacent to St Andrew's Church, Twyford	Y	Y
Greenspace adjacent to All Saint's Church, Lowesby	Y	Y
Lowesby Playing Field	Y	Y
Greenspace adjacent to St Peter's Church, Tilton	Y	Y
Billesdon Cemetery	N	Y
Greenspace adjacent to St Thomas À Becket's Church, Skeffington	Y	Y
Tugby Allotments	Y	Y
Greenspace adjacent to St Mary's Church, Noseley	Y	Y
Greenspace adjacent to St John's Church, Glooston	Y	Y
Greenspace adjacent to St Michael's Church, Cranoe	Y	Y
Greenspace adjacent to St Denys' Church, Stonton Wyville	Y	Y
Greenspace adjacent to St Andrew's Church, Welham	Y	Y
Greenspace adjacent to St Mary's Church, Weston By Welland	Y	Y
Great Bowdon Cemetery	Y	Y
Great Bowden Playing Field	Y	Y
Greenspace adjacent to All Saint's Church, Dingley	Y	Y
Symingtons Recreation Ground	N	Y
Market Harboorugh Playing Field	N	Y
Little Bowden Playing Field	Y	Y
Harborough Town Football Club	Y	Y
Market Harborough Rugby Union Football Club	Y	Y
Market Harborough Golf Course	N	N
Greenspace adjacent to All Saint's Church, Braybrooke	Y	Y

Open Space	Within Scoping Boundary?	Within 500 m of Scoping Boundary?
Greenspace adjacent to St Helen's Church, Great Oxendon	Y	Y
Greenspace adjacent to St Peter and Paul's Church, Harrington	Y	Y
Montsaye Community Sports Centre	N	Y
Rothwell Allotments	N	Y
Loddington Playing Fields	Y	Y
Greenspace adjacent to St Leonard's Church, Loddington	Y	Y
Mawsley Village Playing Field	Y	Y
Broughton Playing Fields	Y	Y
Mawsley Road Allotments	Y	Y
Broughton Cemetery	Y	Y
Pytchley Playing Fields	Y	Y
Isham Cricket Club	Y	Y
Greenspace adjacent to St Mary's Church, Orlingbury	Y	Y
Little Harrowden Playing Fields	Y	Y
Greenspace adjacent to St Mary's Church, Little Harrowden	Y	Y
Wellingborough Golf Course	Y	Y
Weillingborough Grammarians Memorial Sportsfield	Y	Y
Queensway Estate Park, Wellingborough	Y	Y
Redwell Leisure Centre	N	Y
Stanwell Park	Y	Y
Wilby Playing Field	Y	Y
Wilby Allotments	Y	Y
Weavers Leisure Centre	Y	Y
Sywell Country Park	N	Y
The Grange Sportsfield	Y	Y
Clock Close Allotments	Y	Y
Wellingborough Rugby Club	Y	Y
Great Doddington Allotments	N	Y
Greenspace adjacent to St Nicholas' Church, Great Doddington	Y	Y

Open Space	Within Scoping Boundary?	Within 500 m of Scoping Boundary?
Earls Barton Rec	Y	Y
Earls Barton Bowling Green	Y	Y
Earls Barton Allotments	Y	Y
Greenspace adjacent to St Mary's Church, Whiston	Y	Y
Castle Ashby Gardens	N	Y
Greenspace adjacent to St Mary's Church, Grendon	Y	Y
Grendon Allotments	Y	Y
Grendon Play Area	Y	Y

Future Baseline

16.5.37 The future baseline relates to known or anticipated changes to the current baseline in the future which would develop in the absence of the Project.

16.5.38 **Table 16.14** uses data from ONS 2018 based population projections to show total population change and projected change by age group to 2043 (Ref 16.2). The population of the population and deprivation Study Area (see **Table 16.2**) is expected to grow by 11.3%, exceeding the national average of 9.3%, though remaining below the regional average of 12.5%.

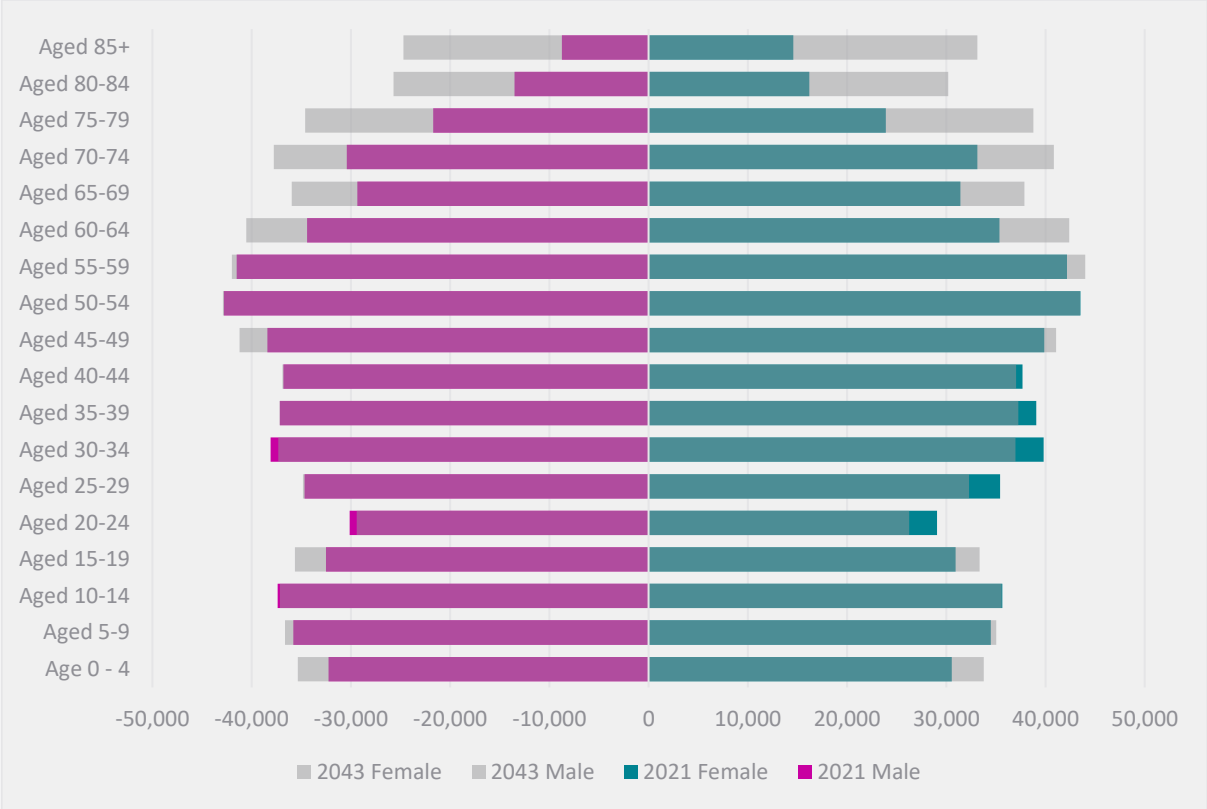
16.5.39 The working-age population in the Study Area is projected to increase by just 1.6%, the lowest growth rate among comparator geographies. In contrast, the East Midlands is projected to see a 5.1% increase, and England as a whole a 2.1% rise. All geographies are expected to experience substantial growth in the population aged 65 and over, with the Study Area forecast to see the largest increase at 49.3%, compared to 42.4% in the East Midlands and 41.6% nationally.

Table 16.14 Population change from 2021 to 2043 (total and by age group) (Ref 16.2)

	Aged 0 to 15	Aged 16 to 64	Aged 65+	Total
Study Area	3.7%	1.6%	49.3%	**11.3%**
East Midlands	5.8%	5.1%	42.4%	**12.5%**
England	1.6%	2.1%	41.6%	**9.3%**

16.5.40 **Image 16.5** shows a population pyramid of the total population within the Study Area in 2021, with the grey bars representing an increase in population between 2021 and 2043. The widening of the top of the pyramid reflects an ageing population, with an increasing proportion of the population in the area aged 60 and over.

Image 16.5 Population pyramid of the local authorities within the Study Area from 2018 to 2043 (Ref 16.1; Ref 16.2)



16.5.41 The future baseline for residential properties, businesses, community facilities, open spaces, visitor attractions and development land 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.

16.6 Design and Control Measures

Design Measures

16.6.1 The Scoping Boundary has been designed as far as is practicable to avoid direct effects to sensitive socio-economic, recreational and tourism features as set out in **Chapter 3 Main Alternatives Considered**.

16.6.2 The detailed design, including the selection of the preferred route corridor and the precise siting of the substations will also seek to avoid and minimise effects on potential receptors as far as is practicable.

16.6.3 Where practicable, the Project has been routed to avoid interacting with clusters of local businesses, properties, recreational and community facilities and visitor attractions.

Control and Management Measures

16.6.4 A range of standard measures for the Project will be adopted throughout the duration of the construction phase. An Initial Outline Code of Construction (CoCP) is provided in **Appendix 4A Initial Outline Code of Construction Practice**. Measures c relevant to the control and management of impacts that could affect socio-economics, recreation and tourism are (refer to **Appendix 4A** for the full description of each measure):

- GG03 – on development of a final CoCP.
- GG12 – on potential nuisance activities being located away from sensitive receptors.
- TT03 – on PRoW diversions and requirement for a Public Right of Way Management Plan (PRoWMP).
- NV01 and NV02– on working hours and adoption of Best Practicable Means (BPM) for noise management.
- S01 – on provision of environmental training of construction workers.
- S02 – on recreational routes and their inclusion in the PRoWMP.

16.7 Potential for Significant Effects

16.7.1 The socio-economic, recreation and tourism assessment will consider the construction, operation and maintenance of the Project. A description of each of these stages is set out in **Chapter 4 Description of the Project**. The potential for significant effects and inclusion (Scoped in) and exclusion (Scoped out) of matters in the scope of the socio-economic, recreation and tourism ES assessment is set out below and has been determined using the approach described in **Chapter 5 EIA Approach and Methodology.**

16.7.2 The potential for the Project to result in the likely significant effects identified below takes into account the embedded design, and control and management measures described in Section 16.6.

16.7.3 **Table 16.15** identifies the sources of potential impacts on receptors identified in the baseline that could result in a significant effect. Where an impact could give rise to potentially significant effects on receptors identified in the Study Area, these are then scoped into the ES. Impact pathways that are unlikely to give rise to significant effects on receptors identified in the Study Area are proposed to be scoped out of the ES.

Table 16.15 Impacts, receptors and the potential for significant effect

Project phase	Source	Receptor	Potential for significant effect	Proposed to be scoped in/out
Construction	Potential employment and training benefits within the local labour market, including supply chain opportunities, as well as opportunities for training and skills development.	Local labour market	**Yes** – the Project will generate beneficial direct and indirect temporary employment, training and apprenticeship opportunities both on site and indirectly in the supply chain during the construction phase, which could be significant.	**Scoped In**
Operation and Maintenance	Potential employment and training benefits across the supply chain.	Local labour market	No – the scale of operational employment generated is likely to be very limited, and is not likely to result in significant effects. This has therefore been scoped out of further consideration.	Scoped Out
Construction	Potential disruption to local users of recreational routes and PRoW of significance in the local area.	Users of recreational routes and PRoW of significance in the local area	**Yes** – disruption to recreational routes and PRoW of significance in the local area during the construction phase will be avoided as far as possible and considered with a PRoWMP. However, there is the potential for	**Scoped In**

Project phase	Source	Receptor	Potential for significant effect	Proposed to be scoped in/out
			significant effects during construction due to the possible need for temporary or permanent suitable diversions to be agreed with relevant bodies, and so this has been scoped in for further consideration at this stage.	
Operation and Maintenance	Potential disruption to local users from temporary closure or diversions of recreational routes and PRoW of significance in the local area.	Users of promoted recreational routes and PRoW of significance	No – any temporary, long-term or permanent effects on recreational routes and PRoW of significance in the local area would arise during the construction period and would therefore be assessed as construction effects. Any long-term impacts would be reflected in the construction assessment conclusions accordingly. No significant effects on recreational routes and PRoW of significance in the local area are anticipated during operation. Disruption to recreational routes and PRoW of significance in	Scoped Out

Project phase	Source	Receptor	Potential for significant effect	Proposed to be scoped in/out
			the local area during maintenance will be avoided as far as possible, managed with a PRoWMP, and it is not considered that there is the potential for significant effects.	
Construction	Potential temporary or permanent loss of development land.	Development land, utilities and renewables infrastructure	**Yes** – the Project has been designed to avoid development land, utilities and renewables infrastructure as far as possible, however there may be the potential for land take which could result in the potential for significant effects and so this has been scoped in for further consideration at this stage.	**Scoped In**
Operation and Maintenance	Potential temporary or permanent loss of development land.	Development land, utilities and renewables infrastructure	No – any temporary, long-term or permanent effects on development land, utilities and renewables infrastructure would arise during the construction period and would therefore be assessed as construction effects. Any long-term impacts would	Scoped Out

Project phase	Source	Receptor	Potential for significant effect	Proposed to be scoped in/out
			be reflected in the construction assessment conclusions accordingly. No significant effects on development land are anticipated during operation. Disruption to development land during maintenance will be avoided as far as possible and it is not considered that there is the potential for significant effects.	
Construction	Potential temporary or permanent loss of open space	Open space	**Yes** – the Project has been designed to avoid open space as far as possible, however there may be the potential for land take which could result in the potential for significant effects and so this has been scoped in for further consideration at this stage. In the event of permanent loss of open space, mitigation measures such as replacement land will be considered.	**Scoped In**

Project phase	Source	Receptor	Potential for significant effect	Proposed to be scoped in/out
Operation and Maintenance	Potential temporary or permanent loss of open space	Open space	No – any temporary, long-term or permanent effects on open space would arise during the construction period and would therefore be assessed as construction effects. Any long-term impacts would be reflected in the construction assessment conclusions accordingly. No significant effects on open space are anticipated during operation. Disruption to open space during maintenance will be avoided as far as possible and it is not considered that there is the potential for significant effects.	Scoped Out
Construction	Potential disruption during construction-based activities (amenity & severance)	Affected communities, community facilities, visitor attractions and businesses (indirect)	**Yes** – the Project has been designed to avoid effects on these receptors as far as possible. However, there is the potential for direct and indirect temporary effects to arise from construction activities that may give	**Scoped In**

Project phase	Source	Receptor	Potential for significant effect	Proposed to be scoped in/out
			rise to significant effects, so this has been scoped in for further consideration at this stage.	
Operation and Maintenance	Potential disruption during operational activities (amenity & severance)	Affected communities, community facilities, visitor attractions and businesses (indirect)	No – access to these receptors will be reinstated post construction and their ongoing use will be unaffected during operation and maintenance activities. Therefore, significant effects are not likely to occur.	Scoped Out
Construction, Operation, and Maintenance	Potential temporary or permanent loss of or impact on receptors (land take).	Affected communities, community facilities, visitor attractions and businesses (direct)	No – the Project has been designed to avoid direct impacts on these receptors and therefore, significant effects are not likely to occur. Should this position change between Scoping and PEIR or ES stage, any communities, community facilities, visitor attractions and businesses likely to be directly impacted, would be included in further assessment as appropriate. Indirect	Scoped Out

Project phase	Source	Receptor	Potential for significant effect	Proposed to be scoped in/out
			effects which may occur during construction such as disruption to access and noise will be managed through the Construction Traffic Management Plan (CTMP) and CEMP.	
Construction	Potential for impacts on the availability of tourism accommodation due to use by the construction workforce.	Tourism accommodation	**Yes** – impact of the construction workforce on bedspace availability is scoped in due to the potential scale of employment generated during the construction phase and the cumulative impact of other projects in the region.	**Scoped In**
Operation and Maintenance	Potential for impacts on the availability of tourism accommodation during operation and maintenance.	Tourism accommodation	No – the scale of operational employment generated is likely to be very limited. Therefore, tourism accommodation availability will be unaffected during operation and maintenance activities. Significant effects are not likely to occur.	Scoped Out

Project phase	Source	Receptor	Potential for significant effect	Proposed to be scoped in/out
Construction, operation and maintenance	Potential temporary or permanent loss of residential property, access, and impact on amenity.	Residential properties	No – the emerging preferred corridor for the Project and substation siting areas avoids acquisition or over-sail of residential properties. Indirect effects which may occur during construction such as disruption to access and noise will be managed through the CTMP and CEMP. Significant effects are not likely to occur.	Scoped Out
Construction, operation and maintenance	Potential for impacts on the operation of aviation infrastructure	Aviation infrastructure	**Yes** – the Project has been designed to avoid effects on these receptors as far as possible. However, there is the potential for aviation infrastructure to be directly or indirectly impacted and so this has been scoped in for further consideration at this stage. An assessment of the effects of the Project on users of airfields as socio-economic receptors will be presented in the ES when information from	**Scoped In**

Project phase	Source	Receptor	Potential for significant effect	Proposed to be scoped in/out
			specialist aviation consultation is available.	

16.8 Proposed Assessment Methodology

Proposed Data Sources

16.8.1 A desk-based baseline assessment will be undertaken using a range of sources to provide a description of the socio-economic conditions within the geographical areas set out in Section 16.5. This will be done using established statistical sources as set out in Section 16.5.1, and in consultation with stakeholders, where relevant. Relevant policy will be reviewed at the local, regional and national levels to identify the key issues of relevance to the Project.

16.8.2 Community facilities, open space, business and tourism receptors will be identified using web mapping of OS data, cross-checked against internet searches, and taking into account stakeholder feedback. The baseline for promoted and recreational routes will also draw on OS data, as well as information from the relevant local planning authorities, maps of Sustrans National Cycle Network routes, and the baseline collected by **Chapter 13 Traffic and Transport**.

Proposed Assessment Methodology

16.8.3 The following section summarises the methodology proposed to be used for the socio-economic, recreation and tourism ES assessment which builds on the general assessment methodology presented in **Chapter 5 EIA Approach and Methodology**.

16.8.4 As noted above, there is limited technical guidance available for socio-economics, recreation and tourism assessments. As such, the methodology for assessing impacts will follow standard EIA guidance and will entail:

- 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.

16.8.5 For socio-economics, recreation and tourism there is no accepted definition of what constitutes a significant (or not significant) effect. It is however recognised that effects are categorised based upon the relationship between the scale (or magnitude) of impact and the sensitivity (or value) of the affected resource or receptor.

16.8.6 Appropriate qualitative and quantitative sensitivity and magnitude criteria have been defined, based on expert judgment and understanding of local and regional priorities, to assess the scale and nature of the impacts of the Project against baseline conditions.

Sensitivity

16.8.7 **Table 16.16** sets out the sensitivity criteria that will be used in the assessment.

Table 16.16 Sensitivity of receptors

Value/Sensitivity	Description
Very high	Businesses, individuals, groups of individuals, or other receptors possessing very significant economic, social

Value/Sensitivity	Description
	and/or community value. These receptors are considered very likely to incur a material loss or gain as a result of potential changes in the environment, with little to no potential for substitution.
High	Businesses, individuals, groups of individuals, or other receptors possessing some significant economic, social and/or community value. These receptors are considered likely to incur some material loss or gain as a result of potential changes in the environment, with limited potential for substitution.
Medium	Businesses, individuals, groups of individuals, or other receptors possessing some economic, social and/or community value. These receptors are considered likely to incur a material loss or gain as a result of potential changes in the environment, with potential for substitution.
Low	Businesses, individuals, groups of individuals, or other receptors possessing some economic, social and/or community value. These receptors are not considered likely to incur any loss or gain as a result of potential changes in the environment.
Negligible	Businesses, individuals, groups of individuals, or other receptors possessing limited economic, social and/or community value. These receptors are not considered likely to incur any loss or gain as a result of potential changes in the environment.

Magnitude

16.8.8 **Table 16.17** sets out the criteria that will be used to define the magnitude of impact in the assessment.

Table 16.17 Magnitude of impact

Magnitude	Description
Large	An impact that would be likely to result in total loss of an individual receptor or permanent changes to baseline conditions for a large number of businesses, individuals or groups of individuals.
Medium	An impact that would be very likely to result in partial changes to baseline conditions for a moderate number of businesses, individuals or groups of individuals.
Small	An impact that would be likely to result in minor changes to baseline conditions for a small number of businesses, individuals or groups of individuals.

Magnitude	Description
Negligible	An impact that would be likely to result in little or no change to baseline conditions for businesses, individuals or groups of individuals.

Significance of effects

16.8.9 The general approach adopted for evaluating the significance of effects considering the sensitivity of the receptor and the magnitude of impacts is outlined in **Table 16.18.**

Table 16.18 Determination of significance matrix

		Value/Sensitivity of Receptor				
		Very high	**High**	**Medium**	**Low**	**Negligible**
Magnitude of Impact	**Large**	Major	Major/ moderate	Major/moderate/ minor	Moderate/ minor	Minor/ negligible
	Medium	Major/moderate	Major/ moderate	Moderate/minor	Minor/ negligible	Negligible
	Small	Major/moderate/ minor	Moderate/ minor	Moderate/minor	Minor/ negligible	Negligible
	Negligible	Minor/negligible	Minor/ negligible	Minor/negligible	Negligible	Negligible

16.8.10 This matrix will be used as the basis for assigning significance to an effect; however, the identification of significance typically requires the application of professional judgement. As an illustration, a high sensitivity receptor subject to a large magnitude of change would experience a major or moderate effect, and a low sensitivity receptor subject to a small magnitude of change would experience a minor or negligible effect. The assessment matrix is a tool to assist with professional judgement; there are no defined cut-off points between the categories, and there is no guidance on which score should be assigned where the matrix provides alternatives.

16.8.11 Those effects which are found to be moderate or major are typically considered ‘significant’ and those which are minor or negligible considered ‘not significant’. Duration of impact will also be considered, with more weight given to reversible long-term or permanent changes than to short-term, temporary ones. Temporary effects are typically considered to be those associated with the construction and maintenance works, whereas long-term reversible effects/permanent effects are generally those associated with the operational stage (notwithstanding in some cases there may be exceptions, such as permanent PRoW diversions during construction).

16.9 Assumptions and limitations

16.9.1 This EIA Scoping Report has been collated based on a range of publicly available data and information only. It is assumed that the data collated is accurate. The baseline will be supplemented with additional data collected as part of the EIA process. A precautionary approach has been taken and professional judgement, based on experience of similar linear projects, has been used where required to inform the scope of the assessment.

16.9.2 The commercial agreement for land, including productive land, between the Applicant and landowners is beyond the scope of this chapter and the ES assessment. This chapter does not consider the financial effects on individual businesses, as this may be the subject of the landowner negotiations and may result in compensation payments to offset effects on landowners and businesses. In addition, this chapter does not consider the effects of the Project on property values as this is not a matter for assessment under the EIA Regulations 2017. As a result, this is scoped out of the ES. Also, it should be noted that potential impacts on farm business would be included in **Chapter 12 Agriculture and Soils**.

16.9.3 A baseline of aviation and defence receptors, such as airports, airfields, barracks and associated infrastructure has been undertaken in Section 16.5. However, the detailed assessment of potential effects on these receptors will be undertaken when information from specialist aviation consultation is available.

16.9.4 Information on open greenspace has been drawn from desk-based research using OS data and checked against Google Maps. This may not capture the most comprehensive or up to date information, and therefore, the list of baseline open greenspaces should be viewed as indicative.

16.9.5 A proportion of the construction and maintenance workers are likely to live locally to the site, while a proportion will travel to the site to work. More detail on the average and peak number of workers expected to work across the construction and maintenance period, and the proportion of workers who will be expected to live locally to the site, will likely become available as the Project progresses and will be set out in the ES. This will inform the assessment of construction employment effects.

16.10 Conclusion

16.10.1 This Scoping Report chapter has outlined relevant legislation, policy and guidance in relation to the socio-economic, tourism, and recreation assessment for the Project. The data sources that will be used to define the current and future baselines have been presented, and the impact control and management measures that will be implemented. The potential for significant effects has been identified, as well as the associated source, impact and receptors in **Table 16.15**.

16.10.2 A summary of the proposed scope of the assessment is provided in **Chapter 20 Summary**.

References

Ref 16.1 Office for National Statistics, (2025). Census. [online] Available at: https://www.ons.gov.uk/census [Accessed 21 Jul. 2025].

Ref 16.2 Office for National Statistics, (2024). Population estimates for England and Wales: Mid-2023. [online] Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/annualmidyearpopulationestimates/mid2023 [Accessed 21 Jul. 2025]

Ref 16.3 Department for Levelling Up, Housing and Communities, (2019). English Indices of Deprivation 2019. [online] Available at: https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019 [Accessed 21 Jul. 2025]

Ref 16.4 Office for National Statistics, (2025). Nominal regional gross value added (balanced) per head and income components. [online] Available at: https://www.ons.gov.uk/economy/grossvalueaddedgva/datasets/nominalregionalgrossvalueaddedbalancedperheadandincomecomponents [Accessed 21 Jul. 2025]

Ref 16.5 Office for National Statistics, (2022). Business Register and Employment Survey. [online] Available at: https://www.ons.gov.uk/surveys/informationforbusinesses/businesssurveys/businessregisterandemploymentsurvey [Accessed 21 Jul. 2025]

Ref 16.6 Office for National Statistics, (2019). National population projections: 2018-based. [online] Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/bulletins/nationalpopulationprojections/2018based [Accessed 21 Jul. 2025]

Ref 16.7 Ordnance Survey, (2025). OS Open Greenspace. [online] Available at: https://www.ordnancesurvey.co.uk/products/os-open-greenspace [Accessed 21 Jul. 2025]

Ref 16.8 Ordnance Survey, (2025). OS OpenMap Local. [online] Available at: https://www.ordnancesurvey.co.uk/products/os-open-map-local [Accessed 21 Jul. 2025]

Ref 16.9 Ordnance Survey, (2025). AddressBase. [online] Available at: https://www.ordnancesurvey.co.uk/products/addressbase [Accessed 21 Jul. 2025]

Ref 16.10 VisitBritain, (2025). England domestic tourism: regional and subregional data. [online] Available at: https://www.visitbritain.org/research-insights/england-domestic-tourism-regional-and-subregional-data [Accessed 21 Jul. 2025]

Ref 16.11 VisitBritain, (2025). England hotel occupancy: latest. [online] Available at: https://www.visitbritain.org/research-insights/england-hotel-occupancy-latest [Accessed 21 Jul. 2025]

Ref 16.12 VisitBritain, (2025). England visitor attractions: latest. [online] Available at: https://www.visitbritain.org/research-insights/england-visitor-attractions-latest [Accessed 21 Jul. 2025]

Ref 16.13 CoStar Group, (2025). CoStar. [online] Available at: https://www.costar.com/ [Accessed 21 Jul. 2025]

Ref 16.14 UK Government, (2000). Countryside and Rights of Way Act 2000. [online] Available at: https://www.legislation.gov.uk/ukpga/2000/37/contents [Accessed 21 Jul. 2025]

Ref 16.15 Harborough District Council, (2025). Proposed Submission Draft Harborough Local Plan. [online] Available at: https://www.harborough.gov.uk/downloads/file/8926/proposed_submission_draft_harborough_local_plan [Accessed 25 Jul. 2025]

Ref 16.16 Melton Borough Council, (2018). Local Plan: Appendix 3 Settlement Hierarchy. [online] Available at: https://democracy.melton.gov.uk/documents/s6271/Item%2012%20appendix%202-%20Full%20Local%20Plan%20appendices.pdf [Accessed 25 Jul. 2025]

Ref 16.17 South East Lincolnshire Joint Strategic Planning Committee, (2019). South East Lincolnshire Local Plan 2011-2036. [online] Available at: https://southeastlincslocalplan.org/article/20102/Adopted-Plan [Accessed 25 Jul. 2025]

Ref 16.18 South Kesteven District Council, (2020). South Kesteven Local Plan. [online] Available at: https://www.southkesteven.gov.uk/planning-building-control/planning-policy-local-plans/south-kesteven-local-plan [Accessed 25 Jul. 2025]

Ref 16.19 North Northamptonshire Council, (2016). North Northamptonshire Joint Core Strategy. [online] Available at: https://www.northnorthants.gov.uk/planning-strategies-and-plans/north-northamptonshire-local-plan [Accessed 25 Jul. 2025]

Ref 16.20 West Northamptonshire Council, (2024). Regulation 18 Local Plan. [online] Available at: https://www.westnorthants.gov.uk/planning-policy/new-local-plan-west-northamptonshire [Accessed 25 Jul. 2025]

Ref 16.21 Homes and Communities Agency (HCA) (now Homes England) (2014). Additionality Guide (4th edition).

Ref 16.22 HM Treasury (2022). The Green Book – Appraisal and Evaluation in Central Government.

Ref 16.23 HM Treasury (2020). The Magenta Book – Guidance for Evaluation.

Ref 16.24 National Grid (2012). Options Appraisal – Toolkit for Project Teams. Aviation and Defence Methodologies.

17. Health and Wellbeing

nationalgrid

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17. Health and Wellbeing

17.1 Introduction

17.1.1 The World Health Organisation defines health as ‘a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity’ (Ref 17.1). Factors that have the most significant influence on the physical and mental health of a population are called ‘determinants of health’ and include a wide range of social, economic and environmental factors which then influence the health of individuals and populations.

17.1.2 This chapter presents how the health and wellbeing assessment will consider the potential likely significant effects on health and wellbeing receptors that may arise from the construction, operation and maintenance of the Project (as described in **Chapter 4, Description of the Project**). An electromagnetic fields (EMF) report will also be prepared as part of the Project, however this is separate to this chapter and the Environmental Impact Assessment (EIA) process as a whole.

17.1.3 This chapter describes the methodology and datasets to be used within the assessment, presents an overview of the baseline conditions, and identifies the potential likely significant effects to be considered within the assessment, and how these will be assessed in the Environmental Statement (ES) . As detailed in **Chapter 4, Description of the Project**, the decommissioning of the Project has been scoped out of the environmental assessment.

17.1.4 The Scoping Boundary is illustrated on **Figure 1.2 Scoping Boundary**.

17.1.5 This chapter should be read in conjunction with the following chapters which provide the Project context and approach to EIA:

- **Chapter 2 Regulatory and Planning Policy Context**;
- **Chapter 3 Main Alternatives Considered**;
- **Chapter 4 Description of the Project**; and
- **Chapter 5 EIA Approach and Methodology**.

17.1.6 There may be interrelationships with other disciplines. Therefore, this chapter should also be read in conjunction with the following chapters:

- **Chapter 7 Visual:** which covers effects on residential properties and recreational, tourism and community visual receptors and their impact on human receptors including the ability to enjoy open space and recreational amenities.
- **Chapter 11 Geology and Hydrology:** which covers contamination sources and potential remediation effects following construction activities.
- **Chapter 13 Traffic and Transport:** which covers effects on accessibility, active travel, use of Public Rights of Way (PRoW) as a result of construction activities and traffic.

- **Chapter 14 Air Quality:** which covers air quality effects following construction activities and traffic and their impact on human receptors.
- **Chapter 15 Noise and Vibration:** which covers noise and vibration effects following construction activities and traffic and their impact on human receptors.
- **Chapter 16 Socio-economic, Recreation and Tourism:** which covers impacts on community land and facilities, commercial property and land, and employment creation, as well as effects on recreational, tourism and community receptors including the ability to access open space and recreational amenities.

17.1.7 This chapter is supported by the following figures associated with **Chapter 16 Socio-economic, Recreation, Tourism**:

- **Figure 16.1 Indices of Multiple Deprivation**; and
- **Figure 16.2 Socio-economic, Tourism and Recreation Receptors**.

17.2 Legislation, Policy and Guidance

17.2.1 **Chapter 2 Regulatory and Planning Policy Context** describes the overall regulatory and planning policy context for the Project.

17.2.2 Key local policy, and guidance that have informed the scoping process for health and wellbeing associated with the construction, operation, and maintenance of the Project in **Appendix 2A Key Legislation, Appendix 2B National and Regional Planning Policy and Appendix 2C Local Policy.**

17.2.3 The relevant principle guidance and standards that have informed the scoping process are listed below and will, along with other relevant material, also be taken into account as part of the ES assessment:

- The Institute of Environmental Management and Assessment (IEMA) now known as The Institute of Sustainability and Environmental Professionals (ISEP) (2022) Effective Scoping of Human Health in Environmental Impact Assessment (Ref 17.2).
- ISEP (2022) Determining Significance for Human Health in Environmental Impact Assessment (Ref 17.3).
- Highways England (2020) Design Manual for Roads and Bridge Document LA112 (Ref 17.4).
- ISEP (2017) Health in Environmental Impact Assessment: A Primer for a Proportionate Approach (Ref 17.5).
- Public Health England (PHE) The Public Health England Strategy 2020 to 2025 (Ref 17.6).
- PHE (2020) Advice on the content of Environmental Statements accompanying an application under the Nationally Significant Infrastructure Planning Regime (Ref 17.7).

17.3 Consultation and Engagement

17.3.1 The ES will be informed by consultation and engagement with stakeholders, including local planning authorities, National Health Service (NHS) Integrated Care

Partnerships, relevant emergency service authorities, Health and Safety Executive, UK Health Security Agency (UKHSA), and the Office for Health Improvement and Disparities (OHID). In addition, engagement will be undertaken with non-statutory stakeholders, as required, to ensure that specialist local views and expertise can be considered as part of the ES.

17.3.2 In preparing this Scoping Report chapter, consideration has been given to stakeholder feedback received following Non-Statutory Consultation held between 11 June and 6 August 2025, as set out in **Table 17.1**. Pre-scoping engagement with a Public Health Officer has also been undertaken, as set out in **Table 17.1**.

Table 17.1 Engagement with Stakeholders

Stakeholder	Summary of response	Consideration in the Scoping Report
Public Health Officer - West Northamptonshire Council Pre-scoping engagement	Positive engagement on proposed scope and assessment methodology, suggestion provided to have direct engagement with Local Area Partnerships (LAPs) and the updated West Northants Health Impact Assessment Tool and guidance to inform assessment were provided.	The West Northants Health Impact Assessment Tool and guidance has been reviewed and considered for the health and wellbeing scoping process and assessment.
Sport England	Sport England considered the proposal in light of the National Planning Policy Framework (NPPF 2024) particularly where the presumption is that playing fields should not be built on and against its own 'Playing Fields Policy and Guidance Document' Sport England's technical guidance on 'Overhead powerlines' in relation to playing pitches should be considered during the determination of the route of the overhead line.	Impacts on open spaces (including playing fields) have been scoped into the health and wellbeing assessment. This will include any impacts associated with land take, access or changes to the amenity of any open space. The Ordnance Survey (OS) Open Greenspace dataset will be used to identify all open spaces within the Study Area including playing fields.
South Holland District Council	The Council raised concerns about visual and neighbourhood amenity due to towers and sub-stations and the impact of construction traffic on access to educational facilities,	The impact of construction traffic and activities on neighbourhood amenity due to noise, air emissions, visual impacts and increased traffic movements have been scoped into the health and wellbeing assessment and

Stakeholder	Summary of response	Consideration in the Scoping Report
	employment, healthcare and social services. There were also concerns raised about cumulative effects on communities and businesses from multiple projects in the area. The Council expresses interest in the submission of detailed construction and environmental management plans to reduce impacts to vulnerable receptors from noise, dust, light and emissions.	will be assessed using the methodology described in Section 17.8. The ES will assess effects on users of the local road networks from construction traffic. The impact of construction traffic on access to educational facilities, employment, healthcare and social services has been scoped out for the health and wellbeing assessment using the methodology described in Section 17.8, as any disruption caused will be localised and temporary, unlikely to affect access at population level. Cumulative effects from multiple projects in the area on communities and businesses will be assessed in the ES as described in **Chapter 5 EIA Approach and Methodology,** Section 5.5 on Cumulative Effects. An Outline Code of Construction Practice will be prepared and submitted as part of the application for development consent. An Initial Outline version is provided as **Appendix 4A Initial Outline Code of Construction Practice**.
Pinchbeck Parish Council	The Parish Council raised concerns about compliance with relevant national planning policy, changes to views and tranquillity as well as impacts on social cohesion and wellbeing. Further concerns raised include negative impacts on	The relevant national planning policies have been considered and are outlined in **Chapter 2 Regulatory and Planning Policy Context**. Impacts on amenity, tranquillity, PRoW and social cohesion and related wellbeing effects have been

Stakeholder	Summary of response	Consideration in the Scoping Report
	the Parish's landscape, amenity and wellbeing and perceived inadequate consultation and communication with local communities. There was also concern raised about cumulative impacts across multiple overlapping Nationally Significant Infrastructure Projects (NSIPs).	scoped into the health and wellbeing assessment as described in this chapter. Also, uncertainty and the potential impact on mental health associated with uncertainty and stress relating to the Project has been scoped in, ensuring that the impact on the wellbeing of local communities is considered. Further consultation by the Applicant is scheduled to take place in 2026. Cumulative effects from multiple developments will be assessed in the ES as described in **Chapter 5 EIA Approach and Methodology**, Section 5.5 on Cumulative Effects.
Lincolnshire County Council	The Council expressed an interest in the inclusion of non-statutory consultees in the development of the Project, recommending the inclusion of local skills providers, both public and voluntary sector providers, including: Boston College, Grimbsy Institution and Voluntary and Community Services.	The consultation which resulted in this response included non-statutory consultees. Further consultation by the Applicant is scheduled to take place in 2026.
	They also expressed concerns around HGV related congestion and recommend for construction phases to avoid peak visitor time to avoid negative impacts on employment and income associated with the visitor economy.	The impacts of construction traffic on neighbourhood amenity for local communities has been scoped into the health and wellbeing assessment as described in this chapter.
	Further, the Council stated that the implications of the	The potential impact on mental health associated with

Stakeholder	Summary of response	Consideration in the Scoping Report
	overhead line and substation on human health needs to be considered, with either a Health Impact Assessment provided to support the application, or a specific consideration of health impacts (both physical and mental) provided in each chapter of the ES.	uncertainty and stress relating to the perceived impacts of the generation of electromagnetic fields (EMFs) from the overhead line has been scoped into the health and wellbeing assessment as described in this chapter.
	The Council references UK Department of Energy Security and Net Zero Guidance 'Community funds for transmission infrastructure' to ensure community benefits have delivered to affected communities.	Appropriate mitigation measures will be identified and embedded in the Project as outlined in Section 17.8 Proposed Assessment Methodology of this chapter.
Anglian Water	Anglian Water expresses interest in further engagement where there are cumulative impacts with Anglian Water projects, including the Lincolnshire Reservoir project.	Cumulative effects from multiple developments will be assessed in the ES as described in **Chapter 5 EIA Approach and Methodology**, Section 5.5 on Cumulative Effects.

17.4 Study Area

17.4.1 For the purpose of this Scoping Report, the Study Area includes the land within the Scoping Boundary, as illustrated on **Figure 1.2 Scoping Boundary**, which has been divided into five Sections. The Scoping Boundary is based on the new overhead line emerging preferred corridor, the new Weston Marsh substation infrastructure Siting Zone, the new WMEL-A and WMEL-B substation preferred Siting Areas, and an assumed area around the existing ZA overhead line to allow for reconductoring works.

17.4.2 Local authority level data has been collected from South Holland, South Kesteven, Melton, Harborough, West Northamptonshire and North Northamptonshire. Given the size of the Scoping Boundary, this level of geography has been used to present the baseline for this scoping assessment. This is presented alongside the corresponding region of the East Midlands and the national comparator of England.

17.4.3 The Study Area for the ES assessment will vary by the type of health impact being assessed, for example, some impacts on health determinants, such as access to work and training, affect the population across a wider geographic area and these are considered at local authority level. For most impacts on health determinants, the

Study Area will be defined to include the areas closest to the Project, which are likely to be affected by issues such as loss of land, access and amenity impacts with the potential to give rise to health and wellbeing effects. This will include the lower super output areas (LSOA) that contain populations and/or community receptors within 500 m of the Scoping Boundary.

17.4.4 The Study Area will remain flexible to capture any impacts with the potential to influence health and wellbeing outside the Study Area, which may be identified during the course of the assessment. For example, this may include impacts on the wider highway network.

17.5 Baseline Conditions

Data Sources

17.5.1 The known or predicted current and future baseline environment described in this section has been informed by the following data sources:

- Ministry of Housing, Communities and Local Government, Indices of Multiple Deprivation 2019 (Ref 17.9).
- Office of National Statistics (ONS), Census 2021 (2022) (Ref 17.8).
- OHID, Local Health data (Ref 17.10).
- Ordnance Survey Data (Ref 17.15).
- Public Health England, Health Profiles (2022) (Ref 17.12).
- Sustrans Open data (Ref 17.11).

Baseline

17.5.2 The Project has been divided into five Sections as described in **Chapter 4, Description of the Project** and shown in **Figure 1.2 Scoping Boundary**. The five Sections are defined by the geographical alignment of the Scoping Boundary and the administrative boundaries of the local authorities.

17.5.3 To provide an assessment of the likely significant effects of the Project on health, it is necessary to identify and understand the health and social baseline conditions in the Study Area. This information helps in the determination of sensitivity of populations, alongside the consideration of vulnerable groups identified in the Study Area who are more likely to experience adverse health and wellbeing effects.

17.5.4 A Project-wide health profile has been presented below comprising data for each host authority within the Study Area, alongside national comparators.

Section 1

17.5.5 Section 1 is in South Holland and is a predominately rural district, characterised by dispersed rural properties, small settlements and market towns. the closest town is Spalding, with the villages of Surfleet, Crossgate, Pinchbeck and Northgate adjacent to the Scoping Boundary. Within the area there are several footpaths, bridleways and local access roads that provide links between rural dwellings and villages.

Section 2

17.5.6 Section 2 is in South Kesteven which is a large and diverse district encompassing several market towns and rural villages. The closest town is Bourne, with the villages of Dunsby, Haconby, Morton, Stainfield, Hanthorpe, Bulby, Irnham, Swinstead, Corby Glen, Swayfield, North Witham and South Witham within or adjacent to Section 1. Within the area there are several footpaths, bridleways and local access roads that provide links between rural dwellings and villages.

Section 3

17.5.7 Section 3 is in Melton which is a predominantly rural borough, centred around the historic market town of Melton Mowbray and a network of surrounding villages including, Sewstern, Garthorpe, Holwell, Ab Kettleby, Wartnaby, Ashfordby, Frisby on the Wreake and Twyford within or adjacent to this Section . Within the area there are several footpaths, bridleways and local access roads that provide links between rural dwellings and villages.

Section 4

17.5.8 Section 4 is in Harborough which is a rural district, the closest and largest town is Market Harborough with the villages Marefield, Lowesby, Cold Newton, Tilton on the Hill, Halstead, Skeffington, Tugby, Rolleston, Noseley, Goadby, Glooston, Stonton Wyville, Cranoe, Slawston, Thorpe Langton, Wilham, Great Bowden, and Little Bowden within or adjacent to this Section . Within the area there are several footpaths, bridleways and local access roads that provide links between rural dwellings and villages.

Section 5

17.5.9 Section 5 is in West and North Northamptonshire which encompass a diverse mix of urban centres, market towns, and rural communities. The closest towns are Market Harborough and Wellingborough with the villages Weston by Welland, Sutton Basset, Dingley Braybrooke, Harrington, Orton, Loddington, Mawsley, Great Cransley, Broughton, Pytchley, Orlingbury, Little Harrowden, Hardwick, Mears Ashby, Wilby, Great Doddington, Earls Barton, Castle Ashby and Grendon within or adjacent to this Section . Within the area there are several footpaths, bridleways and local access roads that provide links between rural dwellings and villages.

17.5.10 The following sections present the existing local authority level baseline established at scoping.

Population

17.5.11 The data in **Table 17.2** (Ref 17.15) sets out the age breakdown of the resident population by host authority Key points are as follows:

- Almost all host authorities have ageing populations, as their proportion of the population aged 65 and over are all above their respective regional and national average, with the exception of North and West Northamptonshire. Of the host authorities, South Holland and Melton have the highest proportion of residents aged 65 and over (24 per cent). This is marginally higher than the East Midlands (20 per cent) and the national average (19 per cent).

- In contrast, the working age population (aged 16-65) in all host authorities is lower or the same as their respective regional averages, and below the national average of 63 percent, except for West Northamptonshire which is higher at 64 percent. Of the host authorities, South Holland, South Kesteven and Melton have the lowest proportion of working age residents.
- The population aged under 16 for each of the host authorities only varies very minimally from the regional and national averages, North Northamptonshire has the highest percentage of young people at 20 per cent and South Holland and Melton have the lowest percentage of young people at 17 per cent.

Table 17.2 Population breakdown by Host Authority

Population breakdown	South Holland	South Kesteven	Melton	Harborough	North Northamptonshire	West Northamptonshire	East Midlands	England
Population (2021)	95,490	143,751	51,756	98,254	360,418	**426,707**	**4,881,559**	**56,554,891**
Population under 16 (%) (2021)	17	18	17	18	20	19	**18**	**19**
Population 16 - 64 (%) (2021)	59	59	59	60	62	64	**62**	**63**
Population aged 65 and over (%) (2021)	24	23	24	22	18	17	**20**	**19**

Economic Activity

17.5.12 The data in **Table 17.3** (Ref 17.8) sets out economic activity across the relevant host authorities, region and England. Key points are as follows:

- The average economic activity rates in South Holland and South Kesteven are broadly in line with the respective regional and national averages. The economic activity rates in Melton, Harborough and North and West Northamptonshire are higher than the regional and national averages.
- Unemployment rates in most host authority areas are broadly in line with the unemployment rates in their respective regional averages and the national average, except for in North and West Northamptonshire where unemployment rates are lower than the other host authorities as well as the regional and national averages.

Table 17.3 Economic Activity by Host Authority

Economic Activity	South Holland	South Kesteven	Melton	Harborough	North Northampton shire	West Northampton shire	East Midlands	England
Economic activity rate (%) (2021)	59	59	60	61	63	**63**	**58**	**58**
Unemployment rate (%) (2021)	4	4	3	3	2	**2**	**4**	**5**

Health Indicators

17.5.13 The data in **Table 17.4** below sets out health indicators for the host authorities. Key points are as follows:

- At the host authority level, the proportion of residents in most areas who consider their health to be 'not good' is broadly in line with the respective regional and national average. However, South Holland has a moderately higher proportion of people not in good health when compared to the East Midlands and England averages, Harborough has a moderately lower proportion of residents that consider their health to be 'not good'.
- The proportion of residents who are disabled under the Equality Act is higher in South Holland and South Kesteven compared to the regional and national averages but only minimally. The proportion of residents who are disabled under the Equality Act is lower compared to the regional and national averages in Harborough and West Northamptonshire but again, only marginally. It is notable that the averages in Harborough across three of the health indicators; general health, disability and Year 6 prevalence of obesity is moderately lower than the regional and national averages.
- It is also notable that the number of deaths reported from respiratory disease is quite considerably higher in North Northamptonshire in comparison to the figures reported for all other host authorities as well as the national and regional average.

Table 17.4 Health Indicators by Host Authority

Health indicators	South Holland	South Kesteven	Melton	Harborough	North Northampton shire	West Northampton shire	East Midlands	England
General Health-Not good (%) (2021) Ref 17.8	21	18	17	15	18	16	**19**	**18**
Disability (% under the	19	19	17	15	17	15	**18**	**17**

Health indicators	South Holland	South Kesteven	Melton	Harborough	North Northampton shire	West Northampton shire	East Midlands	England
Equality Act) (2021) Ref 17.8								
Year 6 prevalence of obesity (including severe obesity) (10-11 yrs) (2023/24) Ref 17.12	24.5	20.6	19	15.8	23.1	19.2	**22.1**	**22.1**
Deaths from Respiratory diseases, all ages (SMR) (2021-23) Ref 17.12	90.2	84.0	89.7	82.6	128.1	108.0	**104.2**	**106.3**
Life expectancy at birth (Male) (2021-23) Ref 17.12	78.5	79.9	80.0	81.0	78.7	79.4	**78.8**	**79.1**
Life expectancy at birth (Female) (2021-23) Ref 17.12	82.8	83.7	83.8	84.5	82.2	83.4	**82.6**	**83.1**

Index of Multiple Deprivation

17.5.14 The English Index of Multiple Deprivation (IMD) 2019 (Ref 17.9) measures relative levels of deprivation at different levels, for this baseline the focus has been on Local authority level. There are seven 'domains' of deprivation (income; employment deprivation; health deprivation and disability; education, skills and training deprivation; crime; barriers to housing and services; and living environment (comprising housing quality, air quality and road traffic accidents).

17.5.15 **Table 17.5** shows deprivation ratings for each host authority, for overall deprivation and the IMD domain that is considered most relevant to the health assessment. A score of 1 means an area is among the 10 per cent most deprived areas nationally, whilst a score of 10 means it is among the 10 per cent least deprived nationally.

17.5.16 As shown **Table 17.5**, all host authorities are within the 50 per cent least deprived areas nationally. Harborough is the least deprived in terms of overall deprivation and health deprivation with a score of 10 for both categories, therefore residents are in one of the 10 per cent least deprived areas nationally.

17.5.17 North Northamptonshire scores are the lowest for both measures, with a score of 5 for overall deprivation and 4 for health deprivation.

Table 17.5 Index of Multiple Deprivation (2019) by Host Authority

IMD (2019)	South Holland	South Kesteven	Melton	Harborough	North Northamptonshire	West Northamptonshire
Overall deprivation (Rank of average score)	6	8	8	10	5	7
Health deprivation (Rank of average score)	6	7	8	10	4	7

Vulnerable Groups

17.5.18 The term 'vulnerable groups' refers to groups of individuals who are made vulnerable by the situations and environments they are exposed to (as opposed to any inherent weakness or lack of capacity). The Wales Health Impact Assessment Support Unit (WHIASU) Health Impact Assessment guidance (Ref 17.16), widely applied to assessments outside of Wales, and the ISEP guidance on Effective Scoping of Human Health in EIA (2022) (Ref 17.2) include checklists for identifying the health determinants and vulnerable groups relevant to the health and wellbeing assessment being undertaken. The WHIASU and ISEP guidance documents have been used to inform **Table 17.6**, this includes groups of people who may be more likely to be exposed to a change in a health determinant, or to experience health effects as a result of exposure. Consideration of vulnerable groups takes into account:

- how an impact on a health determinant is shown (in scientific literature) to affect a particular section of the community;
- whether the affected community is already facing existing deprivation (social, economic or environmental) that could serve to intensify or change the impact(s) of the Project; and
- characteristics such as age, health conditions, or other physical or mental characteristics that make people more likely to be exposed to adverse impacts resulting from the Project.

Table 17.6 Vulnerable Groups

Vulnerable Group	Social receptors in the Study Area	Description of Vulnerabilities
Children and adolescents	Schools, nurseries, parks and open spaces, community resources.	Children and adolescents are more likely to be pedestrians and require freedom to move between their home, school, and recreational activities. Children and adolescents lack the experience and judgment of adults whilst interacting with traffic and public spaces, due to failure to perceive danger or impulsiveness. Children are more vulnerable than adults to air pollution, noise, odour and other environmental factors, as their immune systems are still developing, with their bodies less able to deal with them or inform them when something is wrong. Children living in deprived areas are particularly susceptible to environmental pollutants as deprived communities in England experience higher emissions of air pollutants than those in more well-off communities.
Older people	Parks and open spaces, community resources, residential areas, bus stations and public footpaths.	As people age, movement and reactions generally become slower and hearing loss becomes more likely. Older people can be more at risk from injury. They may also fear falls and be more anxious about crossing the road safely or moving about the neighbourhood in general. This may lead to barriers to some older people participating in outdoor activities, especially walking, which can adversely affect health. Older people are generally more reliant on health and social care services and other social infrastructure. They are less likely to drive and therefore more likely to be pedestrians or to use public transport. Therefore, this group is more vulnerable to effects on transport and access.
Low-income groups and people who are unemployed and/or have low skills and qualifications	Parks and open spaces, social housing, community resources, residential areas, bus stations, social care facilities, local businesses and public footpaths.	People on low income are more likely to experience poor health because they have fewer resources available to them to stay healthy and experience more stress, which impacts health. Employment is known to have a positive health benefit and therefore unemployed people are more likely to experience poor physical and mental health, this group are more likely to use services in their local area including local businesses (especially shops) and community facilities.
People with poor health status or who are disabled	Parks and open spaces, healthcare facilities, residential areas, footpaths and public realm, bus	Disabled people and those with poor health status are likely to be more vulnerable to changes in health determinants. For example, adverse changes in air quality are more likely to impact a person who is

Vulnerable Group	Social receptors in the Study Area	Description of Vulnerabilities
	stops and social care facilities.	chronically ill with impaired lung function, or a person who has asthma. Noise can cause hypertension and cardio-vascular problems. People who already have these conditions can therefore be more impacted by increased in noise. Additionally, people with developmental and behavioural special needs are likely to have a greater sensitivity to noises and are also likely to be more impacted by increases in noise. People with poor physical or mental health, including anxiety and depression, are likely to be more sensitive to changes in their local environment. Disabled people and those with poor health status are generally more reliant on social care services and other social infrastructure. They are less likely to drive and therefore more likely to be pedestrians or to use public transport services. Therefore, this group is vulnerable to effects on transport and access.
Homeless people	Parks and open spaces, healthcare facilities, footpaths, public realm and bus stops.	People who have experienced homelessness are more likely to have poor physical and mental health compared to the general population. People with no fixed residence are likely to be impacted by changes in footfall to local public spaces such as parks, as well as sheltered areas such as footpaths. People without consistent shelter are more exposed to environmental elements such as poor air quality and noise. Additionally, unhoused people are likely to be more reliant on community facilities and more vulnerable to disruptions in provision of services.
People with drug and/or alcohol addiction	Parks and open spaces, healthcare facilities, footpaths, public realm and bus stops.	People with drug or alcohol addiction are more likely to be homeless when compared to the general population. Drug and alcohol dependence is associated with poor health outcomes and increased mortality, indicating that as a population, they are more sensitive to negative impacts on health determinants.

Healthcare and social infrastructure

17.5.19 The baseline text in **Chapter 16 Socio-economic, Recreation and Tourism** makes reference to healthcare and social infrastructure receptors and **Figure 16.2 Socio-economic, Tourism and Recreation Receptors** includes health and social infrastructure located within 500 m of the Scoping Boundary, as well as all relevant receptors for the Health and Wellbeing assessment including (but not limited to) education, health and community receptors**.**

17.5.20 Further health care and social infrastructure receptors may be identified within the Study Area following the use of additional Geographic Information Systems (GIS) data, desk-top research and engagement with relevant stakeholders. These will be reported in the ES.

Promoted recreational routes

17.5.21 National Cycle Network routes (NCN), the local cycle network, long-distance paths and national trails have been identified in the Study Area. These are shown in **Figure 16.2 Socio-economic, tourism and recreation receptors**. **Chapter 16 Socio-economics, Recreation and Tourism** considers potential disruption to users of recreational routes including Public Rights of Way (PRoW). The health and wellbeing assessment will focus primarily on effects on promoted recreational routes which is a subset of these. Further information can be found in **Chapter 13 Traffic and Transport,** which includes a baseline of PRoW within the Study Area in **Figure 13.1 Baseline Transport network**.

Open space

17.5.22 The Study Area comprises large areas of agricultural land or open countryside interspersed by settlements. Open spaces within the Study Area are shown in **Figure 16.2 Socio-economic, tourism and recreation receptors**.

17.5.23 Open spaces have been identified using the Ordnance Survey (OS) Open Greenspace dataset (Ref 17.15), which is a dataset of open greenspaces in urban and rural areas including playing fields, sports' facilities, play areas and allotments. The data set includes both designated open spaces and undesignated open spaces, desk-based analysis will determine which are publicly accessible for the purposes of the health and wellbeing assessment. **Table 16-13** in **Chapter 16 Socio-economics, Recreation and Tourism** lists open spaces within the Scoping Boundary and within 500 m of the Scoping Boundary.

Future Baseline

17.5.24 The future baseline relates to known or anticipated changes to the current baseline in the future which would arise in the absence of the Project.

17.5.25 **Table 17.7** sets out ONS population projection data (Ref 17.17) for mid-2032 using the year 2022 as a baseline. A 10-year period is considered an appropriate timeframe for establishing a future baseline population dataset as it provides a balanced view of demographic trends while maintaining forecasting reliability, particularly as it also aligns with the proposed Project timeline. Key points are as follows:

- Projected population change is the result of assumptions about future births, deaths and migration, known as components of population change. At the local authority level, population change is influenced by many other factors, such as economic development and housing policies. The population of England is projected to increase by 6.4% between mid-2022 and mid-2032, from 57.1 million in mid-2022 to 60.8 million in mid-2032.
- Between mid-2022 and mid-2032 the population is projected to increase across all regions as well as in 302 of the 309 local authorities in England (based on 2021 boundaries).

- All host authorities will experience population growth. Harborough is projected to see the greatest overall population growth at 14.4 per cent, which is notably higher than the projected population increase for England overall, at 6.4 per cent.

17.5.26 **Table 17.7** shows that in 2032, the percentage growth in the population aged 65 and over in all host authorities is expected to rise. However, growth is at a lower rate than for overall population growth projected for each host authority and overall, for the East Midlands and England in 2032.

17.5.27 As of 2022, around 19.7 per cent of the East Midlands population was aged 65 and over, by 2032, this proportion is expected to increase to over 22 per cent, reflecting the national trend of an ageing population.

17.5.28 The same cannot be said for population growth for young people aged 15 and under, there will be a small decrease in the percentage of young people in the population in all host authorities. However, the level of decrease for all is lower for all host authorities than for the region and England overall.

17.5.29 In 2022, approximately 18.1 per cent of the East Midlands population was aged 15 and under. In 2032 it is expected that there will be a -3.4 per cent decrease in young people due to lower birth rates and a larger share of the population shifting into older age groups.

Table 17.7 Population projections for 2022-2032

Population projections	South Holland	South Kesteven	Melton	Harborough	North Northamptonshire	West Northamptonshire	East Midlands	England
Population growth (%)	10.1	4.8	5.2	14.4	6.9	6.8	**6.8**	**6.4**
Population growth 65+ (%)	1.3	2.5	3.1	1.5	1.2	1.1	**2.3**	**1**
Population growth 0-15 (%)	-1.7	-2.7	-2.5	-1.4	-2.6	-2.4	**-3.4**	**-5.9**

17.6 Design and Control Measures

Design Measures

17.6.1 Health and wellbeing will be taken into consideration as part of the iterative design and development of the Project to avoid adverse effects on population health as far as reasonably practicable, enhance potential beneficial effects, and mitigate any potential significant adverse effects on health and wellbeing. The emerging preferred corridor on which the Scoping Boundary has been based has been located to avoid sensitive health features as far as practicable, such residential properties.

17.6.2 The design of the Project will be compliant with the guidelines and policies relating to EMFs stated in National Policy Statement (NPS) EN-5 (Ref 17.13), the main component of which are the International Commission on Non-Ionizing Radiation Protection guidelines (1998) (Ref 17.14).

Control and Management Measures

17.6.3 A range of standard measures for the Project will be adopted throughout the duration of the construction phase. An **Initial Outline Code of Construction Practice** (CoCP) is provided in **Appendix 4A.** Measures relevant to the control and management of impacts that could affect health and wellbeing include (refer to **Appendix 4A** for the full description of each measure):

- GG04 – on employment of Environmental Managers and Environmental Clerks of Works during construction to ensure requirements are met and good practice implemented.
- GG07 – on requirement for the development of management plans to secure mitigation measures.
- GG12 - on locating activities that could cause potential nuisance away from sensitive receptors.
- GG27 - on engagement with the community and local businesses.
- AS03 – on maintaining access to and from residential, commercial, community and agricultural land uses.
- S01 - on environmental training of construction workers.
- S02 – on management of PRoWs and recreational routes crossing working areas.

17.7 Potential for Significant Effects

17.7.1 The health and wellbeing assessment will consider the construction, operation and maintenance of the Project. A description of each of these stages is set out in **Chapter 4 Description of the Project**. The potential for significant effects and the inclusion (Scoped in) or exclusion (Scoped out) of matters in the scope of the health and wellbeing ES assessment is set out below and has been determined using the approach described in **Chapter 5 EIA Approach and Methodology.**

17.7.2 The potential for the Project to result in the likely significant effects identified below takes into account the embedded design, and control and management measures described in Section 17.6.

17.7.3 **Table 17.8** identifies the sources of potential impacts on receptors identified in the baseline that could result in a significant effect. Where an impact could give rise to potentially significant effects on population health, these are then scoped into the ES. Impact pathways that are unlikely to give rise to significant effects on receptors identified in the Study Area are proposed to be scoped out of the ES.

Table 17.8 Impacts, receptors and the potential for significant effect

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
Construction	The demands of the construction of the Project leading to an increase in temporary employment due to the need for a construction workforce.	Increased employment for the construction workforce.	Wider study area population	**Yes** – increased employment, income and training opportunities for communities in the wider study area leading to potential positive effects on population health and wellbeing.	**Scoped in**
Construction	Construction activities and traffic.	Potential temporary changes in neighbourhood amenity due to noise, air emissions, visual impacts and increased traffic movements.	Local residents	**Yes –** changes to people's feelings about their local environment, affecting quality of life, mental and physical health.	**Scoped in**
Construction	Potential temporary and permanent closure or diversions of promoted recreational routes and PRoW and impacts on the amenity value of these routes.	Potential reduced opportunities for access for physical activity, and increased severance.	Local residents and users of promoted recreational routes and PRoW	**Yes –** potential reduction in mental and physical health benefits gained from use of promoted recreational routes, at a population level.	**Scoped in**

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
Construction	Construction activities, use of land for construction of the Project.	Potential temporary and permanent land take leading to changes in access to open space.	Local residents and users of open spaces	**Yes** – potential reduction in mental and physical health benefits associated with access to open space.	**Scoped in**
Construction	Use of land for construction of the Project.	Potential temporary and permanent land take affecting residential properties, community facilities and businesses.	Local residents, users of community facilities and owners/operators of businesses	No **-** the construction of the Project will be undertaken so as to avoid temporary or permanent land take affecting residential properties, community facilities and businesses. On this basis, significant effects are not likely to occur.	Scoped out
Construction	Construction traffic	Increased journey times affecting access to community facilities	Local residents	No - disruption due to construction traffic will be localised and temporary and not likely to affect access at population level. Significant effects are not likely to occur.	Scoped out
Construction	Project planning and public consultation	Uncertainty and stress relating to the actual and perceived impacts	Local residents	**Yes-** potential reduction in mental health associated with uncertainty and stress	**Scoped in**

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
		on local communities from construction and operation of the Project		relating to the Project during the pre-construction period.	
Construction	Construction activities.	Potential for soil and water contamination due to the emission of harmful substances.	Local residents and owners/operators of businesses	No - the construction of the project will comply with legally required standards to minimise the risk of exposure of the population to harmful substances. Pollution control measures are included in **Appendix 4A Initial Outline CoCP**. Significant effects are not likely to occur.	Scoped out
Operation and Maintenance	The demands of the operation and maintenance of the Project leading to an increase in permanent employment	Increased employment for the operational and maintenance workforce.	Wider study area population	No – For a project of this nature and scale, it is unlikely that there will be increased employment, income and training opportunities for communities in the wider study area during operation at a level to have a population wide effect.	Scoped out

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
				Significant effects are not likely to occur.	
Operation and Maintenance	Potential permanent closure or diversions of promoted recreational routes and PRoW	Potential reduced opportunities for access for physical activity, and increased severance.	Local residents and users of PRoW	No - for this Project, there will be no permanent closures or diversions of promoted recreational routes and PRoW during operation and maintenance that would lead to a reduction in mental and physical health benefits gained from use of these, at a population level. Significant effects are not likely to occur.	Scoped out
Operation and Maintenance	Use of land for operation of the Project.	Potential permanent land take leading to changes in access to open space.	Local residents and users of open spaces	No - due to the nature and scale of the Project, it is unlikely that there will be permanent changes to access to open space during operation and maintenance that would lead to a reduction in mental and physical health benefits associated with access to open	

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
				space. Significant effects are not likely to occur.	
Operation and Maintenance	Use of land for the operation of the Project.	Potential for permanent land take affecting residential properties, community facilities and businesses.	Local residents and owners/operators of businesses	No - the operation and maintenance of the Project will avoid land take affecting residential properties, community facilities and businesses. On this basis, significant effects are not likely to occur.	Scoped out
Operation and Maintenance	Potential permanent changes to the local environment due to presence of the Project.	Potential permanent changes in neighbourhood amenity due to noise, and visual impacts.	Local residents within 500 m of Scoping Boundary	**Yes –** changes to people's feelings about their local environment, affecting quality of life, mental and physical health.	**Scoped in**
Operation and Maintenance	Electromagnetic fields generated by operation of high voltage power lines.	Potential permanent impacts associated with the generation of EMFs	Local residents	No - 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	Scoped out

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
				Protection guidelines for electric and magnetic fields (EMFs) and associated precautionary policy. An EMF report will be prepared as part of the Project. This is separate to the EIA process. A summary of the EMF report will be provided in the ES.	
Operation and Maintenance	Electromagnetic fields generated by operation of high voltage power lines	Uncertainty and stress relating to the perceived impacts of the generation of EMFs.	Local residents	**Yes -** potential reduction in mental health associated with uncertainty and stress relating to the perceived impacts of the generation of EMFs.	**Scoped in**
Operation and Maintenance	Operation and maintenance activities	Potential for soil and water contamination due to the emission of harmful substances.	Local residents and owners/operators of businesses	No - the operation and maintenance of the project will comply with legally required standards to minimise the risk of exposure of the population to harmful substances.	Scoped out

Project phase	Source	Impact	Receptor	Potential for significant effect	Proposed to be scoped in/out
Operation and Maintenance	Existence and operation of new infrastructure	Permanent provision of wider societal infrastructure and resources leading to improvements in the determinants of health.	Local residents and owners/operators of businesses	**Yes -** contribution to improved energy infrastructure leading to potential positive effects on population health and wellbeing.	**Scoped in**
Operation and Maintenance	Prescence of new infrastructure in the landscape	Change to visual amenity of the countryside.	Local residents and visitors to the countryside	**Yes -** potential reduction in the wellbeing benefits of the use of countryside and open space	**Scoped in**

17.8 Proposed Assessment Methodology

Proposed Data Sources

17.8.1 In addition to the data sources listed in paragraph 17.5.1, further information may be identified as a result of engagement with health sector stakeholders and communities.

Proposed Assessment Methodology

17.8.2 The following section summarises the methodology proposed to be used for the health and wellbeing assessment which builds on the general assessment methodology presented in **Chapter 5 EIA Approach and Methodology** and the ISEP guidance for the assessment of significance for health effects (Ref 17.3).

17.8.3 The assessment of likely significant health effects will follow ISEP's guidance on *"Determining Significance for Human Health in Environmental Impact Assessment"* (2022) (Ref 17.1.3). Certain principles apply in all cases, including applying a population health approach (i.e. entire groups of people as opposed to the heath of individuals), considering effects on health inequalities and vulnerable groups, and giving parity to mental and physical health. The assessment will apply the World Health Organisation's definition of health as 'a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity'.

17.8.4 The ISEP guidance provides indicative criteria to inform judgements of the significance of health effects, based on the magnitude of impacts on health and the sensitivity of the receptor population. It recommends that the use of these terms is supported by a narrative explaining the rationale for the assessment.

17.8.5 The health and wellbeing assessment will include:

- Policy review: a review of the relevant national and local health policy context.
- Baseline conditions: a profile of the local community will be compiled using publicly available baseline data, focusing on population demographics, socio-economic status and health indicators.
- Evidence review: a review of publicly available evidence will be undertaken to identify links between the determinants of health, and potential health outcomes.
- Consultation: discussions with health-sector consultees regarding specific local health issues and priorities, preliminary findings of the health assessment and potential mitigation or enhancement measures.
- Review of public consultation feedback: identify key health issues and concerns raised by local communities in relation to the construction and operation of the proposed development.
- Assessment of health effects: qualitative professional judgement based on magnitude of the impact and sensitivity of the receptor population, drawing on baseline information and findings from relevant topic assessments. Includes consideration of health inequalities and vulnerable groups.
- Mitigation and enhancement: identify measures to be embedded into the Project to reduce adverse health effects and improve health outcomes.

- Feedback into design: assess residual health effects and identify additional mitigation measures where appropriate.

Sensitivity

17.8.6 The sensitivity of health effects is driven by a number of indicative factors, which are set out below and are based on guidance set out in ISEP guidance (Ref 17.2). A potential health effect may not meet all of the criteria in a particular category or may exhibit criteria across two or more categories. Therefore, justification for the selection of the sensitivity criteria detailed in **Table 17.9** will be provided in the ES.

Table 17.9 Sensitivity of receptors

Value/Sensitivity	Description
High	• high levels of deprivation (including pockets of deprivation); • reliance on resources shared (between the population and the project); • existing wide inequalities between the most and least healthy; • a community whose outlook is predominantly anxiety or concern; • people who are prevented from undertaking daily activities; • dependants; • people with very poor health status; and/or • people with a very low capacity to adapt.
Medium	• moderate levels of deprivation; • few alternatives to shared resources; • existing widening inequalities between the most and least healthy; • a community whose outlook is predominantly uncertainty with some concern; • people who are highly limited from undertaking daily activities; • people providing or requiring a lot of care; • people with poor health status; and/or • people with a limited capacity to adapt.
Low	• low levels of deprivation; • many alternatives to shared resources; • existing narrowing inequalities between the most and least healthy; • a community whose outlook is predominantly ambivalence with some concern; • people who are slightly limited from undertaking daily activities; • people providing or requiring some care; • people with fair health status; and/or • people with a high capacity to adapt.
Very Low	• very low levels of deprivation; • no shared resources;

Value/Sensitivity	Description
	• existing narrow inequalities between the most and least healthy; • a community whose outlook is predominantly support with some concern; • people who are not limited from undertaking daily activities; • people who are independent (not a carer or dependant); • people with good health status; and/or • people with a very high capacity to adapt.

Magnitude

17.8.7 Magnitude of impact is driven by a number of indicative factors, which are set out in **Table 17.10** and are based on guidance set out in ISEP guidance (Ref 17.2). A potential health effect may not meet all of the criteria in a particular category or may exhibit criteria across two or more categories. Therefore, justification for the selection of magnitude criteria will be provided in the ES.

Table 17.10 Magnitude of impact

Magnitude	Description
High	• high exposure or scale; • long-term duration; • continuous frequency; • severity predominantly related to mortality or changes in morbidity (physical or mental health) for very severe illness/ injury outcomes; • majority of population affected; • permanent change; and/or • substantial service quality implications.
Medium	• low exposure or medium scale; • medium-term duration; • frequent events; • severity predominantly related to moderate changes in morbidity or major change in quality-of-life; • large minority of population affected; • gradual reversal; and/or • small service quality implications.
Low	• very low exposure or small scale; • short-term duration; • occasional events; • severity predominantly related to minor change in morbidity or moderate change in quality-of-life; • small minority of population affected; • rapid reversal; and/or

Magnitude	Description
	• slight service quality implications.
Negligible	• negligible exposure or scale; • very short-term duration; • one-off frequency; • severity predominantly relates to a minor change in quality-of-life; • very few people affected; • immediate reversal once activity complete; and/or • no service quality implication.

Significance of effects

17.8.8 Effects resulting from construction, operation or maintenance of the Project will be defined as follows:

- **No Significant Effect (neutral or minor):** a receptor may be affected by the Project, but changes to health determinants would not affect population health.
- **Significant Beneficial Effect (moderate or major):** there may be positive changes to health determinants that would bring significant population health benefits.
- **Significant Adverse Effect (moderate or major):** Changes to health determinants would bring significant population health disbenefits.

17.8.9 ISEP guidance (Ref 17.3) recommends using a matrix, as shown in **Table 17.11** below, to guide the assessment of significance.

17.8.10 Where an effect is identified the assessment of significance will be informed by considering the sensitivity of the receptor (**Table 17.9**) and the magnitude of the impact (**Table 17.10**).

17.8.11 The general approach adopted for classifying effects considering the sensitivity of the receptor and the magnitude of an impact is outlined in **Table 17.11.**

Table 17.11 Determination of significance matrix

		Value/Sensitivity of Receptor				
		Very high	**High**	**Medium**	**Low**	**Negligible**
Magnitude of Impact	**Large**	Major	Major/ moderate	Major/moderate/ minor	Moderate/ minor	Minor/ negligible
	Medium	Major/moderate	Major/ moderate	Moderate/minor	Minor/ negligible	Negligible
	Small	Major/moderate/ minor	Moderate/ minor	Moderate/minor	Minor/ negligible	Negligible
	Negligible	Minor/negligible	Minor/ negligible	Minor/negligible	Negligible	Negligible

17.8.12 Major and moderate effects are typically classed as **significant**, whilst minor and negligible effects are typically classed as **not significant**. The assessment matrix is a tool to assist with professional judgement; there are no defined cut-off points between the categories, and no guidance on which score should be assigned where the matrix provides alternatives. As set out in the ISEP guidance, this is an informed professional judgement of the importance, desirability or acceptability of a change in population health.

17.9 Assumptions and limitations

17.9.1 The health and wellbeing assessment will be qualitative and based on professional judgement, taking into account relevant information such as baseline data, impacts identified by other assessment topics and scientific evidence relating to health determinants and outcomes.

17.9.2 Baseline data is subject to a time lag between collection and publication. As with any dataset, these conditions may be subject to change over time, which may influence the findings of the assessment. It is assumed that the data collated is accurate.

17.9.3 The health and wellbeing assessment is reliant on information from other topics and as such the assumptions and limitations of these topics may also apply to the health and wellbeing assessment.

17.10 Conclusion

17.10.1 This scoping chapter has outlined relevant legislation, policy and guidance in relation to the health and wellbeing assessment for the Project. The data sources that will be used to define the current and future baselines have been presented, and the impact control and management measures that will be implemented. The potential for significant effects has been identified, as well as the associated source, impact and receptors as reported in **Table 17.8**.

17.10.2 A summary of the proposed scope of the assessment is provided in **Chapter 20 Summary**.

References

Ref 17.1 World Health Organisation (2021). Health Promotion Glossary of Terms 2021 [online]. Available at: https://www.who.int/publications/i/item/9789240038349 [Accessed July 2025]

Ref 17.2 Pyper, R., Lamming, M., Beard, C., Waples, H., Birley, M., Buroni, A., Douglas, M., Turton, P., Hardy, K., Netherton, A., McClenaghan, R., Barratt, T., Bhatt, A., Fenech, B., Dunne, A., Hodgson, G., Gibson, G., Purdy, J., Cave, B. (2022) Institute of Environmental Management and Assessment Guide: Effective Scoping of Human Health in Environmental Impact Assessment. [online]. Available at: https://www.iema.net/resources/blog/2022/11/17/launch-of-the-eia-guidance-forconsidering-impacts-on-human-health [Accessed July 2025].

Ref 17.3 Pyper, R., Waples, H., Beard, C.,Barratt, T., Hardy, K., Turton, P., Netherton, A., McDonald,J., Buroni, A., Bhatt, A., Phelan, E., Scott, I., Fisher, T.,Christian, G., Ekermawi, R., Devine, K., McClenaghan, R.,Fenech, B., Dunne, A., Hodgson, G., Purdy, J., Cave, B. (2022). Institute of Environmental Management and Assessment Guide: Determining Significance for Human Health in Environmental Impact Assessment. [online] Available at: https://www.academia.edu/98691691/IEMA_Guides_to_Effective_Scoping_of_Human_Health_in_Environmental_Impact_Assessment_and_Determining_Significance_For_Human_Health_In_Environmental_Impact_Assessment [Accessed July 2025]

Ref 17.4 Highways England (2020). Design Manual for Roads and Bridges Document LA112 [online]. Available at: https://nationalhighways.co.uk/suppliers/design-standards-andspecifications/design-manual-for-roads-and-bridges-dmrb/ [Accessed July 2025].

Ref 17.5 Cave, B. Fothergill, J., Pyper, R., Gibson, G. and Saunders, P. (2017). Health in Environmental Impact Assessment: A Primer for a Proportionate Approach. Ben Cave Associates Ltd, Institute of Environmental Management and Assessment and the Faculty of Public Health. [online] Available at: https://www.iema.net/downloaddocument/7010 [Accessed 20 December 2023].

Ref 17.6 Public Health England (2019). Public Health England Strategy 2020 to 2025 [online]. Available at: https://www.gov.uk/government/publications/phe-strategy-2020-to-2025 [Accessed July 2025].

Ref 17.7 Public Health England (2020). Advice on the Content of Environmental Statements accompanying an Application Under the Nationally Significant Infrastructure Planning Regime [online]. Available at: https://khub.net/documents/135939561/390856715/Advice+on+the+content+of+environmental+statements+accompanying+an+application+under+the+Nationally+Significant+Infrastructure+Planning+Regime.pdf/a86b5521-46cc-98e4-4cadf81a6c58f2e2?t=1615998516658 [Accessed July 2025]

Ref 17.8 Office of National Statistics (2022). Census 2021 [online]. Available at: https://www.ons.gov.uk/census [Accessed July 2025].

Ref 17.9 Department for Levelling Up, Housing and Communities, (2019). English Indices of Deprivation 2019. [online] Available at: https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019 [Accessed 21 Jul. 2025]

Ref 17.10 Office for Health Improvement and Disparities (2019). Local Health [online]. Available at: https://www.gov.uk/government/collections/local-health-public-healthdata-andmapping-tool-for-small-areas [Accessed July 2025].

Ref 17.11 Sustrans' Open Data Portal. Available at: https://data-sustrans-uk.opendata.arcgis.com/ (Accessed: July 2025)

Ref 17.12 Public Health England (2022). Public Health Profiles [online]. Available at: https://fingertips.phe.org.uk/ [Accessed July 2025]

Ref 17.13 Department for Energy Security & Net Zero (2024). National Policy Statement for Electricity Networks Infrastructure (EN-5) [online]. Available at: https://assets.publishing.service.gov.uk/media/65a78a5496a5ec000d731abb/npselectricity-networks-infrastructure-en5.pdf [Accessed July 2025].

Ref 17.14 International Commission on Non-Ionising Radiation Protection (1998) Guidelines for Limiting Exposure to Time-Varying Electric, Magnetic and Electromagnetic Fields. Health Physics, 74(4) [Accessed July 2025]

Ref 17.15 Ordnance Survey (2025) OS Open Greenspace. Available at: https://www.ordnancesurvey.co.uk/products/os-open-greenspace (Accessed: 18 September 2025)

Ref 17.16 Wales Health Impact Assessment Support Unit, “Health Impact Assessment - A practical guide,” 2021. [Online]. Available: https://phwwhocc.co.uk/wp-content/uploads/2020/07/Health-Impact-Assessment-A-Practical-guide.pdf. [Accessed September 2025]

Ref 17.17 Office for National Statistics (2025) Subnational population projections for England: 2022-based. Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/bulletins/subnationalpopulationprojectionsforengland/2022based (Accessed: July 2025)

18. Climate Change

nationalgrid

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18. Climate Change

18.1 Introduction

18.1.1 This chapter presents how the climate change assessment will consider the potential likely significant effects on climate change receptors that may arise from the construction, maintenance and operation of the Project (as described in **Chapter 4, Description of the Project**). It identifies the climate receptors of relevance and sets out the methodology and datasets to be used within the assessment, presents an overview of the baseline conditions, and identifies the potential likely significant effects to be considered within the assessment, and how these will be assessed in the Environmental Statement (ES). As detailed in **Chapter 4, Description of the Project**, the decommissioning of the Project has been scoped out of the environmental assessment.

18.1.2 The area considered in this report is the Scoping Boundary as illustrated on **Figure 1.2 Scoping Boundary**.

18.1.3 The Project will directly support the government's identified critical national priority (CNP) for the provision of nationally significant low carbon infrastructure, as identified in National Policy Statement (NPS) EN-1 (Ref 18.1) in that it will contribute towards greater efficiency in constructing, operating and connecting low carbon infrastructure to the National Electricity Transmission System, as discussed in **Chapter 4, Description of the Project**, Section 4.5.1.

18.1.4 This chapter should be read in conjunction with the following chapters which provide the Project context and approach to EIA:

- **Chapter 2 Regulatory and Planning Policy Context**;
- **Chapter 3 Main Alternatives Considered**;
- **Chapter 4 Description of the Project**; and
- **Chapter 5 EIA Approach and Methodology**.

18.1.5 There may be interrelationships with other disciplines. Therefore, this chapter should also be read in conjunction with the following chapters:

- **Chapter 8 Ecology and Biodiversity** – outputs from the biodiversity assessment and biodiversity net gain report will be used in the land use Greenhouse Gas (GHG) assessment;
- **Chapter 10 Water and Environment** – vulnerability of the Project to projected future flooding is considered as part of the analysis in this chapter;
- **Chapter 13 Traffic and Transport** – GHG calculations may use outputs from the traffic and transport assessment; and
- **Chapter 14 Air Quality** – there is a strong relationship between GHG emissions and air quality, similar inputs will be used in the assessment.

18.1.6 This chapter is supported by **Appendix 18A Climate Change Resilience Screening Assessment**.

18.2 Legislation, Policy and Guidance

18.2.1 **Chapter 2 Regulatory and Planning Policy Context** describes the overall regulatory and planning policy context for the Project. Key legislation, policy, and planning guidance relevant to the assessment of potential effects on climate change associated with the construction, operation, and maintenance of the Project is provided in **Chapter 2 Regulatory and Planning Policy Context, Appendix 2A Key Legislation, Appendix 2B National and Regional Planning Policy** and **Appendix 2C Local Policy.**

18.2.2 Relevant guidance and standards, along with other relevant material, that have informed the scoping process are listed below and will also be accounted for as part of the ES assessment:

- The Institute of Sustainability and Environmental Professionals (ISEP) Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance (Ref 18.1);
- The Publicly Available Specification 2080 (PAS 2080:2023) on carbon management in infrastructure, a global standard for managing infrastructure carbon (Ref 18.3); and
- Department for Energy Security and Net Zero Emission Conversion Factors 2023 (Ref 18.4).

18.3 Consultation and Engagement

18.3.1 Given the nature of the Project and its direct contribution towards supporting the UK's net zero target by connecting low carbon infrastructure to the National Electricity Transmission System, no specific future engagement is currently planned for climate change over and above that proposed as part of statutory consultation. Engagement will be undertaken with non-statutory stakeholders as required to ensure that specialist local views and expertise can be considered as part of the ES.

18.3.2 In preparing this Scoping Report chapter, consideration has been given to stakeholder feedback received following Non-Statutory Consultation held between 11 June and 6 August 2025, as set out in **Table 18.1.**

Table 18.1 Engagement with Stakeholders

Stakeholder	Summary of response	Consideration in the Scoping Report
Environment Agency	The climate change allowance which must be used when assessing floodplain compensation has also changed. The appropriate allowance to assess off-site impacts and calculate floodplain storage	Climate change allowance is a parameter that will be accounted for in the PEIR and ES stage through a Flood Risk Assessment (FRA) as outlined in **Chapter 10 Water and Environment**.

Stakeholder	Summary of response	Consideration in the Scoping Report
	compensation depends on the land uses in affected areas	

18.4 Study Area

18.4.1 The Study Area for the GHG assessment considers GHG emissions arising over the lifecycle of the Project and will be refined for the assessment in the PEIR and ES.

18.4.2 The spatial scope of GHG emissions accounting includes direct emissions arising from pre-construction, construction, operation and maintenance within the Order Limits (to be defined in the ES), and indirect emissions resulting from activities associated with the pre-construction, construction, operation and maintenance activities outside of the Order Limits (such as the transport network utilised for material transport, and the embodied carbon associated with the relevant construction materials).

18.4.3 When interpreting the requirements of the EIA regulations it is necessary to consider the judgment of the Supreme Court in R (on the application of Finch on behalf of the Weald Action Group) v Surrey County Council with particular attention to potential upstream and downstream direct and indirect effects (Ref 18.4). The principles set out in the Finch case have therefore been considered when considering the scope of this assessment.

18.4.4 In the Finch case it was possible to assess the likely downstream impacts because it was inevitable that the oil produced as part of the scheme would be refined and undergo combustion releasing GHG emissions into the atmosphere. This Project would increase capacity in the electricity network, in theory allowing more electricity to be transported and used and more electricity to be generated. However, it is not considered that this Project, as electricity transmission infrastructure, will be the direct or indirect cause of either upstream electricity generation or downstream electricity consumption. Rather, the Project will facilitate the transport of electricity on the network in response to Government policy. Furthermore, it is not considered possible to calculate the upstream or downstream direct or indirect effects. The mix of electricity generation sources cannot be known at the time of undertaking the EIA and will likely change over time, especially in relation to Government policy on decarbonisation of the energy sector. In addition, generation sources of electricity entering the network will likely be varied and subject to their own carbon assessments.

18.4.5 The temporal Study Area is also an important aspect of the GHG assessment because of the diminishing nature of the carbon budgets up to 2050. The temporal boundary for GHG assessment constitutes the construction phase (assumed to commence in 2030 for a duration of approximately four years) and the operational phase (assumed to be 80 years from 2034).

18.4.6 It is unusual for elements of National Grid's transmission system to be decommissioned and the site reinstated. In general, assets will be replaced towards the end of an assets design life (which will vary depending on the asset and the asset condition throughout its operational life).

18.5 Baseline Conditions

18.5.1 This section of the Chapter comprises an overview of the baseline conditions for the GHG assessment, to establish the type and nature of potentially significant effects.

Data Sources

18.5.2 The information to inform the GHG assessment will be from a combination of Project specific information available at the current design stage alongside publicly available industry benchmarks that can be used to provide a preliminary estimate of life cycle GHG emission impacts. The following data sources are proposed to be used to inform the GHG assessment:

- Bill of material quantities (estimated breakdown of construction materials by volume).
- Construction programme.
- Estimated fuel/energy use for construction activities.
- Number of construction workers on site per day.
- Estimated volumes of earthworks cut/fill.
- Estimated volumes of construction waste and method of disposal.
- Land use change.
- Maintenance regimes.

18.5.3 More detailed information will be obtained and reported in the PEIR and ES.

18.5.4 The GHG emissions for the Project will be calculated by converting 'activity' data into carbon emissions through the application of referenced typical emissions conversion factors widely used within the industry. Section 18.8 contains further detail on the assessment methodology. The emissions factors used in the assessment will be informed by the following data sources:

- Greenhouse Gas Reporting: Conversion Factors (published annually by UK Government) (Ref 18.6);
- Inventory of Carbon and Energy database v4 (Ref 18.7); and
- Valuation of energy use and GHG emissions for appraisal: supplementary guidance to the HM Treasury Green Book on Appraisal and Evaluation in Central Government (Ref 18.4).

18.5.5 Data of appropriate quality to satisfy the goal and scope of the assessment will be used. Where limited data is available, for example, due to the fact that some details of the Project may not have been confirmed and where flexibility is required to address uncertainty, appropriate assumptions or benchmarks will be used.

Baseline

18.5.6 The Scoping Boundary has been divided into five Sections as described in **Chapter 4, Description of the Project** and shown in **Figure 1.2 Scoping Boundary**. The Sections are based on the administrative boundaries of the local authorities in which works would be required.

18.5.7 The Study Area for the GHG assessment includes all five Sections, including approximately 60 km of new overhead line, the new WMEL-A and WMEL-B substation preferred Siting Areas, the Siting Zone for Weston Marsh substation infrastructure and reconductoring of approximately 66 km of the existing network. The spatial scope for the GHG assessment includes sources and removals of GHG emissions arising from pre-construction, construction, operation and maintenance of the Project.

18.5.8 Aligning with ISEP (2022) guidance (Ref 18.2), the baseline (Do-Minimum (DM) scenario) is the reference against which the impact of the Project will be compared and assessed.

18.5.9 The DM scenario comprises the cumulative GHG emissions within the Study Area without implementation of the Project (the current situation where the Project is not delivered). Assumptions are made on the projected cumulative GHG emissions over the study period under this DM scenario.

18.5.10 The Scoping Boundary generally comprises predominately arable land, with some managed hedgerows, and trees. As the land use within the Scoping Boundary is mainly arable there are nominal GHG emissions which are associated with land management (including fuel use for machinery use), and the soil types/vegetation present. Given the nominal emissions it is proposed that the baseline will be considered as zero GHG emissions, being a worst–case analysis as a precautionary approach.

Future Baseline

18.5.11 The future baseline relates to known or anticipated changes to the current baseline in the future which should be considered in the assessment.

18.5.12 The future baseline for the assessment of the impact of the Project on climate takes account of emissions caused by not implementing the Project (the ‘Baseline’ as described above). It is assumed that the existing land use identified in the Scoping Boundary continues and no other projects/schemes are developed, therefore the future baseline will include operational emissions associated with land use activities over the study period, which will be considered as zero GHG emissions, being a worst case analysis as a precautionary approach.

18.5.13 The future baseline will also qualitatively consider the impact of the increasing capacity restrictions of the existing transmission network, which would be insufficient to accommodate the connection of the proposed renewable power sources. As a result, potentially more carbon intensive sources of generation would likely be relied upon resulting in additional GHG emissions.

18.6 Design and Control Measures

Design Measures

18.6.1 The Project has been routed in accordance with the Holford Rules (Ref 18.8), to consider options to reduce the overall route length where possible, which therefore may lead to a reduction in the quantity of materials (and associated embodied carbon) required for construction. The detailed design process for the Project will be iterative and would seek to minimise GHG emissions associated with the design of assets and their construction, operation and maintenance.

18.6.2 A number of measures are under consideration subject to the relevant assessments being undertaken and their needs identified. These considerations include:

- Circular economy principles will be considered at the design stage with the intention to implement measures to design out waste and integrate circular economy principles. These will include consideration of pre-construction, construction, operation, and end-of-life processes and materials will be selected to minimise waste over the whole life cycle of the Project. More information can be found in **Chapter 4 Description of the Project** under 'Approach to materials and waste'.
- The design of the Project shall, where practicable, maximise the potential for reuse of material recovered from site. Alternatively, near-site sources of material will be identified to minimise transportation and ground treatment emissions.
- Where appropriate the Project will endeavour to use materials with the highest recycled content, where this leads to lower whole life carbon emissions and encourage their use through procurement exercises.
- The Project will consider a range of measures to reduce energy consumption (and associated emissions) during both construction and operation, as set out in **Chapter 4 Description of the Project** under 'Approach to energy consumption'.
- The Project will continue to integrate carbon as an important consideration within the design and decision-making process and continue to work with partners across the industry on lower carbon alternatives.
- Consideration of lower carbon options for goods transportation, for example through considering alternative options to Heavy Goods Vehicle delivery to site and alternative fuel vehicles.

Control and Management Measures

18.6.3 A range of standard measures for the Project would be adopted throughout the duration of the construction phase. An **Initial Outline Code of Construction Practice** (CoCP) is provided in **Appendix 4A.** Measures relevant to the control and management of impacts that could affect the GHG assessment may include, but are not limited to (refer to **Appendix 4A** for the full description of each measure):

- CC01 - on the development and implementation of a Carbon Efficiency Plan by the contractor(s).
- CC02 - on measures to be included in the contractor(s) Carbon Efficiency Plan.
- CC03 - on consideration of the impacts of extreme weather events and related conditions during construction.
- CC04 - on using weather forecasting to inform short to medium term planning of activities and measures to manage related risks.
- CC05 – on implementing an early warning system for wildfire detection and evacuation procedures.
- GG04 - on the appointment of Environmental Managers and Environmental Clerks of Works during construction, to ensure compliance with requirements and implementation of good practice.
- GG14 – on vehicles emission standards and maintenance.

- GG21 – prohibiting bonfires and the burning of wastes.
- GG22 – on construction lighting.
- GG23 – requiring a Site Waste Management Plan (SWMP).
- LV01 - on retention and replacement of vegetation.
- LV03 – requiring a five-year aftercare period for proposed vegetation.
- TT02 - requiring preparation, implementation and monitoring of a Construction Traffic Management Plan (CTMP).

18.7 Potential for Significant Effects

18.7.1 The climate change assessment will consider the construction, operation and maintenance of the Project. A description of each of these stages is set out in **Chapter 4 Description of the Project**. The potential for significant effects and inclusion (Scoped in) and exclusion (Scoped out) of matters in the scope of the climate change ES assessment is set out below and has been determined using the approach described in **Chapter 5 EIA Approach and Methodology.**

18.7.2 The potential for the Project to result in the likely significant effects identified below, takes into account the embedded design, and control and management measures described in Section 18.6.

18.7.3 A GHG assessment will be considered as part of this chapter. GHGs are gases in the earth's atmosphere that trap heat. Increased GHGs in the earth's atmosphere are the cause of global warming and climate change. The GHG assessment will identify the likely GHG emissions associated with construction, operation and maintenance (i.e. whole lifecycle GHG emissions) in comparison with the current and future baseline. It will also identify mitigation measures to reduce GHG emissions through the life cycle of the Project. The term 'carbon' is used interchangeably to refer to GHG emissions.

18.7.4 The single receptor for the GHG assessment is the global atmosphere and all net emissions of GHGs to the atmosphere will contribute to climate change. The sources of GHG emissions are varied but there is only one impact pathway; GHG emissions released into the atmosphere contribute to global warming by absorbing heat that would otherwise be radiated into space.

18.7.5 Table 18.2 and Table 18.4 provide a summary of the potential emissions sources identified through the Project lifecycle that could give rise to a potentially significant effect on the global atmosphere and provides justification for scoping into or out of the GHG assessment.

18.7.6 A precautionary approach has been taken and where there is no strong evidence base, insufficient baseline or the significance is uncertain at this stage the impact has been scoped into the ES. Where there is a clear evidence base that the effect from the impact will not be significant, either alone or in combination with other plans and projects, the impact has been scoped out of the ES.

18.7.7 The following elements of a climate change assessment have been scoped out:

- Climate Change Resilience (CCR) - this looks to identify the changes in climate and weather events expected in the future with regards to the operational life of the Project and assesses how the Project may be exposed to additional vulnerability arising from these changes. **Appendix 18A Climate Change**

Resilience Screening Assessment sets out a screening assessment for the current stage of the Project to inform this Scoping Report. The Screening Assessment sets out the potential impacts of current and future climate change on the construction, operation, and maintenance of the Project and provides justification for the proposal to scope out a standalone CCR assessment from the EIA based on proposed Design, Control and Management Measures. The vulnerability of the Project to future flooding will be considered as part of the Flood Risk Assessment (FRA) and associated analysis presented in **Chapter 10 Water Environment**. Further embedded design measures will be developed as the Project design evolves through engagement with the engineering design team, and measures will be incorporated into the future development of Project design principles. On this basis, no further assessment of the Project's vulnerability to climate change is required in the ES.

- In-Combination Climate Change Impact (ICCI) assessment - this looks to consider where the future changed climate may increase environmental impacts from the Project on all environmental receptors, beyond those impacts arising from present climate conditions. It is proposed to scope out a standalone ICCI assessment in the ES and instead, each environmental chapter will take account of projected future climate change within their future baseline.

Table 18.2 Construction emission sources to be scoped in or out

Project phase and PAS 2080 Boundary Stage	PAS 2080 Module	Module Description/Pathway	Justification for inclusion in/exclusion from the assessment	Proposed to be scoped in/out
Construction (Product)	A1-3	Raw material supply, transport and manufacture. The product stage captures the GHG emissions attributable to cradle to gate processes: raw material extraction and supply, transport, and manufacturing. The GHG emissions resulting from these processes are often referred to as embodied carbon.	A1-A3 emissions (i.e. from raw material extraction, product processing, and final product manufacture, its energy use, and waste management within these processes, transportation within the supply chain, and manufacture) will be quantified to understand the emissions associated with the construction of the Project, for example, the use of steel or concrete in tower design.	**Scoped in**
Construction process	A4-5	Transport to works site and construction /installation processes: This construction stage captures the GHG emissions associated with the transportation of the materials and components from the factory gate to the project site. GHG emissions associated from any on-site construction-related activities must be considered.	A4 and A5 emissions will be quantified to understand the emissions associated with the transportation of materials required for the construction of the Project and construction activities undertaken.	**Scoped in**
Supplementary information beyond the infrastructure lifecycle	D	Boundary of benefits and loads beyond the infrastructure life cycle: Land use change	A qualitative assessment will be provided to understand the potential impact of removal of any vegetation due to construction of the Project.	**Scoped in**

Table 18.3 Operational emission sources to be scoped in or out

Project phase and PAS 2080 Boundary Stage	PAS 2080 Module	Module Description/Pathway	Justification for inclusion in/exclusion from the assessment	Proposed to be scoped in/out
Operation (Installed products and materials) and Maintenance	B1	Use This use stage captures carbon emitted directly from the fabric of products and materials once they have been installed as part of the project and it is in normal use. This includes GHG emissions from the use of sulphur hexafluoride (SF_6) in switch gear equipment installed as part of the Project.	The use of SF_6 within switchgear equipment is a potential source of GHG emissions during operation of the Project. It is anticipated that associated GHG emissions will be estimated as part of the GHG assessment.	**Scoped in**
	B2	Maintenance of the built asset components and systems over the Project design life.	The Project is not designed with the expectation of any significant plant maintenance activities, or refurbishment being required. Therefore emissions due to these activities are expected to be minimal and would not result in significant effects. As such, this matter is proposed to be scoped out of the assessment.	Scoped out
	B3-4	Repair and Replacement B3 and B4 captures the GHG emissions associated with repair and replacement of the built asset components and systems over the Project design life.	B3 and B4 emissions will be quantified using the same method as the construction works and supply chain carbon emissions. At this stage it is assumed this will cover the new overhead line, reconductoring and proposed substations.	**Scoped in**

Project phase and PAS 2080 Boundary Stage	PAS 2080 Module	Module Description/Pathway	Justification for inclusion in/exclusion from the assessment	Proposed to be scoped in/out
			The following list provides a summary of key asset components and replacement requirements (see **Chapter 4 Description of the Project** for further information): • Overhead Lines: approximately 80 years for overhead line circuits depending on condition/environment/refurbishments/transmission network requirements and approximately 25-40 years for insulators; • Tower foundations: approximately 80 years; • Conductors: approximately 40-60 years; and • Substations: routine site visits required for inspection and maintenance.	
	B5	Refurbishment	It is unusual for elements of National Grid's transmission system to be decommissioned and the site reinstated. In general, assets will be replaced towards the end of an assets design life (which will vary depending on the asset and the asset condition throughout its operational life). As described in **Chapter 4 Description of the Project,** paragraphs	Scoped out

Project phase and PAS 2080 Boundary Stage	PAS 2080 Module	Module Description/Pathway	Justification for inclusion in/exclusion from the assessment	Proposed to be scoped in/out
			4.9.5-4.9.11, minor maintenance works are expected to take place, for which carbon emissions will be negligible and would not result in significant effects. As such, this matter is proposed to be scoped out of the assessment.	
	B6-7	Operational energy use and operational water use This use stage captures the GHG emissions associated with regulated energy consumption including heating, cooling, ventilation, domestic hot water, lighting, and auxiliary systems as projected over the life cycle of the project.	Minimal operational energy use or water use is expected and therefore, emissions would not result in significant effects. As such, this matter is proposed to be scoped out of the assessment. This follows the approach stated in ISEP guidance (Ref 18.2), which states that "*Where expected emissions are less than 1% of total emissions, and where all such exclusions total a maximum of 5% of total emissions; all exclusions should be clearly stated*".	Scoped out
	B8	Other operational processes This use stage captures the GHG emissions associated with other operational processes. For this Project, it captures indirect emissions associated with transmission and distribution (T&D).	When electrical currents travel on a network, some energy is dissipated in the form of heat, and is "lost" due to the electrical resistance in the network. This energy is known as network losses. A portion of the electricity purchased from the power generators will be consumed during its transmission and distribution to end-customers.	**Scoped in**

Project phase and PAS 2080 Boundary Stage	PAS 2080 Module	Module Description/Pathway	Justification for inclusion in/exclusion from the assessment	Proposed to be scoped in/out
			A qualitative assessment of emissions from network losses will be included. It is not considered feasible to quantify these losses and the nature of the Project is such that it largely transmits rather than uses energy.	
	B9	Users' utilisation of infrastructure This use stage captures the activities associated with user's utilisation of the infrastructure.	The Project is not expected to have any direct and quantifiable impact on GHG emissions from electricity use that is distinct from wider national trends on grid decarbonisation. As such, significant effects are not likely and this matter is proposed to be scoped out of the assessment.	Scoped out
End of life	C1-4	Deconstruction, Transport, Waste processing for recovery and disposal	End of life (C1-C4) impacts will not be considered due to the long design life of the Project. It is unusual for elements of National Grid's transmission system to be decommissioned and the site reinstated. As such, significant effects are not likely and this matter is proposed to be scoped out of the assessment.	Scoped out
Supplementary information beyond the infrastructure lifecycle	D	Benefits and loads beyond the system boundary: Exported utilities (i.e. electric energy)	Reduction in GHG emissions from non-renewable energy generation sources once the proposed renewable energy generation can connect to the reinforced network.	**Scoped in**

Project phase and PAS 2080 Boundary Stage	PAS 2080 Module	Module Description/Pathway	Justification for inclusion in/exclusion from the assessment	Proposed to be scoped in/out
			A qualitative assessment will be provided as there is no practical mechanism to quantify the carbon impact without carrying out a time-based analysis of relative grid carbon emissions factors over the operational life of the Project, seeking to identify over what period electricity will be supplied to UK at grid intensities above/below the grid average.	
	D	Benefits and loads beyond the system boundary: Ongoing land use emissions and sequestration	A qualitative assessment will be provided to understand the potential impact of landscaping and habitat creation proposed as part of the design (which has the potential to change GHG sequestration).	**Scoped in**

18.8 Proposed Assessment Methodology

Proposed Data Sources

18.8.1 The data sources listed in Section 18.5 will be used to provide further information for the assessment.

Proposed Assessment Methodology

18.8.2 The following section summarises the methodology proposed to be used for the climate change assessment which builds on the general assessment methodology presented in **Chapter 5 EIA Approach and Methodology**.

18.8.3 The methodology is based on the principle that the environmental effects will be determined by identifying potential receptors, assigning receptor value, assessing the magnitude of change on the receptor and then identifying the significance of the effect. This section provides a summary of the EIA methodology specifically relevant to the GHG assessment.

18.8.4 The GHG assessment will quantify and report the GHG emissions anticipated to be generated or avoided by the Project. This will be reported in tonnes of carbon dioxide equivalent (tCO2e), a single metric of the global warming potential of the main GHGs. This approach is consistent with the principles set out in ISEP guidance (Ref 18.1).

18.8.5 Expected GHG emissions arising from the Project will be quantified using a calculation– based methodology as per the following equation and aligned with the GHG Protocol:

Activity data x GHG emissions factor = GHG emissions

18.8.6 The methodology focuses on assessing the impact of the Project on GHG emissions by quantifying the GHG emissions arising from each lifecycle stage. Emissions associated with the Project will be compared to the baseline and future baseline DM scenario (as described under 'Baseline Conditions' above). If relevant GHG activity data are unavailable, the assessment may be more qualitative and/or assumptions and estimations developed. Any assumptions, inclusions and exclusions that inform the GHG emissions calculation will be clearly described.

18.8.7 The significance criteria for the GHG assessment will take account of the Project's GHG emissions in the context of policy, and specifically the UK's target of net zero by 2050. This will consider the Project's net GHG emissions, but also whether the Project contributes to reducing GHG emissions consistent with a trajectory towards net zero by 2050.

18.8.8 The net GHG emissions associated with the Project will also be contextualised against appropriate existing national carbon budgets where practicable to understand its relative contribution to climate change. Where possible, this will also be contextualised against industry specific carbon budgets.

18.8.9 The assessment process will include work with the wider design team to identify opportunities to reduce the whole-life carbon of the Project.

Sensitivity

18.8.10 The global climate is the receptor for the purposes of the GHG assessment. The sensitivity of the climate to GHG emissions is 'high'. The rationale is as follows:

- GHG emission impacts could compromise the Climate Change Committee's (CCC) sectoral construction and net zero pathways and therefore the ability to meet its future carbon reduction trajectory.
- GHG emission impacts could compromise the UK's ability to reduce its GHG emissions and therefore the ability to meet its future legally binding carbon budgets.
- The extreme importance of limiting global warming to below 2 °C above industrial levels, while pursuing efforts to limit such warming to 1.5 °C as set out in the Paris Agreement and a recent report by the Intergovernmental Panel on Climate Change highlighted the importance of limiting global warming below 1.5 °C (Ref 18.9).
- Disruption to global climate is already having diverse and wide-ranging impacts to the environment, society, economic and natural resources. Known effects of climate change include increased frequency and duration of extreme weather events, temperature changes, rainfall and flooding, and sea level rise and ocean acidification. These effects are largely accepted to be negative, profound, global, likely, long term to permanent, and are transboundary and cumulative from many global actions.

Magnitude

18.8.11 The estimated GHG emissions from the Project will be considered in the context of the UK carbon budgets (Ref 18.10), summarised in Table 18.4 below.

18.8.12 The UK carbon budgets are in place to restrict the amount of GHG emissions the UK can legally emit in a five–year period. The UK is currently in the Fourth carbon budget period, which runs from 2023 to 2027. The Fourth and Fifth Carbon Budgets reflect the previous 80% reduction target by 2050. The Sixth Carbon Budget aligns with the legislated 2050 net zero commitment.

Table 18.4 Carbon budget periods

Carbon Budget and Period	Carbon Budget Limit	Reduction below 1990 levels
Fourth (2023-2027)	1,950 $MtCO_2e$	50% by 2025
Fifth (2028-2032)	1,725 $MtCO_2e$	68% by 2030*
Sixth (2033-2037)	965 $MtCO_2e$	78% by 2035

* Originally 57% when Fifth Carbon Budget was enshrined in law, was increased to 68% as the UK's National Determined Contribution ahead of the United Nations' COP26 in November 2021 (Department for Business, Energy, and Industrial Strategy (BEIS) (now superseded by the Department of Energy Security and Net Zero), 2022) (Ref 18.11).

18.8.13 It is noted that the contribution of most individual projects to national level budgets will be small, so the UK context will have limited value. It is proposed that the GHG assessment, therefore, uses the ISEP guidance (Ref 18.2) to assess the significance of effects with the UK carbon budgets being used to provide context to the GHG emissions.

Significance of effects

18.8.14 ISEP guidance (Ref 18.2) provides criteria for assessing the significance of GHG emissions effects. Five levels of significance are presented which focus on how the Project makes a relative contribution towards achieving a science based 1.5°C aligned transition towards net zero and the levels of mitigation applied. The different levels of significance are plotted against the UK's net zero compatible trajectory as presented in Table 18.5 to determine the Project's significance.

Table 18.5 ISEP guidance levels of significance (Ref 18.2)

Significance level	Effects	Description	Example in the guidance
Significant adverse	Major adverse	A project that follows a 'business–as–usual' or 'do minimum' approach and is not compatible with the UK's net zero trajectory, or accepted aligned practice or area-based transition targets. It is down to the practitioner to differentiate between the 'level' of significant adverse effects e.g. 'moderate' or 'major' adverse effects.	The project's GHG impacts are not mitigated or are only compliant with do–minimum standards set through regulation, and do not provide further reductions required by existing local and national policy for projects of this type. A project with major adverse effects is locking in emissions and does not make a meaningful contribution to the UK's trajectory towards net zero.
Significant adverse	Moderate adverse	The project's GHG impacts are partially mitigated and may partially meet the applicable existing and emerging policy requirements but would not fully contribute to decarbonisation in line with local and national policy goals for projects of this type.	A project with moderate adverse effects falls short of fully contributing to the UK's trajectory towards net zero.
Not significant	Minor adverse	A project that is compatible with the budgeted, science-based 1.5°C trajectory (in terms of rate of emissions reduction) and which	The project's GHG impacts would be fully consistent with applicable existing and emerging policy requirements and good practice design

Significance level	Effects	Description	Example in the guidance
		complies with up– to–date policy and 'good practice' reduction measures to achieve that. It may have residual emissions but is doing enough to align with and contribute to the relevant transition scenario, keeping the UK on track towards net zero by 2050 with at least a 78% reduction by 2035 and thereby potentially avoiding significant adverse effects.	standards for projects of this type. A project with minor adverse effects is fully in line with measures necessary to achieve the UK's trajectory towards net zero.
Not significant	Negligible	A project that achieves emissions mitigation that goes substantially beyond the reduction trajectory, or substantially beyond existing and emerging policy compatible with that trajectory and has minimal residual emissions. This project is playing a part in achieving the rate of transition required by nationally set policy commitments.	The project's GHG impacts would be reduced through measures that go well beyond existing and emerging policy and design standards for projects of this type, such that radical decarbonisation or net zero is achieved well before 2050. A project with negligible effects provides GHG performance that is well 'ahead of the curve' for the trajectory towards net zero and has minimal residual emissions.
Not significant	Beneficial	A project that causes GHG emissions to be avoided or removed from the atmosphere. Only projects that actively reverse (rather than only reduce) the risk of severe climate change can be judged as having a beneficial effect.	The project's net GHG impacts are below zero and it causes a reduction in atmospheric GHG concentration, whether directly or indirectly, compared to the without–project baseline. A project with beneficial effects substantially exceeds net zero requirements with a positive climate impact.

18.9 Assumptions and limitations

18.9.1 The GHG assessment will be undertaken using the best available information at the time of assessment. A reasonable worst case assessment will be developed using appropriate industry benchmarks, and conservative assumptions on materials,

design, assembly, earthworks and use of components to provide a robust assessment of likely carbon emissions.

18.9.2 Assumptions will be made about design and construction information to inform the assessment of GHG emissions. In general, any assumptions made will seek to reflect a reasonable worst case (i.e. seeking not to under-report GHG emissions arising from the Project).

18.9.3 Assumptions/judgements in each case will be made from either:

- emerging design detail;
- engineering specialist knowledge;
- environmental specialist knowledge;
- climate change/carbon specialist knowledge;
- manufacturer specifications; or
- proxy engineering data from previous comparable projects.

18.9.4 The methodology used to calculate the UK carbon budgets is different to that used for the calculation of lifecycle emissions for the Project and therefore caution must be taken when making a direct comparison. However, for the purposes of identifying the extent to which the Project may impact the ability of the UK Government to meet its carbon budgets it is necessary to make this comparison to put the Project into context. Additionally, the GHG emissions to be calculated for the Project will be best estimations based on the design information available at the time of the assessment and the carbon factors utilised.

18.9.5 A comprehensive list of assumptions and limitations will be provided within the ES once the assessment has been undertaken.

18.10 Conclusion

18.10.1 This Scoping Report chapter has outlined the proposed scope for further assessment in relation to the climate change assessment for the Project. The data sources that will be used to define the current and future baselines have been presented, and the impact control and management measures that will be implemented. The potential for significant effects has been identified, as well as the associated source, impact and receptors.

18.10.2 In accordance with ISEP guidance, the GHG emissions from construction and operation will be assessed against the Paris Agreement's goal of achieving net zero by 2050.

18.10.3 A standalone CCR assessment has been scoped out of the ES as per **Appendix 18A Climate Change Resilience Screening Assessment**. A standalone ICCI assessment has also been scoped out of the ES and instead each environmental chapter will take account of projected future climate change within their baseline.

18.10.4 A summary of the proposed scope of the assessment is provided in **Chapter 20 Summary**.

References

Ref 18.1 Department for Energy and Net Zero (2023) Overarching National Policy Statement for energy (EN-1)

Ref 18.2 Institute of Sustainability and Environmental Professionals (2022). Assessing Greenhouse Gas Emissions and Evaluating their Significance.

Ref 18.3 British Standards Institute (2023) PAS 2080:2023 Carbon Management in Infrastructure [online]. Available at: https://www.bsigroup.com/siteassets/pdf/en/insights-and-media/insights/brochures/pas_2080.pdf (Accessed: 14 July 2025).

Ref 18.4 R (on the application of Finch on behalf of the Weald Action Group) (Appellant) v Surrey County Council and others (Respondents) (2024). UK Supreme Court, Environment/Planning, UKSC/2022/0064.

Ref 18.5 Department for Energy Security and Net Zero (2023) 'Valuation of energy use and greenhouse gas (GHG) emissions' [online]. Available at: https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal (Accessed 14 July 2025).

Ref 18.6 HM Government (2025) Greenhouse gas reporting: conversion factors 2025. Available at: https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2025 (Accessed: 14 July 2025).

Ref 18.7 Circular Ecology (2024) 'Embodied Carbon Footprint Database v4', Circular Ecology. Available at: https://circularecology.com/embodied-carbon-footprint- database.html (Accessed: 14 July 2025).

Ref 18.8 National Grid (1959) 'The Holford Rules'. London: National Grid [online]. Available at: https://www.nationalgrid.com/sites/default/files/documents/13795-The%20Holford%20Rules.pdf (Accessed: 14 July 2025).

Ref 18.9 Intergovernmental Panel on Climate Change (2023) AR6 Synthesis Report: Climate Change 2023 [online]. Available at: https://www.ipcc.ch/report/ar6/syr/ (Accessed: 14 July 2025).

Ref 18.10 HM Government (2021) Guidance: Carbon budgets [Online]. Available at: Carbon Budgets - https://www.gov.uk/guidance/carbon-budgets (Accessed: 14 July 2025)

Ref 18.11 BEIS (2022) United Kingdom of Great Britain and Northern Ireland's Nationally Determined Contribution [Online]. Available at: UK's 2030 Nationally Determined Contribution (NDC) emissions reduction target under the Paris Agreement - GOV.UK (Accessed: 14 July 2025).

19. Major Accidents and Disaster

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19. Major Accidents and Disasters

19.1 Introduction

19.1.1 This chapter considers the potential risk of a major accident or disaster causing a significant environmental effect that may arise relating to the construction, operation, or maintenance of the Project (as described in **Chapter 4, Description of the Project**).

19.1.2 The Scoping Boundary is illustrated on **Figure 1.2 Scoping Boundary**.

19.1.3 This chapter should be read in conjunction with the following chapters which provide the Project context and the proposed approach to the Environmental Impact Assessment (EIA):

- **Chapter 2 Regulatory and Planning Policy Context**;
- **Chapter 3 Main Alternatives Considered**;
- **Chapter 4 Description of the Project**; and
- **Chapter 5 EIA Approach and Methodology**.

19.1.4 In addition, there may be interrelationships with other disciplines. Therefore, this chapter should also be read in conjunction with the following chapters and associated appendices:

- **Chapter 10 Water Environment** – covers the flood risk of the area;
- **Chapter 11 Geology and Hydrogeology** – covers the ground conditions of the area;
- **Chapter 14 Air Quality** – covers the air quality baseline of the area; and
- **Chapter 18 Climate Change** – provides an overview of the climatic conditions and trends in the area.

19.1.5 This chapter is supported by **Appendix 19A Major Accidents and Disasters Scoping Table** which identifies hazards and provides justification as to whether each is to be included in the Environmental Statement (ES) (scoped in) or not (scoped out) on the basis of being likely to give rise to significant environmental effects or not, respectively.

19.1.6 This assessment for major accidents and disasters is guided by a Primer published by Institute of Sustainability and Environmental Professionals (ISEP) (formerly Institute of Environmental Management and Assessment (IEMA)) (2020) called, 'Major Accidents and Disasters in EIA' (Ref 19.1) ('the Primer'). The Primer defines the following:

- **Major accident:** events that threaten immediate or delayed serious environmental effects to human health, welfare and/or the environment and require the use of resources beyond those of the Client or its appointed representatives to manage. Whilst malicious intent is not accidental, the outcome

(e.g. train derailment) may be the same and therefore many mitigation measures will apply to both deliberate and accidental events.

- **Disaster:** may be a natural hazard (e.g. earthquake) or a man-made/external hazard (e.g. act of terrorism) with the potential to cause an event or situation that meets the definition of a major accident.

19.1.7 This chapter considers two aspects: the vulnerability of the Project to a major accident/disaster, and the potential for the Project to cause a major accident.

19.1.8 This chapter:

- identifies whether there are any major accidents and disasters topics and events that are proposed to be scoped into the EIA and therefore reported within the ES to be submitted with the application for development consent;
- identifies those major accident and disaster topics and events that are proposed to be scoped out of further assessment, with a justification provided; and
- defines the approach and methodology for identifying potential major accidents and disasters and their assessment, in the context of the Project.

19.2 Legislation, Policy and Guidance

19.2.1 **Chapter 2 Regulatory and Planning Policy Context** describes the overall regulatory and planning policy context for the Project. Key legislation, policy, and planning guidance relevant to the assessment of potential effects on all environmental topic chapters associated with the construction, operation, and maintenance of the Project is provided in **Chapter 2 Regulatory and Planning Policy Context. Appendix 2A Key Legislation, Appendix 2B National and Regional Planning Policy** and **Appendix 2C Local Policy.**

19.2.2 The requirement to consider major accidents and disasters as part of the EIA process is set out in Schedule 4 paragraph 8 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (hereafter referred to as 'the EIA Regulations') which state:

"A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned… Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies".

Guidance and Advice Notes

19.2.3 The following core guidance documents provide the technical framework for applying a risk management process when dealing with major accidents and disasters in EIA's, in addition to other useful documents which relate to the assessment of risk:

- ISEP (formally IEMA), 2020, 'Major Accidents and Disasters in EIA: An IEMA Primer' (Ref 19.1).
- The International Standards Organizations ISO 31000: 2018 Risk Management – Principles and Guidelines (Ref 19.2).

- Department for Environment, Food & Rural Affairs (Defra), 2011, 'Guidelines for Environmental Risk Assessment and Management' (Ref 19.3).

19.3 Consultation and Engagement

19.3.1 The ES will be informed by consultation and engagement with stakeholders, including local authorities and the Health and Safety Executive (HSE). In addition, engagement will be undertaken with non-statutory stakeholders as required to ensure that specialist local views and expertise can be considered as part of the ES.

19.3.2 In preparing this Scoping Report chapter, consideration has been given to feedback received following Non-Statutory Consultation held between 11 June and 6 August 2025.

19.3.3 No feedback relating specifically to environmental effects from major accidents and disasters as defined this chapter were received. Responses regarding flood risk have been considered in **Chapter 10 Water Environment**.

19.4 Study Area

19.4.1 There is no specific regulatory guidance or standardised methodology to define the Study Area, therefore distances are based on professional judgement. All distances provided are from the Scoping Boundary illustrated in **Figure 1.2 Scoping Boundary** and include**:**

- Environmental receptors identified in the technical chapters of this Scoping Report: **Chapters 6-18**.
- Manmade features:
  - nuclear sites;
  - airports, airfields, airstrips and ports within 5 km;
  - Control of Major Accident Hazard (COMAH) facilities within 3 km;
  - major accident hazard pipelines within the Scoping Boundary;
  - rail infrastructure within the Scoping Boundary; and
  - transmission (gas, electrical, oil/fuels) crossing, and within the Scoping Boundary.
- Natural features with the potential to create risks within:
  - seismic activity within 5 km; and
  - flood risk and unstable ground conditions within 1 km.

19.5 Baseline Conditions

Baseline

19.5.1 The baseline relevant to major accidents and disasters primarily comprises:

- features external to the Project that present a potential source of hazard to the Project itself;
- sensitive environmental receptors at risk of significant effect from the Project; and
- identified major accident and disaster risks that currently exist within the local area that could affect the Project or be exacerbated by the Project.

19.5.2 The baseline conditions described for major accidents and disaster events are derived from the following desk study sources:

- technical chapters of this Scoping Report: (Chapters 6-19);
- National Risk Register 2020 (Ref 19.4);
- British Geological Survey 'Onshore GeoIndex' (Ref 19.5);
- The Mining Remediation Authority Interactive Map (Ref 19.6);
- Health and Safety Executive's Planning Advice Web App (Ref 19.7);
- COMAH 2015 Public Information Search (Ref 19.8); and
- Google street view maps covering the Scoping Boundary.

19.5.3 The baseline conditions are split into three areas:

- potential environmental receptors: receptors that could be vulnerable to a major accident or disaster as a result of the Project;
- nearby major accident installations: potential linkages with other projects that could increase the risk of a major accident within the Study Area; and
- natural hazards and disasters: a review of existing baseline data relating to natural hazards/disasters, such as flooding or drought, that inform the likelihood of a natural disaster occurring within the Study Area.

Accident and Disaster Categories

19.5.4 Within the Study Area, the potential major accidents and disaster groups and categories considered are those listed in **Table 19.1.**

Table 19.1 Major accidents and disaster groups and categories

Groups	Categories
Natural Events	Geophysical
	Hydrology
	Climatological and meteorological
	Biological
Technological or manmade hazards	Societal
	Industrial and urban accidents
	Transport accidents
	Pollution accidents

Groups	Categories
	Utility failures
	Malicious attacks
	Engineering accidents and failures
	Human error
	Sabotage/arson
	Explosion

Potential Environmental Receptors

19.5.5 All potential receptors that could be affected by a major accident or disaster have been described and outlined within the specific environmental topic chapters. **Table 19.2** signposts the technical chapters and the potential receptors relevant to major accidents and disasters. No additional receptors have been identified outside those set out within the technical chapters.

Table 19.2 Signpost to chapters with relevant receptors

Stakeholder	Consideration in the Scoping Report
Chapter 6 and 7 Landscape and Visual	Designated Sites
Chapter 8 Ecology and Biodiversity	Ecological receptors
	Notable Habitats
	Designated Sites
Chapter 9 Historic Environment	Designated heritage assets
	Non-designated heritage assets
Chapter 10 Water Environment	Water resources
	Watercourses and waterbodies
Chapter 11 Geology and Hydrogeology	Soil and contamination
	Groundwater
Chapter 12 Agriculture and Soils	The best and most versatile (BMV) Agricultural Land
Chapter 13 Traffic and Movement	Roads
	Cycle routes
	Public rights of way
Chapter 14 Air Quality	Residential receptors
Chapter 15 Noise and Vibration	Residential and other noise sensitive receptors
Chapter 16 Socio-economics, Recreation and Tourism	Commercial receptors Recreational routes Aviation infrastructure

Nearby Major Accident Hazard Installations

19.5.6 There are no sites that fall under the COMAH Regulations 2015 within proximity to the Project (Ref 19.8). The closest COMAH site is Scott Bader UK Limited, located approximately 2 km east of the Scoping Boundary for Section 5.

Natural Hazards and Disasters

19.5.7 The Primer (Ref 19.1) outlines examples of natural hazards in the UK. These have been used to guide the baseline data collection and assist with determining the likelihood of the identified risk. The main natural hazards that can disrupt infrastructure in the UK are outlined below.

Flooding

19.5.8 All of the 11 km of Scoping Boundary within Section 1 (from Weston Marsh to South Forty Foot Drain), and the eastern 5.5 km of the Scoping Boundary in Section 2 (from South Forty Foot Drain to east of Haconby) is located in Flood Zone 2 and 3. Sections 1 and 2 contain Flood Zones associated with waterbodies (River Welland and South Forty Foot Drain and their tributaries). There are narrow flood zones associated with watercourses that the new overhead line would need to cross that would likely be spanned by conductors. Also, the final southern end of the reconductoring, where the Project will connect to the existing Grendon substation, is located in the Flood Zone that is associated with the hydrological catchments of the River Nene.

19.5.9 With regard to flood risk and drainage, future baseline conditions will be forecasted, drawing on current best practice guidelines. These will consider the likely impacts of climate change on river flows, rainfall intensities, and tidal flood levels/storm surges. Further information on the baseline conditions for flooding for the Project can be found in **Chapter 10 Water Environment**.

19.5.10 For the assessment of the impact of climate change on the future physical environment, the UK guidance and projection of sea level rise and changing storm conditions are applied to the baseline as described below.

19.5.11 Guidance on changes in future wind and wave conditions has been provided by the Environment Agency (Ref 19.9). The guidance states that wind speeds and wave height should be increased by 5% between 1990 and 2055, then by 10% for 2056 to 2115.

19.5.12 UK Climate Projections 2018 (UKCP18) (Ref 19.10) provides the most up-to-date assessment of climate change up to and beyond 2100. Sea level is rising over the whole of the England coastline. Sea level rise data along the UK coastline is available to download from the Met Office UKCP18 website at the grid square (latitude(N) 52.94: longitude(E) 0.08). Sea levels are predicted to reach approximately 1 metre under the Representative Concentration Pathway (RCP) 8.5 high emission scenario by 2100. Increases in coastal flooding hazards are attributed to the sea level rise throughout the century which would threaten communities on sea cliffs and coastal plains around much of the east and south coast of England.

Climate

19.5.13 Data sourced from the UK Met Office confirmed the highest daily maximum temperature in the UK to be 40.3°C, recorded in Coningsby, Lincolnshire in July 2022. The lowest daily minimum temperature on record in the UK is -27.2°C recorded in Altnaharra, Scotland in December 1995.

19.5.14 Further climate information was sourced from the Met Office to help understand the climate of the Midlands and eastern England where the Project is located:

- Midlands January mean daily minimum temperatures varying from just below 0 °C to about 1.5 °C;
- Midlands July mean daily maximum temperatures exceed 22 °C in the south and east;
- The average number of days with air frost in the Midlands varies from about 40 a year in the lower Severn valley to over 60 a year in the Peak District and sheltered areas of the Welsh Marches;
- Eastern England mean daily maximum temperatures are between 6°C to 8°C (winter) and 20°C to 23°C (summer); and
- Eastern England days of air frost per year ranges from 30 (coastal areas) to 55 (well inland).

19.5.15 The more sheltered areas of the South and East Midlands, including parts of Northamptonshire, the lower Trent valley and the Avon valley, receive less than 600 mm of rain per year. In eastern England, Lincolnshire receives less than 700 mm per year. Across the east and south Midlands, there is on average 30 to 35 rain days (rainfall greater than 1 mm) in winter and 20 to 25 days in summer. Eastern England on average, has 30 rain days (rainfall greater than 1 mm) in winter (December to February) and less than 25 days in summer (June to August).

19.5.16 The occurrence of snow is linked closely to temperature, with falls rarely occurring if the temperature is higher than 4°C, as temperatures below this are generally required for snow to lie for any length of time. The Met Office data indicates that snow falls around 20 days per year in low lying areas of the Midlands, with the south east of East England has under 20 days per year, while higher ground has over 30 days.

19.5.17 The National Risk Register (Ref 19.14) states that the UK is likely to experience a trend towards warmer winters and hotter summers. This would also lead to changing rainfall patterns, leading to heavier rainfall. Other extreme weather events, such as storms and heavy snowfalls could also be expected, as a result of climate change. The National Risk Register expects extreme weather events to become more frequent.

Storms and high winds

19.5.18 Being one of the most sheltered parts of the UK, the Midlands and east of England usually experience mean wind speeds of around 10 knots. Gales (a mean windspeed of 34 knots or more over 10 consecutive minutes) only occur on average, two days a year in the Midlands but exposed areas, especially in the west and north, usually experience about 5 gales per year. On average gales occur two days a year in Lincolnshire (Ref 19.13).

19.5.19 Extreme storms are very rare in the UK; however, lower magnitude storms that predominantly occur during winter still give rise to challenges. UK data from the past four decades has not shown any significant trends in storminess based on maximum gust speeds to determine thresholds. There is high uncertainty in climate projections of wind due to the complexity and challenges within climate models to simulate wind.

Land Instability

19.5.20 The Project is located in areas that are predominantly rural, with large parts of the land under arable use.

19.5.21 Earthquakes in the UK are moderately frequent but are unlikely to be powerful enough to inflict severe damage. The British Geological Society (BGS) acknowledges that although the UK is distant from the nearest tectonic plate boundary, the Mid-Atlantic Ridge, earthquakes in the UK occur as crustal stresses within the tectonic plates, as they are relieved by movement occurring on pre-existing fault planes. One of the driving forces is regional compression, caused by the motion of the Earth's tectonic plates and uplift, resulting from the melting of the ice sheets that covered many parts of the UK thousands of years ago. The Scoping Boundary is in an area of low seismicity. BGS data indicates that the Project would be located in areas with a Peak Ground Acceleration of 0.00 to 0.02 g over a 95 year return period. This is the lowest of the nine BGS seismicity categories for the UK (Ref 19.11)

Wildfire

19.5.22 The UK has a temperate climate that is not usually associated with wildfires; however, wildfires do occur annually. Wildfires generally start from human error, such as discarded cigarettes or barbeques, when ground conditions are dry after extended periods of hot, dry weather, when vegetation may have increased susceptibility to fire.

19.6 Scoping Methodology

19.6.1 To understand the initial risk with regards to major accidents and disasters an initial scoping exercise has been undertaken to identify and review the sources outlined in this chapter**,** and the results of this scoping exercise are included in **Appendix 19A Major Accidents and Disasters Scoping Table**. The appendix outlines the potential vulnerability of the Project to the natural, man-made and technological risks and hazards, as well as the major accidents and disasters that could occur as a result of the Project. Each hazard is assessed to identify the risk or interaction that could result in a major accident or disaster.

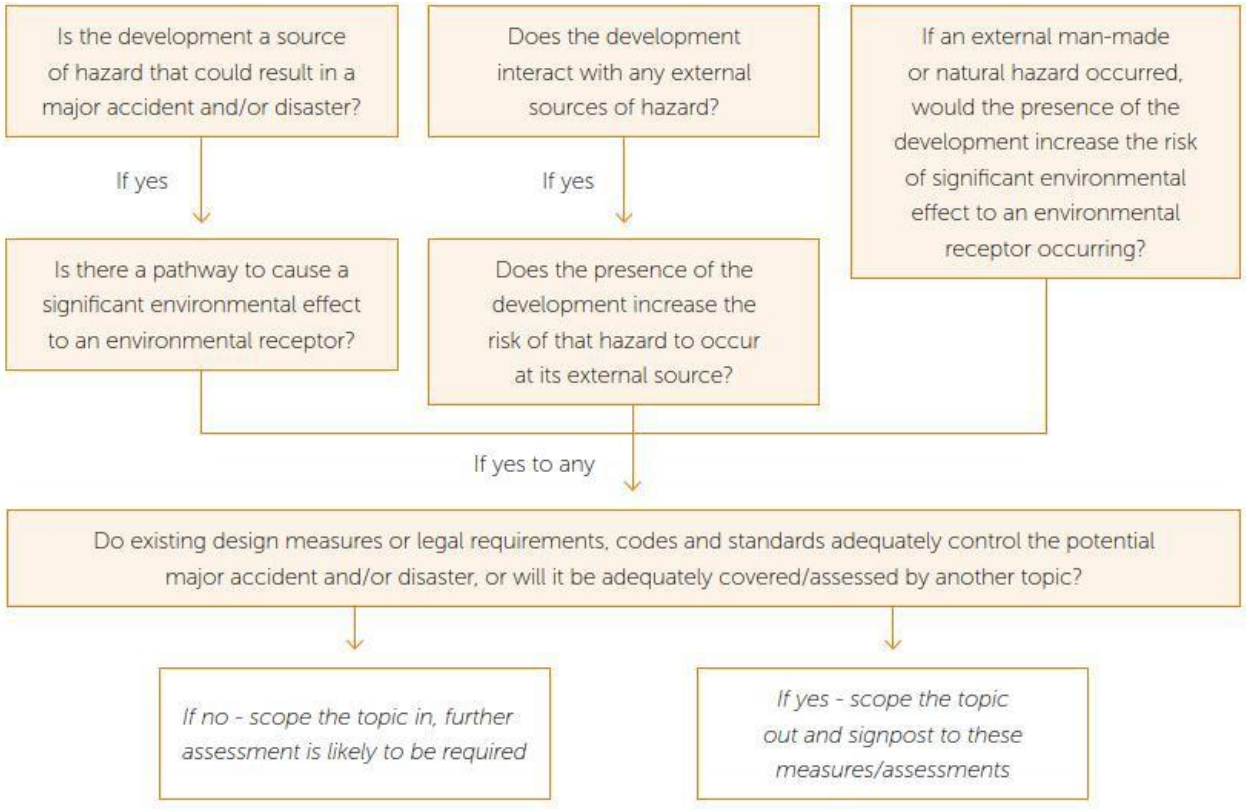
Establishing the Proposed Scope of Assessment

19.6.2 This scoping exercise focuses on identifying the potential impact sources (the Project itself or other existing hazard sources) and the impact pathways that exist between these and potential receptors, that could lead to a significant environmental effect occurring. It then considers whether existing legal requirements and codes and standards are sufficient to control risks. Potential impact sources associated with construction, operation and maintenance that fall within the scope for health and safety legislation and are not considered.

19.6.3 Each hazard was screened in turn to identify whether it could result in a major accident or disaster, or whether it could interact with any external source of hazard. The potential for the Project to result in the potential significant effects described in this section takes account of the embedded and control and management measures described in the **Appendix 4A Initial Outline Code of Construction Practice.**

19.6.4 Details of each stage of the scoping exercise are set out in the methodology set out within the Primer (Ref 19.1) in **Image 19.1.**

Image 19.1 Scoping decision process flow (Ref 19.1)



19.7 Potential for Significant Effects

19.7.1 The scoping exercise presented in **Appendix 19A Major Accidents and Disasters Scoping Table** has not identified any hazards/events that would have the potential to result in significant effects and therefore none are proposed to be scoped into the ES.

19.8 Proposed Assessment Methodology

19.8.1 During the development of the Project new sources of hazards or events could emerge and these would be considered using a staged approach as set out below:

- identify the potential risk events related to the major event types;
- screen the risk events;
- define the reasonable worst consequence should the event occur;
- identify all cross-disciplinary impacts;

- identify mitigation measures, management and, if possible, prevention;
- assess the likelihood; and
- determine the risk has been mitigated to as low as reasonably practical and identify any residual risks and their significance.

19.8.2 In the event of a hazard being identified that could give rise to potentially significant environmental effects, it would be considered appropriately in the ES. This would include a detailed methodology for the assessment of the relevant major accidents and disasters, based on the guiding principles outlined above. Any limitations of the assessment of major accidents and disasters would also be clearly presented.

19.9 Assumptions and Limitations

19.9.1 Major accidents and/or disasters associated with construction, operation and maintenance activities that fall within the scope for health and safety legislation and Construction Design and Management (CDM) regulations are not considered further, as they are already inevitably subject to appropriate management.

19.10 Conclusion

19.10.1 **Appendix 19A Major Accidents and Disasters Scoping Table** summarises the hazards/events identified as part of this scoping exercise and provides justification in concluding that they are proposed to be scoped out of the assessment in **Table 19A.1**. No hazard/event is proposed to be scoped into the ES. The scoping assessment has shown that the vulnerability of the Project to major accidents and disasters can be mitigated or reduced by the processes and standards in place. It also outlines that the Project is unlikely to generate any potential significant effects on the environment if a major accident or disaster were to occur.

References

Ref 19.1 Institute of Environmental Management and Assessment (IEMA) (2020). Major Accidents and Disasters in EIA: An IEMA Primer [online]. Available at: https://www.isepglobal.org/content/major-accidents-and-disasters-in-eia-an-iema-primer-october-2020/ [Accessed: 18 July 2025].

Ref 19.2 The International Standards Organizations (ISO) (2018). ISO 311000: 2018 Risk Management – Principles and Guidelines [online]. Available at: https://www.iso.org/standard/65694.html [Accessed: 18 July 2025].

Ref 19.3 Department of Food, Environment and Rural Affairs (DEFRA) (2011). Guidelines for Environmental Risk Assessment and Management Green Leaves III [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachmentdata/file/69449/pb13670-green-leaves-iii-summary-111107.pdf [Accessed: 18 July 2025].

Ref 19.4 Cabinet Office (2020). National Risk Register [online] Available at: CCS's National Risk Register 2020 (publishing.service.gov.uk) [Accessed: 18 July 2025].

Ref 19.5 British Geological Survey (BGS) (N/A) Onshore GeoIndex [online] Available at: https://mapapps2.bgs.ac.uk/geoindex/home.html [Accessed 15 July 2025].

Ref 19.6 Mining Remediation Authority (N/A). Mining Remediation Authority Interactive Map [online] Available at: https://datamine-cauk.hub.arcgis.com/ [Accessed: 15 July 2025].

Ref 19.7 Health and Safety Executive (N/A). Health and Safety Executive's Planning Advice Web App [online] Available at: https://www.hse.gov.uk/landuseplanning/planning-advice-web-app.htm [Accessed: 15 July 2025].

Ref 19.8 Health and Safety Executive (2015). COMAH 2015 Public Information Search. [online]. Available at: https://notifications.hse.gov.uk/COMAH2015/Search.aspx [Accessed: 18 July 2025].

Ref 19.9 Environment Agency (2021). Flood Risk Assessments: Climate Change Allowances [online]. Available at: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances#sea-level-allowances [Accessed: 23 July 2025].

Ref 19.10 Met Office (2018). UKCP User Interface (UI) Products. [online] Available at: https://ukclimateprojections-ui.metoffice.gov.uk/products/form/LS3_Subset_01 [Accessed: 23 July 2025].

Ref 19.11 British Geological Society (BGS) (2022). Seismic Hazard in the UK. [online] Available at: http://www.earthquakes.bgs.ac.uk/hazard/UKhazard.html [Accessed: 23 July 2025].

Ref 19.12 Act of Parliament (2017) Town and Country Planning (Environmental Impact Assessment) Regulations: Statutory Instrument 2017 no. 571, HMSO, UK.

Ref 19.13 Met Office (2016). Descriptions of regional climates in the UK [online] Available at: https://www.metoffice.gov.uk/research/climate/maps-and-data/regional-climates/index [Accessed: 23 July 2025].

Ref 19.14 HM Government (2023) National Risk Register. [online] Available at: CCS's National Risk Register 2023 (publishing.service.gov.uk). [Accessed 18 July 2025].

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Table 20.14 Proposed scope of the Major Accidents and Disasters assessment 20-61

20. Summary

20.1.1 This chapter provides a summary of the proposed scope of the Environmental Statement (ES) as described in detail in **Chapters 6 – 19** of this EIA Scoping Report. **Table 20.1** to **Table 20.14** provide summaries of the matters considered for each environmental aspect included in this report and whether it is proposed to be **Scoped in** or out of the EIA.

Table 20.1 Proposed scope of the Landscape assessment

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
Construction	Norfolk Coast National Landscape	No – North Norfolk Coast is the National Landscape in closest proximity to the Project, there would be no discernible change due to separation distance of over 30 km.	Scoped out
Construction	All RPGs.	No – in relation to construction of the new overhead line and substations. No direct change anticipated through careful siting of construction works in line with the Initial Outline CoCP (refer to **Appendix 4A Initial Outline Code of Construction Practice (CoCP)**). Indirect change will be limited by screening from existing boundary vegetation and will be temporary and of short duration.	Scoped out
Construction	All RPGs.	No – in relation to reconductoring. Construction will occur along an existing overhead line, will be temporary, with only limited and localised influence for a short duration.	Scoped out
Construction	All locally designated landscapes (SLAs).	No – in relation to construction of the new overhead line and substations, there are no SLAs	Scoped out

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
		located within the Study Area. In relation to reconductoring, construction will occur along an existing overhead line, will be temporary, with only limited and localised influence for a short duration.	
Construction	NLCA 46: The Fens, NLCA 75: Kesteven Uplands, and NLCA 74: Leicestershire and Nottinghamshire Wolds	**Yes** – in relation to construction of the new overhead line and substations. Potential for direct effects on landscape elements and features and indirect effects on perceptual attributes across wide area.	**Scoped in** (summary assessment based on local character units)
Construction	All other NLCA	No – in relation to construction of the new overhead line and substations. All other NLCA are located greater than 3km from the new overhead line and substations, limiting potential for discernible change.	Scoped out
Construction	All NLCA	No – in relation to reconductoring. Construction will occur along an existing overhead line, will be temporary, with only limited and localised influence for a short duration.	Scoped out
Construction	Rutland units:	No – in relation to construction of the new overhead line and	Scoped out

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
	Vale of Catmose LCA; Cottesmore Plateau LCA; and Clay Woodlands LCA. Melton unit: Vale of Belvoir LCA.	substations. These LCAs are located outside of the Scoping Boundary and therefore no direct change will occur. Only small parts are within the Study Area. Potential change to perceptual attributes will be limited in extent and duration and will not result in discernible change.	
Construction	Melton unit: Melton LCA.	No – in relation to construction of the new overhead line and substations. This LCA covers the urban area of Melton Mowbray defined by settlement and development. Construction will not occur within this LCA and will not alter the existing perceptual attributes.	Scoped out
Construction	All remaining local character units (LCTs and LCAs) within the assessment Study Area and ZTV.	**Yes** - in relation to construction of the new overhead line and substations. There is potential for localised direct effects on landscape features and more widespread indirect effects on perceptual attributes and overall impression of character.	**Scoped in**
Construction	All local landscape units (LCTs and LCAs).	No – in relation to reconductoring. construction will occur along an existing overhead line and be undertaken in accordance with the	Scoped out

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
		Initial Outline CoCP (refer to **Appendix 4A: Initial Outline Code of Construction Practice (CoCP)**). Any change will be temporary and of a short duration and will be localised, with only limited influence on landscape character.	
Operation	Norfolk Coast National Landscape.	No – no discernible change due to separation distance of over 30 km.	Scoped out
Operation	Grimsthorpe Castle RPG.	**Yes** – in relation to introduction of the new overhead line. There is potential for long-term indirect change to perceptual aspects and in relation to designed vistas from the castle and grounds which may locally alter the impression of the landscape. No – in relation to the substations, as the nearest proposed substation is located approximately 4.5 km from the RPG.	**Scoped in** for new overhead line. Scoped out for substations.
Operation	Stapleford Hall RPG.	No – in relation to introduction of the new overhead line and substations. This RPG is located approximately 2 km from Scoping Boundary. Potential indirect change limited by distance, local topography and vegetation.	Scoped out

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
Operation	All RPGs.	No – in relation to reconductored overhead line. Reconductored overhead line will appear similar to existing with very little or no change from the baseline.	Scoped out
Operation	All locally designated landscapes (SLAs).	No – in relation to the new overhead line and substations, there are no SLAs located within the Study Area. In relation to reconductoring, the reconductored overhead line will appear similar to existing with very little or no change from the baseline.	Scoped out
Operation	NLCA 46: The Fens, NLCA 75: Kesteven Uplands, and NLCA 74: Leicestershire and Nottinghamshire Wolds	**Yes** – in relation to introduction of the new overhead line and substations. Potential for direct effects on landscape elements and features and indirect effects on perceptual attributes across wide area.	**Scoped in** (summary assessment based on local character units)
Operation	All other NLCA	No – in relation to introduction of the new overhead line and substations. All other NLCA are located greater than 3km from the new overhead line and substations, limiting potential for discernible change.	Scoped out
Operation	All NLCA	No – in relation to reconductored overhead line. Reconductored	Scoped out

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
		overhead line will appear similar to existing with very little or no change from the baseline.	
Operation	Rutland units: Vale of Catmose LCA; Cottesmore Plateau LCA; and Clay Woodlands LCA. Melton unit: Vale of Belvoir LCA.	No – in relation to introduction of the new overhead line and substations. Only small parts of these LCAs are within the Study Area. No direct change will occur. Change to perceptual attributes limited and localised, very little or no alteration of baseline.	Scoped out
Operation	Melton unit: Melton LCA.	No – in relation to introduction of the new overhead line and substations. This LCA is located outside the Scoping Boundary therefore no direct change will occur. Existing character defined by settlement and development which will not be influenced by the new overhead line located outside this LCA.	Scoped out
Operation	All remaining local character units (LCTs and LCAs) within the assessment Study Area and ZTV.	**Yes** - in relation to introduction of the new overhead line and substations. Potential for localised direct change and more widespread indirect change to perceptual attributes and overall impression of character.	**Scoped in**

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
Operation	All local landscape units (LCTs and LCAs).	No – in relation to reconductored overhead line. Reconductored overhead line will appear largely the same as existing with very little or no change from the baseline.	Scoped out
Construction, Operation and Maintenance	All identified landscape designations and landscape character units outside the final Study Area (3 km from Order Limits) and/or outside the ZTV/ extent of potential visibility.	No – in relation to all Project components. There is no potential for change on receptors outside the ZTV, and little potential for impacts on those greater than 3 km from the Project.	Scoped out
Maintenance	All identified landscape receptors.	No – in relation to periodic maintenance works for all Project components. Any change would be limited and localised and occur in context of overhead lines and substations, would be temporary and of a short duration.	Scoped out

Table 20.2 Proposed scope of the Visual assessment

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in/out
Construction	Residential receptors and users of outdoor recreational facilities, including PRoW, in and around settlement areas within the assessment Study Area (3 km from Order Limits) and with potential visibility of construction.	**Yes** – in relation to construction of the new overhead line and substations. Potential for temporary alteration to views and visual amenity, particularly for receptors in close proximity to construction activity.	**Scoped in**
Construction	Users of nationally or regionally promoted long distance recreational routes and users of recreational watercraft within the assessment Study Area and with potential visibility of construction.	**Yes** - in relation to construction of the new overhead line and substations. Potential for temporary alteration to views and visual amenity, particularly from sections of routes in close proximity to construction activity.	**Scoped in**
Construction	Users travelling on roads and railway lines.	No – in relation to construction of the new overhead line and substations. Road and rail users generally travelling at speed, largely limiting visibility to glimpsed views of temporary activity, with significant effects unlikely.	Scoped out
Construction	All potential visual receptors outside the assessment Study Area and/or with no potential visibility of construction.	No – in relation to construction of the new overhead line and substations. - While there is potential for localised views of aspects of construction, the separation distance is such that effects will not be significant.	Scoped out

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in/out
Construction	All potential visual receptors.	No – in relation to reconductoring. Reconductoring works will occur along an existing overhead line and will be temporary and of short duration with limited and localised influence on views and visual amenity. Application of measures set out in the Initial Outline CoCP (refer to **Appendix 4A Initial Outline Code of Construction Practice (CoCP)**) will help ensure change is minimised.	Scoped out
Operation	Residential receptors and users of outdoor recreational facilities, including PRoW, in and around settlement areas within the 3 km assessment Study Area and with potential visibility of the Project.	**Yes** – in relation to introduction of the new overhead line and substations and associated lighting. Potential for alteration to views and visual amenity, particularly where new structures are visible in the foreground or across a wide extent.	**Scoped in**
Operation	Users of nationally or regionally promoted long distance recreational routes and users of recreational watercraft within the 3 km assessment Study Area and with potential visibility of the Project.	**Yes** - in relation to introduction of the new overhead line and substations and associated lighting. Potential for alteration to views and visual amenity, particularly where new structures are visible in the foreground or running parallel to sections of the routes.	**Scoped in**
Operation	Users travelling on roads and railway lines.	No – in relation to introduction of the new overhead line and substations and associated lighting. Road and rail users generally of lower sensitivity and often travelling at speed limiting visibility to glimpsed views.	Scoped out
Operation	All potential visual receptors outside the assessment Study Area and/or with no potential visibility of the Project.	No – in relation to introduction of the new overhead line and substations and associated lighting. No potential change for receptors with no visibility of the Project. While there is potential	Scoped out

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in/out
		for localised views of the Project from beyond 3 km, the separation distance is such that effects will not be significant.	
Operation	Residents in individual properties within 150m RVAA Study Area.	**Yes** – in relation to introduction of the new overhead line and substations and associated lighting. Potential for alteration to residential visual amenity, particularly where new structures are visible in the foreground of principal views.	**Scoped in**
Operation	Residents in individual properties outside 150m RVAA Study Area.	No – in relation to introduction of the new overhead line and substations and associated lighting. No potential for alteration to residential visual amenity due to offset distance. Visual effects from residential receptors covered above under settlement areas.	Scoped out
Operation	All potential visual receptors.	No – in relation to reconductored overhead line. Reconductored overhead line will appear largely the same as existing with very little or no change from the baseline.	Scoped out
Maintenance	All potential visual receptors.	No – in relation to periodic maintenance works for all Project components. Any change would be limited and localised and occur in context of overhead lines and substations, and would be temporary and of a short duration.	Scoped out

Table 20.3 Proposed scope of the Ecology and Biodiversity assessment

Project phase	Feature	Potential for significant effect	Proposed to be Scoped in or out
Construction and maintenance	Statutory and non-statutory designated sites (without mobile qualifying criteria) located greater than 2 km from Scoping Boundary.	**Yes** – during construction, there is a risk of habitat degradation resulting from pollution for sites that are hydrologically connected to the Project. No likely significant effects identified for other impact pathways for this feature.	**Scoped in** for construction impacts only from new overhead line, substations and reconductoring (habitat degradation from pollution only). Scoped out for maintenance impacts from new overhead line and substations.
Construction and maintenance	Statutory designated sites within 10 km and up to 30 km from Scoping Boundary for those sites used by birds or bats associated with Internationally designated sites.	**Yes** – there will be no direct loss of habitat from statutory designated sites. However, it is possible that habitats utilised by birds or other species associated with nearby designated sites (i.e. FLL) could be lost. Surveys will investigate use of these habitats by such species and inform any requirement for mitigation or necessity for design adjustments. In addition, sites that are designated for habitats sensitive to pollution will be assessed.	**Scoped in** for construction (all impacts from new overhead line, substations and reconductoring) and maintenance (temporary habitat loss, disturbance, degradation and fragmentation from new overhead line and substations only).
Construction and maintenance	Non-statutory designated sites up to 2 km from Scoping Boundary.	**Yes** – the construction of overhead line infrastructure, supporting structures, and associated tracks have the	**Scoped in** for construction (all impacts from new overhead line, substations and reconductoring) and maintenance (temporary

Project phase	Feature	Potential for significant effect	Proposed to be Scoped in or out
		potential for direct habitat loss within non-statutory designated sites. Until the route corridor and working methods are confirmed this impact pathway will be included on a precautionary basis. Permanent habitat loss of a non-statutory designated site could occur as a result of the construction of the overhead line infrastructure such as the siting of a tower, or the required clearance below the overhead line/conductors. No permanent habitat loss or fragmentation is anticipated during maintenance works.	habitat loss, disturbance and fragmentation from new overhead line and substations only).
Construction and maintenance	Priority and notable habitats within Scoping Boundary Ancient woodland and ancient and veteran trees up to 2 km from Scoping Boundary.	**Yes** – semi-natural woodland (if present), hedgerows, lowland meadow, coastal and floodplain grazing marsh, arable field margins, and other notable habitats could be impacted by tower locations, supporting structures and access routes. Permanent habitat loss of notable habitats could occur as a result of the construction of overhead line infrastructure such	**Scoped in** for construction (all impacts from new overhead line, substations and reconductoring) and maintenance (temporary habitat loss, disturbance and fragmentation from new overhead line and substations only).

Project phase	Feature	Potential for significant effect	Proposed to be Scoped in or out
		as the siting of a tower, or the required clearance below the overhead line/conductors. However, a combination of routeing, micro-siting, and habitat re-instatement and replacement will be employed as mitigation and reduce these impacts, where possible. No permanent habitat loss or fragmentation is anticipated during maintenance works.	
Construction and maintenance	Protected and notable species (all listed within Section 8.6 of Chapter 8) up to 2 km from Scoping Boundary.	**Yes** - habitats with potential to support protected and notable species to be potentially impacted by overhead line infrastructure, supporting structures, and associated access tracks. Permanent habitat losses may reduce the extent of habitat available to protected or notable species. Mitigation measures will include habitat avoidance, reinstatement and compensation. Habitat connectivity may be impacted in the short term but will be minimised where possible to avoid key habitats. Where	**Scoped in** for construction (all impacts from new overhead line, substations and reconductoring) and maintenance (temporary habitat loss, disturbance, fragmentation and degradation from new overhead line and substations only).

Project phase	Feature	Potential for significant effect	Proposed to be Scoped in or out
		unavoidable fragmentation or habitat degradation is unavoidable this will be a temporary effect until habitat re-instatement is established. No permanent habitat loss or fragmentation is anticipated during maintenance works.	
Construction and maintenance	Great crested newt, Non-breeding birds, Breeding birds, Bats, Badger, Hazel dormouse, Terrestrial invertebrates, Reptiles, and Other mammals (including only brown hare, hedgehog, polecat) up to 2 km from Scoping Boundary.	**Yes** - potential exists for works to impact protected and notable species which may be relatively isolated along the route corridor depending on the access routes (haul road) and result in direct mortalities. If the route corridor cannot avoid suitable habitat, mitigation options include a works Ecological Method Statement and or Natural England mitigation licence to avoid direct mortalities.	**Scoped in** for construction (new overhead line, substations and reconductoring) and maintenance (new overhead line and substations only).
Construction and maintenance	Riparian mammals (otter, beaver and water vole) and other aquatic species. Aquatic invertebrates up to 2 km from Scoping Boundary.	**Yes** - increased levels of incidental mortality may undermine the conservation status of protected or notable species. It is expected that direct impacts on watercourses (and therefore water vole, otter and other aquatic species) can be	**Scoped in** for construction (new overhead line, substations and reconductoring) and maintenance (new overhead line and substations only).

Project phase	Feature	Potential for significant effect	Proposed to be Scoped in or out
		avoided through appropriate design and routing of access requirements. However, until routing and design can be confirmed, there is a potential requirement for mitigation and/or licensing and these features are **Scoped in**.	
Construction and maintenance	Great crested newt, Non-breeding birds (intertidal), Non-breeding birds (terrestrial), Breeding birds, Bats, Badger, Otter, Beaver, Water vole, Hazel dormouse, Terrestrial and aquatic invertebrates, and Reptiles. Other mammals (including only brown hare, hedgehog, polecat) up to 2 km from Scoping Boundary.	**Yes** - trees, hedgerows and other habitats within the Scoping Boundary may be suitable for protected or notable species. Disturbance above a tolerable threshold may affect the extent of habitat that is available to protected or notable species. If the route corridor cannot avoid disturbance impacts, then mitigation (i.e. works under an Ecological Method Statement or Natural England EPSML/development licence) could be required.	**Scoped in** for construction (new overhead line, substations and reconductoring) and maintenance (new overhead line and substations only).

Project phase	Feature	Potential for significant effect	Proposed to be Scoped in or out
Construction and maintenance	Designated sites and notable habitats (ancient woodland and ancient and veteran trees) within 200 m of roads that may be affected by the Project.	**Yes** – should screening of construction traffic flows show vehicle trips exceed the Institute of Air Quality Management (IAQM) criteria then habitat degradation can occur. Changes in air quality during maintenance are not predicted to lead to significant effects upon ecological features (for the reasons presented in **Chapter 14 Air Quality, Table 14.5,** where it is proposed to scope this matter out).	**Scoped in** for all impacts during construction (new overhead line, substations and reconductoring). Scoped out for all impacts during maintenance (new overhead line and substations only).
Construction and maintenance	Designated sites up to 10 km and protected and notable habitats and species up to 2 km from Scoping Boundary.	**Yes** - potential for pollution or other indirect impacts during construction resulting in degradation of habitats, including those used by protected and notable species. This will be mitigated though implementation of the CEMP. Changes in water quality (**Chapter 10 Water Environment**) and dust (**Chapter 14 Air Quality**) during maintenance are not predicted to lead to significant effects upon	**Scoped in** for all impacts during construction (new overhead line, substations and reconductoring). Scoped out for all impacts during maintenance (new overhead line and substations only).

Project phase	Feature	Potential for significant effect	Proposed to be Scoped in or out
		ecological features and therefore are Scoped out.	
Construction and maintenance	Designated sites up to 10 km and protected and notable habitats. and species up to 2 km from Scoping Boundary.	**Yes** – potential for spread of invasive non-native species during works and movement around the site. Introduction of INNS can be detrimental to native habitats and species present.	**Scoped in** for all impacts during construction (new overhead line, substations and reconductoring) and maintenance (new overhead line and substations only).
Construction and maintenance	Designated sites and protected and notable habitats and species.	**Yes** - potential for degradation of existing habitat quality, which could impact designated or otherwise notable habitat and protected and notable species.	**Scoped in** for all impacts during construction (new overhead line, substations and reconductoring) and maintenance (new overhead line and substations only).
Operation (new overhead line section)	Breeding and non-breeding birds.	**Yes** - there is potential for a bird to fly into the overhead line and be killed either from the impact with the line, from hitting the ground, or from injuries sustained in the process. Birds that perch or nest on towers can be electrocuted by causing a short circuit, either by touching two live wires, or a live and an earthed component.	**Scoped in** for new overhead line section during operation.
Operation (new overhead line section)	Protected and notable species.	**Yes** – infrastructure could result in a degree of habitat fragmentation to terrestrial and potentially aquatic habitat.	**Scoped in** for new overhead line section during operation.

Project phase	Feature	Potential for significant effect	Proposed to be Scoped in or out
Operation (new overhead line section)	Nesting birds (kestrel, hobby and peregrine).	No – the towers would be most likely to benefit nesting corvids and certain birds of prey (principally kestrel, hobby and peregrine) and may contribute to regional or local population gains for these species.	Scoped out for new overhead line section during operation
Operation (new overhead line section)	Statutory designated sites: Upper Nene Valley Gravel Pits SPA / Ramsar, The Wash SPA / Ramsar, Rutland Water SPA / Ramsar, and Nene Washes SPA / Ramsar. Non-breeding birds[1].	**Yes** - where this occurs there may be local depletions of prey species, particularly other birds. Any local or regional population decreases arising from this impact might adversely affect the conservation objectives of sites designated for qualifying ornithological interest features, although impacts on bird populations more generally are unlikely to be significant. Where this occurs near designated sites, there may be an impact on the populations of qualifying features, adversely affecting the integrity and function of the site	**Scoped in** for new overhead line section during operation (for designated sites only).
Operation (new overhead line section)	Breeding and non-breeding birds.	**Yes -** effects of EMF on wildlife, especially birds, bats and insects	**Scoped in** for new overhead line section during operation.

[1] This potential for effect is listed for “non-breeding” birds, because the duration and timing of breeding seasons varies for each species. Therefore, the breeding season of one species might overlap the non-breeding period of another.

Project phase	Feature	Potential for significant effect	Proposed to be Scoped in or out
		can lead to negative impacts relating to navigation and migration, reduced reproduction and survival rates and behavioural changes such as altered foraging habits.	
Operation and maintenance (reconductoring)	All identified features	No - scoped out for reconductoring as the operational and maintenance phase for the reconductoring section will be the same as the current baseline and therefore, no significant effects are anticipated.	Scoped out (all impacts) during operation and maintenance
Operation (substations)	Protected and notable species	Yes - there is potential for operational lighting at the substation locations to result in the accidental disturbance of protected or notable species. This potential impact is therefore scoped in until further details on lighting requirements for the substations are known.	**Scoped in** (lighting) during operation

Table 20.4 Proposed scope of the Historic Environment assessment

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
Construction	Non-designated heritage assets Historic landscapes	**Yes** – the Project has the potential to result in a physical impact on heritage assets through their truncation, removal or alteration from intrusive construction activities.	**Scoped in**
Construction	Designated heritage assets	No – the project will be designed to avoid all direct impacts upon designated assets from intrusive construction activities.	Scoped out
Construction	Designated heritage assets Non-designated heritage assets Historic landscapes	**Yes** – presence of construction facilities within the landscape has the potential to result in significant effects on designated and non-designated heritage assets and historic landscapes from temporary changes to their setting.	**Scoped in**
Construction	Designated heritage assets Non-designated heritage assets Historic landscapes	**Yes** – machinery, noise, vibration, dust, and light have the potential to result in significant effects on designated and non-designated heritage assets and historic landscapes from changes to their setting.	**Scoped in**
Operation and maintenance	Designated heritage assets	**Yes** – presence of the Project in the landscape (new overhead	**Scoped in**

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
	Non-designated heritage assets Historic landscape	line) has the potential to result in significant effects on designated, non-designated heritage assets and historic landscapes from changes to their setting.	
Operation and maintenance	Designated heritage assets Non-designated heritage assets Historic landscape	No – changes in the appearance of the existing overhead line from reconductoring would be minimal and would be unlikely to result in significant effects on their setting.	Scoped out
Operation and maintenance	Designated heritage assets Non-designated heritage assets Historic landscapes	No – given the scale and size of the footprint of individual towers, significant effects arising from changes to/limitation of access and use of heritage assets are unlikely to occur.	Scoped out
Operation and maintenance	Designated heritage assets Non-designated heritage assets Historic landscapes	**Yes** – presence of maintenance structures within the landscape has the potential to result in significant effects on designated and non-designated heritage assets and historic landscapes from changes to their setting.	**Scoped in**
Operation and maintenance	Designated heritage assets Non-designated heritage assets	No – vehicular traffic and maintenance activities visits required for the Project would not constitute an impact of sufficient magnitude to cause significant	Scoped out

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
	Historic landscapes	effects to either designated or non-designated heritage assets, nor historic landscapes.	

Table 20.5 Proposed scope of the Water Environment assessment

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
Construction	Surface water receptors such as watercourses, standing water bodies, and surface water abstractions etc.	**Yes** – from pollution from silt, and other construction materials; and potential reduction in channel flow capacity due to siltation. Although measures outlined in **Chapter 10 Water Environment** (Section 10.6) would act to manage work site runoff to ensure water features are not polluted, nor their flow capacities reduced, the scale of the proposed works (especially at substation sites) means that the potential for a significant effect cannot be ruled out at this stage.	**Scoped in**
Construction	Surface water receptors such as watercourses, standing water bodies, and surface water abstractions etc.	**Yes** – from pollution from hydrocarbons, chemicals and other construction materials. Although measures outlined in **Chapter 10 Water Environment** (Section 10.6) would act to manage work site runoff to ensure water features are not polluted, the scale of the proposed works (especially at substation sites) means that the potential for a significant effect cannot be ruled out at this stage.	**Scoped in**

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
Construction -	Watercourses	**Yes** – the Project will cross numerous watercourses, with potential for temporary physical disturbance and impacts on flow regimes. Watercourses should be buffered from the location of new towers.	**Scoped in**
Construction -	People, existing property, and infrastructure.	**Yes** – increased fluvial flood risk to people, existing property and infrastructure. Parts of the overhead line and substations proposed within the floodplain to the east of the study area, temporary works in floodplain cannot be avoided.	**Scoped in**
Construction	People, existing property, and infrastructure.	**Yes** – impacts on other forms of flood risk (e.g. surface water). The Project interacts will interact with numerous minor watercourses and areas at risk from different forms of flooding.	**Scoped in**
Construction -	Watercourses.	No – from impact on flood conveyance arising from scaffolding structures on riverbanks. Installations will be temporary with an anticipated relatively small footprint and can be managed through good practice mitigation and regulatory permitting process (e.g. FRAP or	Scoped out

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
		Land Drainage Consent). Effects on flood conveyance will be localised.	
Construction	Watercourses, standing water bodies and any surface water abstractions.	No – from impact from any dewatering for substation construction. Relatively low levels of permeability and low BFI values for most gauged watercourses suggest the risk is low. Construction works would also be temporary.	Scoped out
Operation	People, existing property, and infrastructure.	**Yes** - permanent new impermeable surfaces associated with the overhead line infrastructure could increase surface water flood risk.	**Scoped in**
Operation	Surface water receptors such as watercourses, standing water bodies, and surface water abstractions etc.	No – in relation to potential water pollution risks, there are no significant sources of potential pollution associated with overhead line infrastructure once construction is complete.	Scoped out
Operation	Watercourses	**Yes** – from physical disturbance and change to flow regime. There is currently uncertainty as to the location of new towers and a number of factors to balance and avoid water features by	**Scoped in**

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
		assumed off set distances may not always be possible.	
Operation	People, property and infrastructure	**Yes –** from increased fluvial flood risk. The footprint of the towers, which are likely to be a lattice design could cause increased flood risk from loss of floodplain storage/disruption to flow paths.	**Scoped in**
Operation	People, property and infrastructure.	**Yes** – from increased fluvial flood risk. Although the WMEL-A and WMEL-B substations are located in Flood Zone 1, there is a risk from surface water flooding. Both substation locations are impacted by a surface water flow path which will therefore need to be considered further so that flood risk to the development / surrounding land is not increased. The Weston Marsh substation infrastructure is located entirely within an extensive area of Flood Zone 3. This will need to be considered further so that flood risk to the development / surrounding land is not increased.	**Scoped in**
Operation	Watercourses.	**Yes** – from increased surface water pollution risk. Operational	**Scoped in**

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
		works have the potential to increase water pollution risk if suitable Drainage Strategies are not implemented. Any foul drainage will also need to be appropriately managed.	
Maintenance	Watercourses, standing water bodies, and any surface water abstractions.	No – from pollution of watercourses and physical disturbance. The nature and scale of the maintenance activities would not cause pollution of the water environment and any physical disturbance would be highly localised. Good practice methods and mitigation measures to be applied to all maintenance works.	Scoped out

Table 20.6 Proposed scope of the Geology and Hydrogeology assessment

Project phase	Receptor	Potential for significant effect	Proposed to be scoped in/out
Construction	Adjacent land users, construction workers Aquifers Groundwater abstractions Springs	**Yes** - from harm to human health through exposure to contamination, including dust and vapours; and deterioration in chemical quality of the land and aquifers. Initial consideration of the Study Area indicates a generally low risk of potential contamination, but isolated areas of existing contamination cannot be discounted.	**Scoped in**
Construction	Aquifers Groundwater abstractions Springs GWDTEs	**Yes** – from physical effects on aquifers, such as depletion of the aquifer and increased solids / turbidity; and deterioration in chemical quality of aquifers. Due to the nature of the Project and the potential for shallow groundwater, there is likely to be some level of dewatering required, so the effect is scoped in for further consideration/ assessment.	**Scoped in**
Construction	Soil / land quality Aquifers Groundwater abstractions Springs GWDTEs	**Yes** – from deterioration in chemical quality of the land and aquifers. Some level of risk of inadvertent release of contamination is inherent in the construction activities associated with the Project. However, environmental controls should be such that any accidental leaks / spills are minimised as far as reasonably possible.	**Scoped in**
Construction	Adjacent land users, construction workers	**Yes** – from explosion or asphyxiation as a result of ingress and accumulation of ground gas within structures. Potential for localised areas of gas generating soils cannot be discounted, so the	**Scoped in**

Project phase	Receptor	Potential for significant effect	Proposed to be scoped in/out
		effect should be given consideration on a precautionary basis.	
Construction	Structures	**No** – from explosion or asphyxiation as a result of ingress and accumulation of ground gas within structures. Although there is potential for localised areas of gas generating soils, this is considered to be a matter of engineering design and will be addressed as an 'embedded engineering measure'.	**Scoped out**
Construction	Soil/ land quality (aspects related to land contamination, other effects for these receptors fall under **Chapter 12 Agriculture and Soils**) Groundwater within aquifers s of differing sensitivities, including principal aquifers and groundwater Source Protection Zones (SPZ)	**Yes** – from deterioration in chemical quality of the land and aquifers. Initial consideration of the Study Area indicates a potential for dissolution. There is generally a low potential for contamination, but isolated areas of existing contamination cannot be discounted. Therefore, there is a risk that construction activities could introduce contamination pathways.	**Scoped in**
Construction	Geological conservation sites	**No** - at present no such sites have been identified within the Study Area. On this basis, significant effects as a result of damage to designated geological conservation sites are not likely to occur.	**Scoped out** See Note [1]
Construction	Adjacent land users, construction workers Groundwater aquifers, Surface water bodies	**No** – disturbance of unstable ground from historical mining, leading to potential emergence of sink holes will be addressed by the engineering/geotechnical study and design,	**Scoped out**

Project phase	Receptor	Potential for significant effect	Proposed to be scoped in/out
		following applicable standards to ensure no likely significant environmental effects.	
Construction	Adjacent land users, construction workers Groundwater aquifers, Surface water bodies	**Yes** - from harm to human health and aquifers from disturbance of historical mining, as part of Section 3 is located within a Coal Mining Reporting Area (Section 3 and WMEL-B Substation).	**Scoped in**
Operation and Maintenance	Future land users, adjacent land users Aquifers Groundwater abstractions Springs GWDTEs	**No** – from harm to human health through exposure to contamination, including dust and vapours; and deterioration in chemical quality of the land and aquifers. Whilst some ground disturbance may be necessary during maintenance, this is likely to be restricted to land previously disturbed during construction. Earthworks and materials movement would be controlled by National Grid standard operational and maintenance procedures. Having regard to the nature of the operational and maintenance phases, significant effects are not likely to occur.	**Scoped out**
Operation and Maintenance	Aquifers Groundwater abstractions Springs GWDTEs	**Yes** – from potential changes to shallow groundwater flow and levels at the site and downstream and to hydraulically connected habitats as a result of permanent below ground structures (e.g. piling) and surface structures intercepting recharge (e.g. hardstanding). Particularly in relation to substations due to the relatively larger area of impermeable surfacing and presence of engineered drainage. Effects on flows and levels from other aspects of the	**Scoped in**

Project phase	Receptor	Potential for significant effect	Proposed to be scoped in/out
		Project, such as tower foundations and permanent accesses, are not expected to be significant, but this should be verified through assessment.	
Operation and Maintenance	Aquifers Groundwater abstractions Springs GWDTEs	**No** – from physical effects on aquifers, such as depletion of the aquifer and increased solids / turbidity. There are not expected to be any permanent dewatering requirements during the operation and maintenance phase of the Project. On this basis, significant effects are not likely to occur.	**Scoped out**
Operation and Maintenance	Proposed Structures	**No** – from structural damage caused by aggressive ground conditions. This is considered to be a matter of engineering design (i.e. addressed as an 'embedded engineering measure' as previously described) and is not to be considered further within the ES.	**Scoped out**
Operation and Maintenance	Workers (i.e. manual access to carry out operational activities).	**Yes** – from explosion or asphyxiation as a result of ingress and accumulation of ground gas within structures. There is potential for localised gas generating ground in proximity of proposed substations and possible mine gas.	**Scoped in**
Operation and Maintenance	Maintenance workers, future land users, adjacent land users	**No** – from harm to human health via exposure to contamination, including dust and vapours. Initial consideration of the Study Area indicates a generally low risk of potential contamination and National Grid standard operational and maintenance procedures will be implemented.	**Scoped out**

Project phase	Receptor	Potential for significant effect	Proposed to be scoped in/out
		This is considered sufficient to ensure no likely significant effects during operation and maintenance.	
	Soil/ land quality Aquifers Groundwater abstractions Springs GWDTEs	**Yes** – from deterioration in chemical quality of the land and aquifers. Initial consideration of the Study Area indicates a generally low risk of potential contamination but isolated areas of existing contamination cannot be discounted.	**Scoped in**
Operation and Maintenance	Soil / land quality Aquifers Groundwater abstractions Springs GWDTEs	**Yes** – from deterioration in chemical quality of the land and aquifers via maintenance purposes. Although National Grid standard operational and maintenance procedures will be implemented, there is a risk of inadvertent and/or accidental release or spillage of contamination during operation.	**Scoped in**

[1]- Note that this is provisional and is subject to confirmation of the absence of locally designated sites in the Scoping Boundary and Study Area, which will be carried out as part of further baseline characterisation to support the ES. Therefore, the proposed assessment methodology in Section 11.7 includes a methodology for how effects on geological conservation receptors would be assessed, should it be necessary to scope this effect back into the assessment following further baseline characterisation.

Table 20.7 Proposed scope of the Agriculture and Soils assessment

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
Construction	Agricultural land/BMV land (as defined by the ALC system)	**Yes -** a very large proportion of land within the Scoping Boundary is predicted to be BMV land and therefore the Project could result in an unavoidable temporary or permanent loss of agricultural land which is likely to include BMV land. ALC surveys are to be undertaken in areas where soils will be disturbed and BMV land is predicted. The assessment will inform good practice soil handling measures that will be detailed in the SMP.	**Scoped in**
Construction	Soil	**Yes -** the Project would potentially result in soil quality being adversely affected during construction. Due to the presence of soils with low resilience to structural damage (particularly clayey soils), a significant effect on soils cannot be ruled out although good practice soil handling measures would be implemented through a SMP during construction.	**Scoped in**
Construction	Agricultural land holdings	**Yes -** a very large proportion of the land within the Scoping Boundary is predicted to be BMV land, the	**Scoped in**

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
		impact on which has the potential to result in a significant adverse effect on agricultural productivity and thus agricultural land holdings. The temporary acquisition of land to accommodate construction activities will result in temporary disruption and severance to agricultural land holdings and the permanent loss of some land from agricultural land holdings, resulting in reduction in the operational capacity and loss of income to farm businesses (which would be addressed through compensation agreements, which lie out with the scope of the ES).	
Operation and maintenance	Agricultural land/BMV land (as defined by the ALC system)	No – the construction phase assessment will account for both temporary and permanent loss of agricultural land, and therefore no further significant effects are anticipated. Periodic vehicle access for routine maintenance and emergency repairs may require temporary access tracks and small compound areas, but based on the Applicant's experience of similar projects these are likely to be limited in extent. All soil handling would be undertaken	Scoped out

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
		in line with published good practice, such as the measures described in AS01 of **Appendix 4A Initial Outline Code of Construction Practice** which will be part of the SMP and be required, and therefore no likely significant effects are expected. The ISEP guidelines (Ref 12.3) recognises temporary work to be low magnitude.	
Operation and maintenance	Soil	No – the construction phase assessment will account for both temporary and permanent loss of agricultural land, and the majority of land required for construction would be returned to its pre-construction land use; therefore, no further significant effects are anticipated during the operation and maintenance phases. Maintenance activities may impact soil function and quality, but at a much smaller scale than construction. Any disturbance to soils during maintenance would be undertaken in accordance with good practice soil handling methods, such as the measures described in measure AS01 of **Appendix 4A Initial Outline Code**	Scoped out

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
		of Construction Practice in relation to the SMP, and, therefore, no likely significant effects are expected. The ISEP guidelines (Ref 12.3) recognises temporary work to be low magnitude.	
Operation and maintenance	Agricultural land holdings	No - the majority of land required for construction would be returned to its pre-construction land use on completion of construction. Any impacts on farm businesses from periodic vehicle access for routine maintenance and emergency repairs would be limited and would not result in significant effects. Financial agreements for access would lie outside the scope of the ES.	Scoped out

Table 20.8 Proposed scope of the Traffic and Transport assessment

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
Construction	Road users	**Yes -** whilst short-term and temporary in nature, it is considered that there is still potential for significant effects on road users as a result of construction traffic and road closures/diversions leading to potential Severance, Driver Delay and Highway Safety effects.	**Scoped in**
Construction	Public transport users (bus)	**Yes -** whilst short-term and temporary in nature, it is considered that there is still potential for significant effects on public transport users as a result of construction traffic and road closures/diversions leading to potential Public Transport Delays.	**Scoped in**
Construction	Pedestrians and cyclists	**Yes -** whilst short-term and temporary in nature, it is considered that there is still potential for significant effects on pedestrians and cyclists as a result of construction traffic leading to Traffic Severance, Pedestrian Delay, Pedestrian and Cycle Amenity effects, and Fear and Intimidation. There is also PRoW or designated pedestrian and cycle route closures/diversions potentially leading to Increased Journey Time.	**Scoped in**
Construction	Road users	**Yes** – whilst short-term and temporary in nature, and generally planned for off peak times when the road network is less busy; the frequency of abnormal load deliveries, construction routes and traffic management requirements are not defined at this stage, and it is therefore considered that effects on road users from abnormal loads should be **Scoped in** at this stage.	**Scoped in**

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
Construction	General public	No - there is low potential for significant effects on the general public as a result of a road traffic accident leading to a Hazardous Load spill. The only bulk hazardous material expected to be delivered during construction is fuel for construction plant. These are likely to be infrequent and delivered to several construction sites along the route rather than a single central site. Therefore, in addition to the low numbers, deliveries are also spread over a large area of the network resulting in a likely very low increase in loads on any one route. No likely significant effect is anticipated therefore hazardous loads is scoped out.	Scoped out
Construction	Railway users	No – methods will be employed when installing overhead line to avoid any potential impacts on the railway. This may include overnight blockades/temporary closures to install protection/temporary works. The new overhead line would cross the rail network in only 2 locations, once over the Peterborough to Lincoln Railway Line (in Section 1 near Pinchbeck) and once over the East Coast Mainline (in Section 2 near Corby Glen). Tower locations will be designed to avoid the rail line meaning that only short-term temporary scaffolding over the rail line would be required while the conductors are pulled into place over them, no extensive works or permanent structures would be required on or over the rail line. The proposed method and timing would be developed in consultation with Network Rail to ensure significant effects on the rail network are avoided. A similar approach would be employed for reconductoring	Scoped out

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
		where the existing overhead line crosses rail infrastructure at two further locations, and one test track.	
Construction	Navigable waterway users	No – there are four navigable waterways that could potentially be crossed by the new overhead lines and one navigable waterway that is crossed by the existing overhead line. Where navigable waterways 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. Specific detailed designs for each navigable waterway crossing, consistent with the principles set out in **Appendix 4A Initial Outline Code of Construction Practice** will be subject to appropriate consent by the relevant regulatory body. Significant effects are not likely to occur.	Scoped out
Operation	Road users, public transport users (Bus), pedestrians and cyclists	No - during operation (inc. maintenance) of the Project, traffic generated would be associated with routine maintenance and occasional repair, inspection activities, and a small number of operational staff. The impact of operational traffic from OHL projects would be expected to be substantially lower than 10% of existing traffic and movements are not anticipated to have a material effect on the transport network and receptors. This approach has been successfully undertaken by National Grid on similar OHL projects, and is also	Scoped out

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
		suitable for this Project. Traffic and transport effects during operation (inc. maintenance) are therefore proposed to be scoped out.	
Operation	Pedestrians and cyclists	**Yes -** there is potential for significant effects on pedestrians and cyclists, as a result of permanent PRoW closures/diversions associated with the substations leading to potential Increased Journey Time.	**Scoped in**
Operation and maintenance	Railway users	No – maintenance vehicles would only cross railway lines using existing highway crossing points e.g. bridges, underpasses or level crossings, therefore no impacts are anticipated. Traffic and transport effects during operation (inc. maintenance) are therefore proposed to be Scoped out.	Scoped out

Table 20.9 Proposed scope of the Air Quality assessment

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
Construction	Ecological and human receptors	**Yes** – potential for significant effects at ecological and human receptors, from deterioration in local air quality (PM10 and PM2.5), caused by dust, due to proximity of proposed construction activities to sensitive receptors.	**Scoped in**
Construction	Ecological and human receptors	**Yes -** potential for temporary deterioration in local air quality (NO_2, NO_x, PM_{10} and $PM_{2.5}$) at local human and ecological receptors, when the use of NRMM including generators occurs.	**Scoped in**
Construction	Ecological and human receptors	**Yes -** potential for deterioration in local air quality (NO_2, NO_x, PM_{10} and $PM_{2.5}$) at local human and ecological receptors. This will be scoped out if the EPUK/IAQM indicative criteria are not met, as there would be no potential for significant effects. It will be scoped in if the EPUK/IAQM indicative criteria are met or exceeded. The assessment of emissions from diverted traffic and road closures would also be scoped out if the EPUK/IAQM indicative criteria are not met, as there would be no potential for significant effects. It will be scoped in if the	**Scoped in** (if the EPUK/IAQM indicative criteria are met or exceeded)

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
		EPUK/IAQM indicative criteria are met or exceeded.	
Operation and maintenance.	Ecological and human receptors.	No – significant effects are not likely to occur from operational dust sources, vehicle emissions, generators and NRMM. The only vehicle trips associated with the operational phase will be for maintenance and these would be minimal across an annual period. The predicted volumes of traffic would not meet the EPUK/IAQM indicative criteria. Therefore, vehicle emissions during operation and maintenance are proposed to be scoped out. No significant effects are likely to occur from dust sources, generators and NRMM due to the infrequent, temporary and transient nature of any maintenance works and incorporation of best practice measures and NRMM standards. Therefore, no significant operation or maintenance effects are predicted.	Scoped out

Table 20.10 Proposed scope of the Noise and Vibration assessment

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
Construction noise.	Noise Sensitive Receptors within the Study Area	**Yes** – there is the potential for effects due to construction noise within the Study Area. There is a greater likelihood of significant adverse effects from construction noise at static sites, such as construction compounds where the duration of works may be medium to long term. Furthermore, any activities required to be undertaken outside of normal working hours (for example, any night-time working associated with trenchless crossing locations), or where certain operations cannot be stopped once started.	**Scoped in**
Construction vibration on human receptors.	Structures within the Study Area	**Yes** – whilst construction vibration is not anticipated to result in damage to buildings or structures during the works, an assessment is required to ensure that appropriate mitigation measures are put in place should the potential for damage to structures be identified. This would be reviewed during the iterative design process and potential areas of concern would be highlighted.	**Scoped in**
Construction vibration on structures.	Humans within Vibration Sensitive Receptors in the Study Area	**Yes** – there is the potential for effects on human receptors due to construction vibration at Vibration Sensitive Receptors within the Study Area.	**Scoped in**
Construction traffic noise.	Noise Sensitive Receptors within the Study Area	**Yes** – there is the potential for significant effects at Noise Sensitive Receptors close to construction traffic routes.	**Scoped in**
Construction traffic vibration.	Vibration Sensitive Receptors within the Study Area	**No** – vibration from traffic on public highway is caused by irregularities in the road surface. Where the road surface is well maintained, as per TT01 of **Appendix 4A Initial Outline Code of Construction Practice**, and free from irregularities, such as potholes, significant vibration effects would not be expected, even at relatively short distances.	Scoped out

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
Operational noise from overhead lines.	Noise Sensitive Receptors within the Study Area	No – the proposed overhead line system is a 'triple Araucaria' conductor bundle, which is regarded as practically quiet during both typical dry and wet weather conditions and would not lead to significant adverse effects at nearby Noise and/or Vibration Sensitive Receptors. In addition, tower fittings, such as insulators, dampers, spaces, and clamps, shall be designed and procured in accordance with a series of National Grid Technical Specifications and must be type registered (rigorously tested) to ensure the fitting conforms to the specification. These processes reduce the potential for audible noise and tones to occur from all types of fittings, including insulators. Therefore, operational noise from the overhead lines and towers is not likely to be significant at nearby Noise Sensitive Receptors under any weather conditions. If an alternative type of conductor is considered later in developing the design the potential for significant noise effects will be considered appropriately in the ES.	Scoped out
Operational noise from substation transformers and associated cooling plant.	Noise Sensitive Receptors within the Study Area	**Yes** – there is the potential for significant effects at Noise Sensitive Receptors close to substations, particularly from those elements which operate on a 24-hour basis (for example, transformers generally run continuously).	**Scoped in**
Operational noise from substation switchgear	Noise Sensitive Receptors within the Study Area	**No** – switchgear noise is generated, in the main, by the operation of circuit breakers, for which the noise emissions are 'impulsive' in character (i.e. of short duration.) Modern switchgear operates with a dull 'thud'. Switchgear would	Scoped out

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
and auxiliary plant.		operate infrequently and is therefore proposed to be Scoped out. Auxiliary plant may comprise standby diesel generators and air compressors to provide emergency back-up power to cooling plant. When present and operating, these would generate noise. However, they do not run continuously and would be housed in a building or outdoor acoustic enclosure. Noise from such assets is therefore not considered significant, given its emergency function and as such is proposed to be scoped out.	
Operational vibration.	Vibration Sensitive Receptors within the Study Area	No – substation plant would include vibration isolation measures within the design (see **Chapter 15 Noise and Vibration**, Section 15.6). With these measures in place, operational vibration due to substation plant is not expected to result in any vibration impact at Vibration Sensitive Receptors. There are no other sources of operational vibration proposed as part of the Project and as such, is proposed to be scoped out.	Scoped out
Maintenance noise and vibration.	Noise and/or Vibration Sensitive Receptors within the Study Area	No – maintenance of the overhead lines, and substations would be infrequent, localised and short term in duration. Maintenance activities would follow standard measures to reduce noise and vibration where required and as such, is proposed to be scoped out.	Scoped out

Table 20.11 Proposed scope of the Socioeconomics, Recreation and Tourism assessment

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
Construction	Local labour market	**Yes -** the Project will generate beneficial direct and indirect temporary employment, training and apprenticeship opportunities both on site and indirectly in the supply chain during the construction phase, which could be significant.	**Scoped in**
Operation and maintenance	Local labour market	No - the scale of operational and maintenance employment generated by the Project is likely to be very limited.	Scoped out
Construction	Users of recreational routes and PRoW of significance in the local area	**Yes -** disruption to recreational routes and PRoW of significance in the local area during the construction phase will be avoided as far as possible and considered with a PRoWMP. However, there is the potential for significant effects during construction due to the possible need for temporary or permanent suitable diversions to be agreed with relevant bodies.	**Scoped in**
Operation and maintenance.	Users of recreational routes and PRoW of significance in the local area	No - any temporary, long-term or permanent effects on recreational routes and PRoW of significance in the local area	Scoped out

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
		would arise during the construction period and would therefore be assessed as construction effects. Any long-term impacts would be reflected in the construction assessment conclusions accordingly. No significant effects on recreational routes and PRoW of significance in the local area are anticipated during operation. Disruption to recreational routes and PRoW of significance in the local area during maintenance will be avoided as far as possible, managed with a PRoWMP, and it is not considered that there is the potential for significant effects.	
Construction	Development land, utilities and renewables infrastructure	**Yes -** the Project has been designed to avoid development land, utilities and renewables infrastructure as far as possible, however there may be the potential for land take which could result in the potential for significant effects.	**Scoped in**
Operation and maintenance.	Development land, utilities and renewables infrastructure	No - any temporary or permanent effects on development land, utilities and renewables infrastructure would arise during the construction period and	Scoped out

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
		would therefore be assessed as construction effects. . Any long-term impacts would be reflected in the construction assessment conclusions accordingly. No significant effects on development land are anticipated during operation. Disruption to development land during maintenance will be avoided as far as possible and it is not considered that there is the potential for significant effects.	
Construction	Open space	**Yes -** the Project has been designed to avoid open space as far as possible, however there may be the potential for land take which could result in the potential for significant effects and so this has been **scoped in** for further consideration at this stage. In the event of permanent loss of open space, mitigation measures such as replacement land will be considered.	**Scoped in**
Operation and maintenance.	Open space	No – any temporary, long-term or permanent effects on open space would arise during the construction period and would therefore be assessed as construction effects. Any long-	Scoped out

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
		term impacts would be reflected in the construction assessment conclusions accordingly. No significant effects on open space are anticipated during operation. Disruption to open space during maintenance will be avoided as far as possible and it is not considered that there is the potential for significant effects.	
Construction	Affected communities, community facilities, visitor attractions and businesses (indirect)	**Yes** - The Project has been designed to avoid effects on these receptors as far as possible. However, there is the potential for direct and indirect temporary effects to arise from construction activities (amenity and severance) that may give rise to significant effects.	**Scoped in**
Operation and maintenance.	Affected communities, community facilities, visitor attractions and businesses (indirect)	No - access to these receptors will be reinstated post construction and their ongoing use will be unaffected during operation and maintenance activities. Therefore, significant effects are not likely to occur.	Scoped out
Construction, operation, and maintenance.	Affected communities, community facilities, visitor attractions and businesses (direct)	No - the Project has been designed to avoid direct impacts on these receptors and therefore, significant effects are not likely to	Scoped out

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
		occur. Should this position change between Scoping and PEIR or ES stage, any communities, community facilities, visitor attractions and businesses likely to be directly impacted, would be included in further assessment as appropriate. Indirect effects which may occur during construction such as disruption to access and noise will be managed through the Construction Traffic Management Plan (CTMP) and CEMP.	
Construction	Tourism accommodation	**Yes -** impact of the construction workforce on bedspace availability is **scoped in** due to the potential scale of employment generated during the construction phase and the cumulative impact of other projects in the region.	**Scoped in**
Operation and Maintenance	Tourism accommodation	No - the scale of operational employment generated is likely to be very limited. Therefore, tourism accommodation availability will be unaffected during operation and maintenance activities.	Scoped out

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
Construction, operation and maintenance.	Residential properties	No - the emerging preferred corridor for the Project and substation siting areas avoids acquisition or over-sail of residential properties. Indirect effects which may occur during construction such as disruption to access and noise will be managed through the CTMP and CEMP.	Scoped out
Construction, operation and maintenance.	Aviation infrastructure	**Yes -** the Project has been designed to avoid effects on these receptors as far as possible. However, there is the potential for aviation infrastructure to be directly or indirectly impacted and so this has been **scoped in** for further consideration at this stage. An assessment of the effects of the Project on users of airfields as socio-economic receptors will be presented in the ES when information from specialist aviation consultation is available.	**Scoped in**

Table 20.12 Proposed scope of the Health and Wellbeing assessment

Project phase	Receptor	Potential for significant effect	Proposed to be scoped in/out
Construction	Wider study area population.	**Yes** – increased employment, income and training opportunities for communities in the wider study area leading to potential positive effects on population health and wellbeing.	**Scoped in**
Construction	Local residents	**Yes –** changes to people's feelings about their local environment, affecting quality of life, mental and physical health.	**Scoped in**
Construction	Local residents and users of promoted recreational routes and PRoW	**Yes –** potential reduction in mental and physical health benefits gained from use of promoted recreational routes, at a population level.	**Scoped in**
Construction	Local residents and users of open spaces	**Yes** – potential reduction in mental and physical health benefits associated with access to open space.	**Scoped in**
Construction	Local residents, users of community facilities and owners/operators of businesses	No – the construction of the Project will be undertaken so as to avoid temporary or permanent land take affecting residential properties, community facilities and businesses. On this basis, significant effects from potential	Scoped out

Project phase	Receptor	Potential for significant effect	Proposed to be scoped in/out
		temporary and permanent land take are not likely to occur.	
Construction	Local residents	No – disruption due to construction traffic will be localised and temporary and not likely to affect access at population level. Significant effects from increased journey times affecting access to community facilities are not likely to occur.	Scoped out
Construction	Local residents	**Yes** - potential reduction in mental health associated with uncertainty and stress relating to the Project during the pre-construction period.	**Scoped in**
Construction	Local residents and owners/operators of businesses	No – he construction of the project will comply with legally required standards to minimise the risk of exposure of the population to harmful substances. Pollution control measures are included in **Appendix 4A initial Outline CoCP**. Significant effects from potential soil and water contamination due to the emission of harmful substances are not likely to occur.	Scoped out

Project phase	Receptor	Potential for significant effect	Proposed to be scoped in/out
Operation and Maintenance	Wider study area population.	No – For a project of this nature and scale, it is unlikely that there will be increased employment, income and training opportunities for communities in the wider study area during operation at a level to have a population wide effect. Significant effects are not likely to occur.	Scoped out
Operation and Maintenance	Local residents and users of PRoW	No - for this Project, there will be no permanent closures or diversions of promoted recreational routes and PRoW during operation and maintenance that would lead to a reduction in mental and physical health benefits gained from use of these, at a population level. Significant effects are not likely to occur.	Scoped out
Operation and Maintenance	Local residents and users of open spaces	No - due to the nature and scale of the Project, it is unlikely that there will be permanent changes to access to open space during operation and maintenance that would lead to a reduction in mental and physical health benefits associated with access to open space. Significant effects are not likely to occur.	Scoped out

Project phase	Receptor	Potential for significant effect	Proposed to be scoped in/out
Operation and Maintenance	Local residents and owners/operators of businesses	No - the operation and maintenance of the Project will avoid land take affecting residential properties, community facilities and businesses. On this basis, significant effects are not likely to occur.	Scoped out
Operation and Maintenance	Local residents within 500 m of Scoping Boundary.	**Yes –** changes to people's feelings about their local environment due to presence of the Project, affecting quality of life, mental and physical health.	**Scoped in**
Operation and Maintenance	Local residents	No – in relation to potential permanent impacts associated with the generation of EMF. 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. An EMF report will be prepared as part of the Project. This is separate to the EIA process. A summary of the EMF report will be provided in the ES.	Scoped out

Project phase	Receptor	Potential for significant effect	Proposed to be scoped in/out
Operation and Maintenance	Local residents	**Yes -** potential reduction in mental health associated with uncertainty and stress relating to the perceived impacts of the generation of EMF.	**Scoped in**
Operation and Maintenance	Local residents and owners/operators of businesses	No - the operation and maintenance of the project will comply with legally required standards to minimise the risk of exposure of the population to harmful substances. Significant effects from potential soil and water contamination due to the emission of harmful substances are not likely to occur.	Scoped out
Operation and Maintenance	Local residents and owners/operators of businesses	**Yes -** contribution to improved energy infrastructure leading to potential positive effects on population health and wellbeing.	**Scoped in**
Operation and Maintenance	Local residents and visitors to the countryside	**Yes -** potential reduction in the wellbeing benefits of the use of countryside and open space	**Scoped in**

Table 20.13 Proposed scope of the Climate Change assessment

Project Phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
Pre-construction	Global atmosphere (effect from GHG emissions)	No - emissions associated with pre- construction are considered to be very small and therefore not likely to be material to the assessment.	Scoped out
Construction	Global atmosphere (effect from GHG emissions)	**Yes** - the Project could give rise to significant effects on climate change arising from GHG emissions during construction.	Lifecycle Stage Modules **Scoped in**: A1 Raw Material Supply, A2 Transport, A3 Manufacture, A4 Transport to Works Site A5 Construction /Installation processes, D Benefits and Loads Beyond the System Boundary (Land use change).
Operation	Global atmosphere (effect from GHG emissions)	**Yes** - the Project could give rise to significant effects on climate change arising from GHG emissions during operation.	Lifecycle Stage Modules **Scoped in**: B1 Use, B3 Repair, B4 Replacement, B8 Other operational processes (emissions associated with network losses),

Project Phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
			D Benefits and Loads Beyond the System Boundary (Reduction in GHG emissions from non-renewable energy generation sources once the proposed renewable energy generation can connect to the reinforced network).
Operation	Global atmosphere (effect from GHG emissions)	No – emissions during the activities of these Lifecycle Stage Modules are expected to be minimal and would not result in significant effects.	Lifecycle Stage Modules scoped out: B2 B5 B6-7 B9
End of Life	Global atmosphere (effect from GHG emissions)	No – end of life impacts will not be considered due to the long design life of the Project. It is unusual for elements of National Grid's transmission system to be decommissioned and reinstated. As such, significant effects are not likely.	Lifecycle Stage Modules scoped out: C1-4
Construction, operation and maintenance.	Principal Project Infrastructure (a portfolio of assets defined in **Chapter 4 Description of the Project**); human health receptors and environmental receptors	No - a Climate Change Resilience (CCR) Screening Assessment has been undertaken in **Appendix**	Scoped out

Project Phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
		18A. This concludes that taking account of the design and control measures, significant adverse effects on the environment are not likely as a result of the Project's vulnerability to climate change and no further assessment is required in the ES.	

Table 20.14 Proposed scope of the Major Accidents and Disasters assessment

Project phase	Receptor	Potential for significant effect	Proposed to be Scoped in or out
Construction, operation and maintenance.	The Project	No – as set out in **Appendix 19A Major Accidents and Disasters Scoping Table,** the Project is not potentially vulnerable to a major accident or disaster.	Scoped out
Construction, operation and maintenance.	Receptors listed in **Table 19.2**	No - as set out in **Appendix 19A Major Accidents and Disasters Scoping Table,** the Project will not exacerbate existing hazards.	Scoped out

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