

The Great Grid Upgrade

Chesterfield to High Marnham

Chesterfield to High Marnham

Environmental Appraisal Report - Part 1 of 8

October 2026



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1. Introduction

1.1 Purpose and Scope of the Environmental Appraisal Report (EAR)

- 1.1.1 This Environmental Appraisal Report (EAR) has been prepared by Arcadis Consulting (UK) Ltd on behalf of National Grid Electricity Transmission plc ('National Grid'), which is proposing overhead line 'tie in' works ('the Scheme') related to the proposed new High Marnham 400kV Substation on land near High Marnham.
- 1.1.2 The purpose of this EAR is to provide a description of the Scheme, the environmental baseline, the potential for construction and operation phase impacts, and the mitigation and control measures by which construction and operation of the Scheme will be managed.

1.1 Background to the Scheme and its Context

- 1.1.3 The Scheme is located to the north of the village of High Marnham. The location of the Scheme is shown in Appendix D High Marnham New Overhead Lines Drawings, Figure 1.2.1. The Scheme is located within the administrative area of Bassetlaw District Council (BDC).
- 1.1.4 National Grid is proposing to develop a new 400kV substation on land near High Marnham as part of the Chesterfield to High Marnham reinforcement project ('the Project'), the purpose of which is to reinforce the electricity network, upgrading the existing 275kV transmission in between Chesterfield and High Marnham to operate at 400kV. The Project forms part of the National Grid 'Great Grid Upgrade', which aims to provide additional resilience within the electricity network. The Great Grid Upgrade will enable the electricity grid to carry more clean energy from renewable sources to communities, homes and businesses in every part of England and Wales, helping the UK to reach Net Zero. The proposals will also increase the security and resilience of the UK's electricity network.
- 1.1.5 This report is in relation to the Scheme required to facilitate the Project and the connection of the new 400kV High Marnham substation to the National Grid network.
- 1.1.6 The Scheme will reinforce the network and also assist in rationalising this part of the transmission system to improve operational flexibility, meet localised demand and address anticipated customer connections in this location.

1.2 Planning Context

- 1.2.1 National Grid has consent from BDC for the proposed new 400kV High Marnham substation under the Town and Country Planning Act 1990 (TCPA). A TCPA application was submitted to BDC in November 2025. Planning permission was granted in June 2026.

- 1.2.2 Consent for elements of the Scheme will be sought under Section 37 of the Electricity Act 1989 from the Secretary of State for Energy Security and Net Zero. National Grid will also ask for Deemed Planning Consent for works subject of the Section 37 application. The remaining elements of the Scheme will be delivered under a combination of existing rights, exemptions or permitted development, as set out in Section 2 of this report. The EAR applies to all aspects of the Scheme, regardless of their consenting route, to ensure a robust consideration of the Scheme with respect to the environment.

Requirement for EIA

- 1.2.3 The Electricity Works (Environmental Impact Assessment) (England and Wales) Regulations 2017 (the 'EIA Regulations') define EIA development as either:
- Schedule 1 development, where an EIA is required; or
 - Schedule 2 development likely to have significant effects on the environment by virtue of factors such as its nature, size or location, taking into account the selection criteria set out in Schedule 3, identified through the process of screening.
- 1.2.4 The Scheme does not fall under the activities listed in Schedule 1 of the EIA Regulations, but it does fall under paragraph (3)(b)(ii) of Schedule 2 of the EIA Regulations.
- 1.2.5 The Scheme also does not fall within a sensitive area as defined by the EIA Regulations:
- land notified under section 28(1) (sites of special scientific interest) of the Wildlife and Countryside Act 1981 (WCA);
 - a National Park within the meaning of the National Parks and Access to the Countryside Act 1949;
 - the Broads;
 - a property appearing on the World Heritage List kept under article 11(2) of the 1972 UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage;
 - a scheduled monument within the meaning of the Ancient Monuments and Archaeological Areas Act 1979;
 - an area of outstanding natural beauty designated as such by an order made by Natural England under section 82(1) (areas of outstanding natural beauty) of the Countryside and Rights of Way Act 2000 as confirmed by the Secretary of State; or
 - a European site.
- 1.2.6 An EIA Screening Assessment has been undertaken to consider the Scheme in relation to the criteria set out in Schedule 3 of the EIA Regulations. This determined that significant effects on the environment are not likely to occur with the application of appropriate mitigation. A request for an EIA Screening Opinion has been submitted to the Department for Energy Security and Net Zero (DESNZ) alongside this EAR, which sets out the measures to be taken to manage construction and operation of the Scheme.

1.3 Stakeholder Engagement

Public Consultation

- 1.3.1 Consultation is ongoing with a variety of different statutory and non-statutory consultees with regard to the Scheme and its potential environmental impacts. National Grid is proactively engaging with statutory consultees such as BDC, Environment Agency, Natural England and Historic England. Non-statutory consultation with the wider public is also being undertaken for the Scheme as part of the Great Grid Upgrade. All matters arising from consultation have been taken into consideration as appropriate as part of the Form B process, which is a mechanism by which the local authorities can make a recommendation on Section 37 applications to the Secretary of State.

1.4 Structure

- 1.4.1 The structure of the EAR is outlined below:
- Chapter 1 Introduction;
 - Chapter 2 Scheme Description;
 - Chapter 3 Environmental Appraisal;
 - Chapter 4 Summary of Impacts and Measures;
 - Chapter 5 Planning and Policy; and
 - Chapter 6 References.
 - Appendix A High Marnham New Overhead Lines Glossary and Abbreviations;
 - Appendix B Methodology;
 - Appendix C High Marnham Overhead Works Plans;
 - Appendix D High Marnham New Overhead Lines Drawings;
 - Appendix E Type 1 Photographic Survey;
 - Appendix F Agricultural Land Classification Report;
 - Appendix G High Marnham New Overhead Lines Outline Soil Management Plan;
 - Appendix H Noise Impact Assessment;
 - Appendix I High Marnham Overhead Lines Construction Dust Assessment and Methodology;
 - Appendix J Arboricultural Survey Report;
 - Appendix K Excerpts from Appendix F of the new 400kV High Marnham Substation Environmental Appraisal Report; and
 - Appendix L Flood Risk Assessment (FRA).

1.5 The Team

- 1.5.1 The environmental appraisal has been compiled by Arcadis Consulting (UK) Ltd. In addition to the team preparing the EAR, National Grid, Jacobs, WSP, Laing O'Rourke, M Group and JBP Consulting Limited have contributed to the preparation of this EAR and have provided information that has been used in the EAR.

2. Scheme Description

2.1 Introduction

- 2.1.1 This chapter of the EAR provides a description of the Scheme and forms the basis of the appraisal presented in Chapter 3. It provides an overview of the land required to construct the Scheme, a description of the layout and physical characteristics of the Scheme and the land use requirements during the construction and operational phase of the development. This chapter also describes the construction programme and anticipated construction activities.
- 2.1.2 All dimensions described are approximate.

2.2 Existing Site and Surroundings

- 2.2.1 The overhead lines shown in Appendix C High Marnham Overhead Works Plans, illustrate the extent of the Scheme, located to the north of High Marnham, Nottinghamshire. The red line boundary shows the location of the new 400kV High Marnham substation, which is located on land intersecting with the existing 400kV and 275kV substations and adjoining the former High Marnham Power Station site, which has been decommissioned and removed. Post construction, any remaining areas of land only temporarily required would be restored to their former land use.
- 2.2.2 Currently, the land required to construct the Scheme predominantly comprises agricultural parcels and hedgerows, as well as containing part of the existing High Marnham Substation. The land required to construct the Scheme is bound by local roads and agricultural parcels to the north, west and south, and by the River Trent to the east. The wider area is rural in nature and includes village settlements such as Normanton on Trent, High and Low Marnham, North and South Clifton and Ragnall.
- 2.2.3 The topography is generally flat, ranging from 9m Above Ordnance Datum (AOD) – 17m AOD. The landscape is gently undulating and generally open with hedgerows and trees delineating field boundaries. The existing pylons and substation are visible, backclothed by tree planting along the River Trent.
- 2.2.4 There are no international or nationally designated sites or receptors within the land required to construct the Scheme, however, the Fledborough to Harby Dismantled Railway Local Wildlife Site (LWS) is included within the northern portion of the land required to construct the Scheme, as is the Marnham Railway Yard candidate LWS (see Section 3.2 Ecology).
- 2.2.5 The land required to construct the Scheme is not located within areas designated nationally or locally for their landscape value. There are no National Landscapes or National Parks within 2km of the Site (see 3.3 Landscape and Visual).
- 2.2.6 There are no World Heritage Sites, scheduled monuments, Registered Battlefields or Registered Parks and Gardens within the land required to construct the Scheme (see Section 3.4 Cultural Heritage). There are eight listed buildings (L1-L8) within 500m of land required to construct the Scheme (see Section 3.4 Cultural Heritage).

- 2.2.7 The land required to construct the Scheme is not within an Air Quality Management Area (AQMA) (see Section 3.5 Air Quality).
- 2.2.8 There are a number of residential receptors within 500m of the land required to construct the Scheme (see Section 3.3 Landscape and Visual).
- 2.2.9 No Environment Agency designated Main Rivers are located within the Site. The River Trent (Environment Agency Main River) is located adjacent to the land required to construct the Scheme in the east (see Section 3.6 Water Resources and Flood Risk).
- 2.2.10 There are no Noise Important Areas within the land required to construct the Scheme (see Section 3.8 Noise and Vibration).
- 2.2.11 The PRoWs in the vicinity of the land required to construct the Scheme are shown in Appendix D High Marnham New Overhead Lines Drawings: Figure 3.9.1 Traffic and Transport Proposed Construction Route. There are seven PRoWs within the land required to construct the Scheme:
- Fledborough FP10 and FP12 are located to the north east.
 - Marnham FP7 is located to the east.
 - Marnham FP4 and FP5 are located to the south west.
 - Normanton On Trent FP5 and FP8 are located to the south west.
- 2.2.12 There are also 17 footpaths, one bridleway and three byways open to all traffic located 500m from the land required to construct the Scheme.
- 2.2.13 There are four DMMO application routes located within the land required to construct the Scheme and one DMMO application route located 500m from the land required to construct the Scheme.

2.3 The Scheme

- 2.3.1 The Scheme is composed of several elements, set out below, to enable the connection of the new 400kV substation at High Marnham (which was screened as a non-EIA project and subject to a separate TCPA application) to the Project and the wider network. This will comprise the installation of short stretches of overhead line between the new High Marnham 400kV substation and the existing overhead line network, as well as the removal of some existing stretches of overhead line, together with the temporary works (such as temporary masts) required to make the proposed permanent changes.

Consenting the Scheme

- 2.3.2 Certain elements require consent under Section 37 of the Electricity Act 1989 (as amended) where they fall outside permitted development or National Grid land ownership boundaries, or where an exemption does not apply under The Overhead Lines (Exemption) (England and Wales) Regulations 2009 ('Exemption Regulations'). These include:

- permanent tie in works and overhead line installations that exceed exemptions or fall outside National Grid land ownership;
- permanent turn-ins and modifications to overhead line alignment that are not within National Grid land ownership or are not classed as repair/renewal; and
- any temporary diversions requiring longer than six months where the exemption is not applicable.

2.3.3 Temporary overhead line works that meet the exemption criteria may proceed under the Exemption Regulations without a Section 37 consent, subject to the following limits:

- temporary overhead lines not exceeding 850m in aggregate length;
- time-limited (typically up to six months per exemption); and
- temporary diversions that remain within the exemption thresholds and do not involve position changes that negate the exemption.

2.3.4 These exemptions apply only where the temporary lines stay within the 850m limit and meet all other exemption criteria; they do not apply if the temporary line is in a different position from existing lines, or would exceed height limits.

2.3.5 Section 37(2)(b) provides that Section 37(1) will not apply in relation to so much of an electric line as is or will be within premises in the occupation or control of National Grid. The effect of Section 37(2)(b) would be to remove the need for consent under Section 37(1) for the installation of electric lines within land occupied and controlled by National Grid. Where Section 37(1) does not apply to electric line works by virtue of Section 37(2)(b) this means that National Grid can carry out certain overhead line works as permitted development under Class B(a) of Part 15 of The Town and Country Planning (General Permitted Development) (England) Order 2015, including:

- construction of short overhead line sections and installation of new pylons within National Grid land ownership; and
- replacement/repair/renewal works to existing overhead lines that do not increase height beyond current structures and remain within National Grid land ownership.

Scheme Elements

2.3.6 The overhead line 'tie in' works at High Marnham which comprise the Scheme include the following elements:

- Section 37 Consent:
 - Overhead line 4ZV is an overhead electric line between Chesterfield and High Marnham. Permanent turn-ins measuring 154m in line length require Section 37 consent.
 - Overhead line ZDA is an overhead electric line to High Marnham. It is a temporary diversion that is required for longer than six months, measuring 296m in line length and comprising one new pylon. It will require Section 37 consent.

- Overhead line ZDF is an overhead electric line to High Marnham. Permanent turn-ins measuring 181m in line length and one new line pylon require Section 37 consent.
- Overhead line XE is an overhead electric line between Thurcroft/West Milton to High Marnham. Permanent turn-ins measuring 183m in line length require Section 37 consent.
- Section 37 Exemption/permitted development:
 - Overhead line 4ZV – 200m of overhead electric line. Downloads measuring 74m and 73m. One new terminal pylon. One new line pylon.
 - Overhead line ZDA – 107m of permanent overhead electric line (High Marnham to West Burton, Cottam to High Marnham). Permanent downloads measuring 52m and 56m. 291m of temporary overhead electric line for longer than six months (High Marnham to West Burton, Staythorpe to High Marnham) with downloads measuring 41m and 48m. 16m of temporary overhead electric line for longer than six months (High Marnham to Staythorpe). One new permanent terminal pylon. One new temporary terminal pylon.
 - Overhead line ZDF – 163m of overhead electric line. Downloads measuring 62m and 62m. One new terminal pylon.
 - Overhead line XE – 82m of overhead electric line. Downloads measuring 60m. One new terminal pylon.
- Installation of approximately 1.3km of temporary overhead line, in two sections to the south of the new 400kV substation (Chesterfield-High Marnham 1, 4ZV0003T and Stoke Bardolph-High Marnham, ZDF004T), and two temporary structures, in place for less than six months. This does not require Section 37 consent.
- Removal of approximately 9.3km of existing overhead line, in five sections, predominantly to the north, east, south and south west of the existing High Marnham Substation, and the removal of 24 pylons (4ZV1AT to 4ZV3T, 4ZV1BT to 4ZV3T, XE1T to XE4T, ZDA252AT to ZDA252BT, ZDA248AT, ZDA248BT, ZDA249T to ZDA253T, ZDF2T to ZDF4T and ZDA248FT to ZDA248BT). The removal of overhead line does not require Section 37 consent.

2.4 Construction Phase

- 2.4.1 This section sets out the construction programme and outlines the key assumptions that have been made within the EAR with regard to the construction approach and working methods for the Scheme.

Construction Environmental Management Plan

- 2.4.2 Construction of the Scheme will be managed in line with a Construction Environmental Management Plan (CEMP) informed by the appraisal and control measures set out in this EAR. This will also include managements plans relating to the management of construction traffic, and materials and waste.
- 2.4.3 The purpose of the CEMP is to identify potential adverse environmental issues arising from the construction of the Scheme, to specify measurable limits and targets,

and to detail the mitigation measures to be undertaken during construction, and the management tools and procedures required. The CEMP will therefore provide an operational manual detailing the management, monitoring, auditing and training procedures to be followed during the construction of the works to ensure compliance with relevant legislation. It will also set out the specific roles and responsibilities of the Contractors and wider project team personnel. The CEMP will include, but not be limited to, the following:

- available details regarding the phasing of works;
- details of the works to be undertaken highlighting any operations likely to result in adverse environment impacts, with an indication of the specific detailed mitigation measures to be employed;
- prohibited or restricted operations;
- a framework for compliance with relevant legislation and guidance;
- details of plant to be used;
- construction working hours including any weekend or public holiday works proposed and, if so, their working hours;
- roles and responsibilities of key staff including training of staff, liaison with stakeholders and management of enquiries and complaints;
- details of emergency procedures to be implemented on the site;
- details of general site management practices, including working hours, hoarding, access, lighting, site facilities, energy and water use, waste, materials procurement and storage;
- details of environmental management and control procedures covering ecology, traffic and access, noise and vibration, dust, contamination, hazardous materials, drainage and pollution control;
- requirements for auditing, monitoring and record-keeping;
- mechanisms for third parties to register complaints and the procedures for responding to complaints; and
- provisions for reporting, public liaison and prior notification, especially where dispensations will be required.

2.4.4 All proposed control and mitigation measures relating to the construction phase identified in Chapter 3 of this EAR will be included within the CEMP.

Construction Activities

2.4.5 The works required to construct the Scheme will include:

- installation of haul road;
- laydown/working platforms around existing pylons and proposed pylon locations;
- conductor/earth wire pulling;
- installation of new permanent structures;

- dismantling of existing structures;
 - installation of temporary structures;
 - erection and use of scaffolding; and
 - laydown areas.
- 2.4.6 Pre-commencement works will consist of vegetation clearance where necessary to enable the construction works undertaken in line with the CEMP.
- 2.4.7 The working areas associated with the provision of new temporary and permanent structures will be fenced and secured during construction only. The working area at each new pylon location will generally be stoned similarly to the stone access roads, to accommodate the crane pad required for pylon installation.
- 2.4.8 The construction of the foundations for new pylons will be of mass concrete design or piled, depending on geotechnical conditions. Mechanical excavators will dig excavations of sufficient size for the foundations in the shape of a pyramid; or temporary sheet piles will be installed to support the ground, depending on the size of the foundation. Subsoil and topsoil will be stored separately and in accordance with the CEMP. The dimensions of the excavation will differ, depending on the type of pylon to be installed, but will typically be no greater than 5m x 5m x 5m. Upon excavation for all four leg foundations, steel stubs will be suspended from a template to achieve the correct dimensions and rake for each leg of the pylon. All excavations will be fenced for protection and the foundations concreted in position using specially designed formwork.
- 2.4.9 Concrete will be delivered by ready-mixed concrete truck. After 48 hours, the formwork will be removed, and the excavations backfilled and consolidated.
- 2.4.10 Steelwork members of the new pylon will be delivered to site by lorry. The assembly of the pylon will commence at ground level and would proceed as far as possible until a crane is necessary to enable assembly to continue. Sections of the pylon will be erected at ground level and then craned into position and bolted on to the lower section of the pylon. Anti-climbing guards will be fitted and maintained from an early stage of pylon erection.
- 2.4.11 Where pylons are to be removed, the existing conductors will be unclamped and placed in rollers. The tension of the line will then be released, and the conductors lowered to the ground where they will be cut into manageable lengths, coiled and removed for recycling at a suitable facility. The insulator strings and other line fittings will be removed from each pylon. All these items will be removed for recycling. The pylons will be cut into manageable sections and the steelwork removed from site to be recycled. The foundations of each redundant pylon will be excavated, and the concrete and stub foundations removed from the site.

Construction Programme

- 2.4.12 The indicative construction and commissioning stage will consist of the following phases:
- January 2027 to January 2028 – installation of foundations;
 - February 2027 to February 2028 – pylon construction;

- April 2027 to October 2030 – overhead line installation works; and
- October 2030 to October 2032 – reinstatement, close out and demobilisation.

Working Hours

- 2.4.13 Typical working hours are likely to be 8am to 6pm on Monday to Friday, except during system outages, and 8am to 1pm on Saturday. System outages are assumed to be permitted only from the end of March to the end of October (standard summer working). During outages, some additional weekend working may be required. Construction of new access points to the public highway and associated traffic management may also be undertaken outside typical working hours.
- 2.4.14 Any works proposed outside the hours specified above are to be agreed with BDC prior to any of the proposed works being carried out.

Site Access and Routes

- 2.4.15 Site access will make use of existing access routes/tracks, where practical. Where new temporary access routes are required to reach working areas, these will generally be stoned. During construction, access will be required to construct the Scheme from:
- Skegby Road;
 - Fledborough Road;
 - Hollowgate Lane (north of High Marnham);
 - Polly Taylor's Road;
 - Sparrow Lane;
 - Hollow Gate Lane (west of Fledborough); and
 - Main Street.
- 2.4.16 Following construction, the temporary stoned access routes will be removed and any vegetation removed for their installation/removal will be reinstated.

2.5 Operational Phase

- 2.5.1 The following table sets out the dimensions of the new pylons proposed as part of the Scheme.

Table 2.5.1 Pylon specifications

Pylon reference	Section 37 Consent/ Exemption/ Permitted Development	Pylon Height (m)	Base Footprint (sq m)	Foundation Footprint (m)
XE4	Exemption Regulations 2009	33	8	4m x 4m pad @ 3m depth

Pylon reference	Section 37 Consent/ Exemption/ Permitted Development	Pylon Height (m)	Base Footprint (sq m)	Foundation Footprint (m)
XE3	Permitted Development	37	8	4m x 4m pad @ 3m depth
4ZV4T	Exemption Regulations 2009 (temporary)	58	21	4m x 4m pad @ 3m depth
4ZV3	Exemption Regulations 2009	52	14	5m x 5m pad @ 5m depth
4ZV2	Permitted Development	54	12	3m x 3m pad @ 3m depth
4ZV1	Permitted Development	53	16	5m x 5m pad @ 5m depth
ZDA252	Permitted Development	49	15	5m x 5m pad @ 5m depth
ZDA248GT	Section 37 (temporary)	52	13	5m x 5m pad @ 5m depth
ZDA248HT	Permitted Development (temporary)	52	13	5m x 5m pad @ 5m depth
ZDF4	Exemption Regulations 2009	56	15	5m x 5m pad @ 4m depth
ZDF5T	Exemption Regulations 2009 (temporary)	52	13	5m x 5m pad @ 5m depth
ZDF3	Section 37	51	9	3m x 3m pad @ 3m depth
ZDF2	Permitted Development	52	16	5m x 5m pad @ 5m depth

Access

- 2.5.2 There will be no permanent access routes provided as part of the Scheme. However, National Grid will retain rights of access for repair and maintenance.

3. Environmental Appraisal

3.1 Introduction

- 3.1.1 This chapter details the baseline conditions and the environmental appraisal of potential environmental impacts associated with the construction and operation of the Scheme. Where potential environmental impacts are identified, relevant control measures to reduce or avoid these impacts are prescribed for each environmental topic below.
- 3.1.2 This report should be read in conjunction with the appendices set out in Section 1.5.

3.2 Ecology

Introduction

- 3.2.1 This section details the Ecology baseline conditions and the environmental appraisal of the potential Ecology impacts associated with the construction and operation of the Scheme. Where potential environmental impacts are identified, relevant control measures are prescribed to reduce or avoid these impacts.
- 3.2.2 This section should be read in conjunction with Appendix A High Marnham New Overhead Lines Glossary and Abbreviations; Appendix B Methodology; Appendix D High Marnham New Overhead Lines Drawings; and Appendix K Excerpts from Appendix F of the new 400kV High Marnham Substation Environmental Appraisal Report.

Study Area

- 3.2.3 The study area comprises the land required to construct the Scheme, plus a 10km search area for International or European statutory designated sites, a 5km search for bat species records and a 2km search area for other statutory designated sites, non-statutory designated sites, protected and notable species, invasive non-native species, and granted European Protected Species Mitigations (EPSM) licences.

Consultation

- 3.2.4 Table 3.2.1 provides a summary of the issues raised and agreed during Form B consultation with respect to ecology and the Scheme and how they have been addressed.

Table 3.2.1 Summary of consultation

Consultee/Date	Summary of Issues Raised/Agreed
Natural England 13 July 26	Natural England confirmed that the development is not close to or within a Habitats Site, Site of Special Scientific Interest (SSSI) or protected landscape and that they have no comments to make on this consultation.
BDC 12 August 26	In their response to the Form B consultation, BDC highlighted that, despite an EIA not being required, sufficient ecological information be provided to support the assessment of environmental effects. This section sets out the appraisal of impacts related to ecology, thereby providing the requested information.

Baseline

3.2.5 This section details the baseline sites or features of particular nature conservation interest in relation to the Scheme. The locations of the ecological features confirmed as present across the Scheme and within the immediate vicinity are presented in Appendix D High Marnham New Overhead Lines Drawings of this EAR:

- Figure 3.2.1 Designated Sites;
- Figure 3.2.2 Phase 1 Habitat Plan;
- Figure 3.2.3 Pond Location Map;
- Figure 3.2.4 Bat Potential Roost Feature Tree Locations Map;
- Figure 3.2.5 Invasive Non-Native Species Map;
- Figure 3.2.6 Otter and Water Vole Survey Map.

Designated sites

3.2.6 There are no internationally designated sites identified within 10km of the land required to construct the Scheme including Special Areas of Conservation (SACs), Special Protection Areas (SPAs) or Ramsar sites.

3.2.7 No nationally or locally designated statutory sites for nature conservation were located within 2km of the land required to construct the Scheme.

3.2.8 Table 3.2.2 summarises the potential for the Scheme to impact the recorded non-statutory designated sites within their relevant Zone of Influence (Zol). Sites which require further consideration in this appraisal have been identified and can be found in Appendix D High Marnham New Overhead Lines Drawings; Figure 3.2.1.

Table 3.2.2 Non-statutory locally designated sites within the study area

Site Name and Designation	Distance from Site	Reason for Designation
Marnham Railway Yard candidate LWS	Intersects with the land required to construct the Scheme	<p>A strip of land along the southern side of an old disused railway line. It includes parts of what was Fledborough Station with areas of hardstanding having been colonised by plants and lichens.</p> <p>To the south of this dry, open area the vegetation comprises tall ruderal, coarse grassland and scrub communities. These habitat types increase to the east with large areas under dense scrub.</p>
Fledborough to Harby Dismantled Railway LWS	Intersects with the land required to construct the Scheme	<p>This long length of disused railway line has a rich floristic diversity with areas of open grassland and scrub. The composition of the vegetation ranges from well-developed scrub to low-growing pioneer plants colonising rabbit-disturbed soils and the bare ground of the old station and sidings.</p> <p>The Scheme supports a number of notable plant species including hoary cinquefoil (<i>Potentilla argentea</i>), wild liquorice (<i>Astragalus glycyphyllos</i>), small-flowered buttercup (<i>Ranunculus parviflorus</i>) and fine-leaved vetch (<i>Vicia tenuifolia</i>).</p>
Skegby Road Triangle LWS	Intersects with the land required to construct the Scheme	Roadside verge of unimproved neutral grassland.
Fledborough Holme LWS	Adjacent to east of the land required to construct the Scheme	<p>Pastureland encircled by a ditch with an oxbow pond and the River Trent to the east. The banks of the river are steep with an emergent flora at the base whilst the upper bank is lined with trees and shrubs and has a tall herb vegetation. The grassland is semi-improved, grazed by cattle and probably relict flood meadow.</p>
Old Trent, Marnham LWS	260m south east	<p>Old course of the River Trent with associated wetland habitats and an interesting selection of marginal and aquatic plant species. The channel varies from being steep sided with well vegetated banks, to wider stretches with lower banks.</p> <p>The site provides valuable habitat for amphibians and odonates in an intensively farmed landscape.</p>
North Clifton Church LWS	540m east	Churchyard of North Clifton Church. The underlying blown-sand soils produce a notable sward. The churchyard is

Site Name and Designation	Distance from Site	Reason for Designation
		bordered by mature evergreen and deciduous trees and surrounded by pasture.
South Clifton Grassland LWS	760m south east	Neutral pasture situated next to the River Trent on the floodplain.
Weston Road Verge LWS	900m south-west	<p>These roadside verges retain a number of grassland species characteristic of an unimproved sward. Grasses include much rough meadow-grass (<i>Poa trivialis</i>) and Yorkshire-fog (<i>Holcus lanatus</i>), with false oat-grass (<i>Arrhenatherum elatius</i>), red fescue (<i>Festuca rubra</i> agg.) and meadow foxtail (<i>Alopecurus pratensis</i>). Among the forbs common knapweed (<i>Centaurea nigra</i>), meadow vetchling (<i>Lathyrus pratensis</i>), meadow crane's-bill (<i>Geranium pratense</i>), bird's-foot-trefoil (<i>Lotus corniculatus</i>) and cowslip (<i>Primula veris</i>) can be found.</p> <p>The verges are backed by hedgerows dominated by hawthorn (<i>Crataegus monogyna</i>) and blackthorn (<i>Prunus spinosa</i>) with planted trees of mainly pedunculate oak (<i>Quercus robur</i>), with some sycamore (<i>Acer pseudoplatanus</i>) and ash (<i>Fraxinus excelsior</i>).</p>
Old Trent Oxbow, Spalford LWS	1km south east	Remnants of an oxbow lake, associated drains, and a pond.
Dunham Oxbow LWS	1.2km north-east	<p>This site comprises an oxbow lake near with associated marsh and wet woodland which support an interesting variety of characteristic plant species.</p> <p>Marshy areas are dominated by large stands of common reed (<i>Phragmites australis</i>), reed sweet-grass (<i>Glyceria maxima</i>), greater pond-sedge (<i>Carex riparia</i>) and bulrush (<i>Typha latifolia</i>) with marsh woundwort (<i>Stachys palustris</i>) and purple-loosestrife (<i>Lythrum salicaria</i>), growing amongst them. Willow (<i>Salix</i> sp.) and alder (<i>Alnus glutinosa</i>) woodland border the marsh while common meadow-rue (<i>Thalictrum flavum</i>), meadowsweet (<i>Filipendula ulmaria</i>) and great willowherb (<i>Epilobium hirsutum</i>) grow along the banks. The channel supports pink water-speedwell (<i>Veronica catenate</i>), water forget-me-not (<i>Myosotis scorpioides</i>) and marsh marigold (<i>Caltha palustris</i>) among the emergent species with blunt-fruited water-starwort (<i>Callitriche obtusangula</i>) beginning to re-colonise.</p>
Dunham Dubs LWS	1.3km north-east	The site comprises two lakes, a river bank and a small area of marsh on the opposite bank. The lakes are surrounded by sheep-grazed improved grassland with groups of broad

Site Name and Designation	Distance from Site	Reason for Designation
		<p>leaved trees. A flood bank runs along the western boundary and one divides the two lakes.</p> <p>The smaller lake has a well-developed marginal flora, including species like yellow iris (<i>Iris pseudacorus</i>), purple-loosestrife, grey club-rush (<i>Schoenoplectus tabernaemontani</i>) water mint (<i>Mentha aquatica</i>) and amphibious bistort (<i>Persicaria amphibia</i>). The other lakes marginal vegetation includes rushes (<i>Juncus</i> spp). Aquatic vegetation includes fennel pondweed (<i>Potamogeton pectinatus</i>), waterweed (<i>Elodea nuttalli</i>) and water crowfoot (<i>Ranunculus</i> sp).</p> <p>The river bank is dominated by tall ruderal vegetation of mainly common nettle (<i>Urtica dioica</i>) and creeping thistle (<i>Cirsium arvense</i>) with Purple-loosestrife and Reed Canary-grass (<i>Phalaris arundinacea</i>) along its lower reaches. The draw-down zone, in this tidal stretch of the river, supports marsh yellow-cress (<i>Rorippa palustris</i>) and Water pepper (<i>Persicaria hydropiper</i>).</p>
Meadow Lane Grasslands, Normanton on Trent LWS	1.5km south east	Collection of unimproved meadows close to the River Trent. There are three meadows divided by thick well-grown hedgerows, all cut for hay, with a fourth having been planted up with trees. To the east lie three much smaller meadows on either side of the track 'Meadow Lane'.
Grassthorne Corner LWS	1.5km south	This site comprises a triangle of roadside verge backed by a hawthorn hedgerow with a small group of trees planted in its centre. This species-rich pocket of unimproved grassland has as sward containing agrimony (<i>Agrimonia eupatoria</i>), meadow foxtail, meadow fescue, common knapweed, lady's bedstraw (<i>Galium verum</i>), common bird's-foot-trefoil, great burnet (<i>Sanguisorba officinalis</i>), lesser stitchwort (<i>Stellaria graminea</i>) and tufted vetch (<i>Vicia cracca</i>).
Goosemoor Dyke LWS	1.8km south-west	<p>A stream which is part shaded in places with riffles and silty areas.</p> <p>14 water beetles and a single species of water bug have been recorded. The nationally scarce water beetle (<i>Riolus subviolaceus</i>) has been recorded along the dyke at three locations near Tuxford and at Scarthinmoor. The dyke also supports 2 local A species of water beetles, black moss beetle (<i>Hydraena nigrita</i>) and moss beetle (<i>Ochthebius bicolon</i>) plus a single Local B species diving beetle (<i>Agabus didymus</i>).</p>

Habitat Survey

- 3.2.9 The full extent of the Scheme has not been surveyed due to lack of access to certain land parcels (some access tracks, two small parcels in the south west of the Scheme, and one small parcel to the east). This lack of data is unlikely to affect the recommendations or appraisal of impacts from the Scheme as a whole. The Phase 1 Habitat Plan can be found in Appendix D High Marnham New Overhead Lines Drawings; Figure 3.2.2.
- 3.2.10 The desk study identified five Habitats of Principal Importance in England (HPIE) within 2km of the land required to construct the Scheme. There are 15 areas of Deciduous Woodland HPIE (consisting of 24 parcels); two located within the existing High Marnham Substation site to the east, one adjacent to the land required to construct the Scheme and three located 600m south of the Scheme. Three areas (consisting of 11 parcels) of Coastal and Floodplain Grazing Marsh HPIE were identified adjacent to the north east of the Scheme. There were 10 areas of traditional orchard identified, the closest of which was located 60m west. Three areas of Wood-pasture and Parkland HPIE were identified, the closest of which was located adjacent to the Scheme, to the south. There were three areas of lowland fen HPIE, 1.3km north east of the Scheme.
- 3.2.11 The following habitats have been identified within the land required to construct the Scheme:
- Scrub
 - Several patches of dense scrub were recorded within the east of the Scheme, predominantly along the central/eastern access routes. These were dominated by hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), dog-rose (*Rosa canina*), elder (*Sambucus nigra*), willow (*Salix* sp.) and bramble (*Rubus fruticosus*). This was the primary habitat recorded in 2023, where the Scheme intersects Fledborough to Harby Dismantled Railway LWS, though surveys were unable to be updated in 2026 due to access limitations.
 - Grassland
 - Parcels of poor semi-improved grassland recorded within the south east of the land required to construct the Scheme and north west of the existing substation. Dominated by Yorkshire-fog (*Holcus lanatus*), meadow-grasses (*Poa* sp.), Fescues (*Festuca* sp.), meadow foxtail (*Alopecurus pratensis*) with frequent creeping buttercup (*Ranunculus repens*), dandelion (*Taraxacum officinale* agg.), thistles (*Cirsium* sp.), daisy (*Bellis perennis*) and occasional cleavers (*Gallium aparine*), hairy bittercress (*Cardamine hirsuta*), cut-leaved crane's-bill (*Geranium dissectum*), common chickweed (*Stellaria media*), cow parsley (*Anthriscus sylvestris*), common ragwort (*Jacobaea vulgaris*), ribwort plantain (*Plantago lanceolata*), white dead-nettle (*Lamium album*), red dead-nettle (*Lamium purpureum*) and bristly ox-tongue (*Helminthotheca echioides*).
 - Eight parcels of short improved grassland were also bordering or intersecting the Scheme, four to the north, three to the south west and one in the middle of the Scheme, identified as being previously arable. Improved Grassland is a Habitat of Conservation Concern (HoCC) in Nottinghamshire Local Biodiversity Action Plan (LBAP) (Nottinghamshire Biodiversity Action Group, 2016). These areas comprise species such as common nettle (*Urtica dioica*),

broad-leaved dock (*Rumex obtusifolius*), poison-hemlock (*Conium maculatum*), bittercress (*Cardamine sp.*), cock's-foot (*Dactylis glomerata*), common hogweed (*Heracleum sphondylium*), ragwort (*Senecio sp.*), bristly oxtongue, dead-nettle (*Lamium sp.*) and ribwort plantain (*Plantago lanceolata*). This habitat was originally recorded in the area that intersects Skegby Road Triangle LWS when surveyed in 2023. No updated survey was carried out in 2026 due to access limitations.

- One area of unimproved calcareous grassland was also present at the north of the Scheme, comprising species such as bedstraw (*Galium sp.*), cock's-foot, red fescue (*Festuca rubra*), lady's bedstraw (*Galium verum*), knapweed (*Centaurea nigra*), perforate St John's-wort (*Hypericum perforatum*), ribwort plantain (*Plantago lanceolata*), bird's-foot trefoil (*Lotus corniculatus*), cinquefoil (*Potentilla sp.*), yarrow (*Achillea millefolium*) and oxeye daisy (*Leucanthemum vulgare*). This habitat qualifies as HPIE. This habitat falls within Marnham Railway Yard candidate LWS.
- Cultivated/disturbed land – arable
 - The majority of the Scheme is arable land, comprising three fields bordered by hedgerow. The fields had no crops at the time of survey and the margins were narrow (i.e., under 1m wide) and dominated by ruderal species. The margins did not meet the definition of Arable Field Margins HPIE. Arable farmland is an HoCC in Nottinghamshire LBAP (Nottinghamshire Biodiversity Action Group, 2016).
- Other tall ruderal
 - Four small parcels intersecting the centre the Scheme comprised tall forbs vegetation, dominated by common nettle. Species recorded in this habitat at the time of survey included: common nettle, common hogweed, cleavers (*Galium aparine*), cocksfoot and spear thistle (*Cirsium vulgare*).
- Woodland
 - Two parcels of mixed woodland plantation sit partially within the Scheme, one to the south east of the existing substation and one to the north of the existing substation, comprising species such as hybrid black poplar (*Populus x canadensis*), sycamore, wild cherry (*Prunus avium*), alder (*Alnus glutinosa*), hawthorn, field maple (*Acer campestre*), weeping willow (*Salix babylonica*), white beam (*Sobrus aria*) and Leyland cypress (*Cupressus x leylandii*).
 - Three parcels of semi-natural broadleaved woodland sit along the east of the Scheme, comprising species such as sycamore, elder, willow (*Salix sp.*) and hawthorn.
 - Two parcels of woodland broadleaved plantation site in the centre of the Scheme, north of the existing substation, comprising species such as sycamore, willow, elder, pedunculate oak (*Quercus robur*), bramble, gooseberry (*Ribes uva-crispa*), dog rose (*Rosa canina*), hawthorn, cherry (*Prunus sp.*), copper beech (*Fagus sylvatica f. purpurea*), horse chestnut (*Aesculus hippocastanum*), Lombardy poplar (*Populus nigra 'Italica'*), ash (*Fraxinus excelsior*), beech, silver maple (*Acer saccharinum*) and cherry.

- Hedgerows
 - There are two defunct species-rich hedgerows within the Scheme south of the existing High Marnham Power Station, used as a border for the arable fields. They contain hawthorn, blackthorn, field maple, wych elm (*Ulmus glabra*), elder, and hazel (*Corylus avellana*).
 - There are nine defunct species-poor and 12 intact species-poor hedgerows across the Scheme that contained blackthorn, dog rose, hawthorn and buckthorn (*Rhamnus cathartica*).
 - Three intact species-rich hedgerows were recorded to the east of the Scheme, comprising field maple, hawthorn, blackthorn, elder, ash and dog rose.
 - Three species-poor hedgerows with trees were present, two to the west of the scheme, and one to the north, comprising maple (*Acer* sp.), horse chestnut, hawthorn, silver birch (*Betula pendula*), English oak, Wych elm, beech, sycamore, common nettle, blackthorn, ash, ivy (*Hedera helix*), elder, elm sp. (*Ulmus* sp.), dandelion, common hogweed, cow parsley, lesser celandine (*Ficaria verna*), bulbous buttercup (*Ranunculus bulbosus*) and cleavers.
 - The hedgerows within the Scheme consist of predominantly (i.e., 80% or more cover) of at least one woody UK native species and, as such, meet the definition of hedgerow HPIE. Hedgerows (Including Ancient and/or Species-rich Hedgerows) are Habitats of Conservation Concern (HoCC) in the Nottinghamshire LBAP (Nottinghamshire Biodiversity Action Group, 2016).
- Scattered trees
 - Three broadleaved trees were located within the south of the Scheme; the species comprised two ash and one unidentified tree.
 - Two lines of trees were located, one within the north of the Scheme and one to the west of the existing substation, the species comprised horse chestnut, beech, English oak, rowan (*Sorbus aucuparia*), field maple and Leyland cypress (*Cupressus × leylandii*).
- Ditches
 - There are 12 ditches within the Scheme: two dry, six with standing water and four with running water. The ditches with standing water have well vegetated banks comprising meadowsweet (*Filipendula ulmaria*), cranesbill (*Geranium* sp.), common hogweed, common nettle, teasel (*Dipsacus fullonum*), dock, perennial rye-grass (*Lolium perenne*), bramble, bulrush (*Typha latifolia*), watercress (*Nasturtium officinale*), reed canary-grass (*Phalaris arundinacea*), a hedgerow on the west bank and a sluggish channel current. An existing pumping main service for the existing High Marnham Substation connects to an outfall in this ditch. This ditch has running water has a very slow water flow and is well vegetated with common nettle and mixed scrub bordering the west.
 - There are two dry ditches associated with the hedgerows to the south west of the Scheme.
 - Ditches are HoCCs in the Nottinghamshire LBAP (Nottinghamshire Biodiversity Action Group, 2016).

- Areas of cultivated/disturbed land (ephemeral/short perennial)
 - Cultivated land intersects the south west, centre and north east of the Scheme. The areas in the north east are made up of a former rail yard. These were originally surveyed in 2023. Species from the original survey carried out in 2023 comprised common whitlowgrass (*Draba verna*), perforate St John's-wort, sticky mouse-ear (*Cerastium glomeratum*), great mullein (*Verbascum thapsus*), biting stonecrop (*Sedum acre*), weld (*Reseda luteola*), rosebay willowherb (*Chamaenerion angustifolium*), parsley-piert (*Aphanes arvensis*), teasel, thistle (*Cirsium sp.*), heath groundsel (*Senecio sylvaticus*), white dead-nettle (*Lamium album*), creeping cinquefoil (*Potentilla reptans*), sycamore saplings, moth mullein (*Verbascum blattaria*), dandelion, bristly oxtongue (*Helminthotheca echioides*), creeping thistle (*Cirsium arvense*), oilseed rape (*Brassica napus*), curled dock (*Rumex crispus*), cut-leaved cranesbill (*Geranium dissectum*), common ragwort (*Jacobaea vulgaris*), willowherb (*Epilobium sp.*), coltsfoot (*Tussilago farfara*), common hogweed, spear thistle (*Cirsium vulgare*), patches of perennial rye-grass and common groundsel (*Senecio vulgaris*).
 - This habitat was not confirmed as Open Mosaic Habitat HPIE in 2023. Land access for survey to confirm or update its classification was not available at the time of appraisal.
- Other habitat – hardstanding and bare ground
 - Hardstanding intersects the north, north east, west, south west and east of the Scheme, comprising roads, tarmac for a lorry park and the existing 275kV High Marnham substation. To the south east of the Scheme there is a small area of bare ground noted as an access track with short modified grassland. There are further areas of bare ground around the existing 275kV substation.
- Built up areas – buildings
 - Three built up areas were present on site, including a disused railway bridge to the north east of the Scheme, and some buildings in the north west of the Scheme.

Protected and notable species

Plants

- 3.2.12 There were 58 records of protected and/or notable plant species returned by the desk study, the closest is small cudweed (*Logfia minima*) located within the east of the Scheme boundary.
- 3.2.13 There were no records of protected/notable plant species within the Scheme.

Invasive Non-Native Species (INNS)

- 3.2.14 There were 19 records of INNS plants listed under Schedule 9 of WCA 1981 returned from the desk study. The closest record of INNS is New Zealand pygmyweed (*Crassula helmsii*), in the area of the existing High Marnham Substation. The species included Parrot's-feather (*Myriophyllum aquaticum*), New Zealand Pygmyweed,

Himalayan Balsam (*Impatiens glandulifera*) and Water Fern (*Azolla filiculoides*), which were in the proposed substation area. However, these species were not recorded during surveys in May 2026, and as such are presumed absent from the Scheme. Parrots feather and Himalayan balsam are also listed under The Invasive Alien Species (Enforcement and Permitting) Order 2019.

- 3.2.15 New Zealand Pygmyweed was recorded within a ditch in the former High Marnham Power Station area, outside the land required to construct the Scheme. INNS are therefore confirmed as not present within the land required to construct the Scheme, shown in Appendix D.
- 3.2.16 There were two records of invasive crustaceans within 2km of the Scheme, including demon shrimp (*Dikerogammarus villosus*) and Chinese mitten crab (*Eriocheir sinensis*). There were two records of invasive mollusc, both of which are of Asian clam (*Corbicula fluminea*).

Invertebrates

- 3.2.17 The desk study returned no records of protected and/or notable invertebrate species within 2km of the Scheme.
- 3.2.18 The north east of the Scheme within the existing High Marnham Substation, particularly along the former railway yard and dismantled railway, comprises a mosaic of species-rich calcareous grassland, scrub, woodland and early successional plants. This area of the Scheme also drafted as an Open Mosaic Habitats on Previously Developed Land (Joint Nature Conservation Committee, 2010). Despite the lack of records, open mosaic habitats can support a diverse invertebrate assemblage, including uncommon species.
- 3.2.19 The Scheme is predominantly managed arable with some areas of scrub, so lacks diverse plant species for foraging or commuting, although is likely to support a limited assemblage of common and widespread terrestrial invertebrate species. The likelihood that the Scheme supports a significant assemblage of protected or notable terrestrial invertebrates was assessed as low.

Fish

- 3.2.20 The desk study returned 35 records of one protected and/or notable fish species within 2km of the Scheme of which there were three species: European eel (*Anguilla anguilla*), bullhead (*Cottus gobio*) and spined loach (*Cobitis taenia*). The majority of records are located along the River Trent and connected drain network.
- 3.2.21 The closest record protected and notable species to the Scheme was of European eel to the Scheme was located approximately 0.4km south west, in a Fledborough Brook adjacent to a proposed access route to the Scheme.
- 3.2.22 European eel is protected by The Eels (England and Wales) Regulations 2009 and is listed as an SPI under S41 of the NERC Act (2006). Bullhead is listed on Annex II of the Habitats Directive as a species which requires the designation of SACs for its conservation. Spined loach is protected under European conservation frameworks (like the EC Directives and the Bern Convention). European eel is a species of conservation concern as listed on the Nottinghamshire Biodiversity Action Plan (BAP).

- 3.2.23 Due to the connectivity between ditches and streams and the known records of European eel recorded in the ditch along Polly Taylor's Road and to the north-east of the Scheme, the likelihood that the Scheme supports European eel was considered moderate. The ditch along Polly Taylor's Road was found to be dry at the time of the survey, but suitability remains moderate on a precautionary basis as the ditch may not be dry all year round.

Amphibians

- 3.2.24 In May 2026, Habitat Suitability Index (HSI) surveys were carried out of all waterbodies identified within 250m of the Scheme and confirmed as ponds during the field survey. The locations of the ponds assessed can be found in Appendix D New Overhead Lines Drawings, Figure 3.2.3.
- 3.2.25 The desk study returned negative great crested newt (*Triturus cristatus*) records following surveys across six waterbodies and ditches located within the existing High Marnham Substation from 2019. These records indicate that great crested newt were likely absent from the existing substation site in 2019. The desk study returned no records of granted European Protected Species Mitigation (EPSM) licence applications for great crested newt within 2km of the land required to construct the Scheme. The closest record of amphibians was common frog (*Rana temporaria*) located approximately 1.1km south of the Scheme.
- 3.2.26 The scrub, modified grasslands and hedgerows within the Scheme provide limited suitable shelter and hibernation opportunities for common amphibians. These habitats were relatively well connected to ponds located in the existing substation (within 250m of the Scheme) and two ponds within 500m of other suitable habitats such as the dismantled railway line. Broken concrete slabs were noted during the walkover within the east of the Scheme which could be used as common amphibian refugia.
- 3.2.27 There were five ponds originally scoped in within 250m of the Scheme, four of which were confirmed as ponds during updated surveys in 2026. One of these four ponds was dry at the time of survey (May/June 2026). There were no ponds or waterbodies suitable for amphibians found within the land required to construct the Scheme. Targeted surveys were undertaken on three ponds, including Habitat Suitability Index (HSI).
- 3.2.28 The HSI surveys carried out in 2026 returned a good suitability for two of the ponds, and 'below average suitability' for the third pond scoped in. These results differ from the HSI surveys undertaken in 2023, which returned one pond as excellent (now below average) and one as average (now good). These three ponds were previously surveyed for environmental DNA (eDNA) in 2023 as part of the TCPA application. The results from the eDNA all returned as negative. Updated eDNA surveys will be carried out on these ponds to inform detailed design and construction activities.
- 3.2.29 Great crested newt were assessed as likely absent from the Scheme, and the Scheme was assessed as offering limited suitability to common and widespread species of amphibians.

Reptiles

- 3.2.30 The desk study returned three records of reptiles, two of grass snake (*Natrix helvetica*) and one of common lizard (*Zootoca vivipara*). The closest record was of grass snake approximately 2km north-east of the Scheme.
- 3.2.31 The existing High Marnham Substation to the north east of the Scheme, particularly along the former railway yard and dismantled railway, comprise a mosaic of unmanaged grassland, scrub and woodland which provide suitable basking, shelter and hibernation opportunities for reptiles such as common lizard. Broken concrete slabs were noted during the walkover within the east of the Scheme which could be used as reptile refugia. However, all known records of reptiles are isolated from the Scheme due to the River Trent, and the surrounding landscape is dominated by intensively managed arable land with loosely connected hedgerows and infrequent pockets of woodland.
- 3.2.32 Reptile surveys were undertaken by Arcadis at the former High Marnham Power Station in 2023 and confirmed presence of an individual grass snake near to defunct species-poor hedgerow adjacent to the Scheme.
- 3.2.33 As the habitat suitable for reptiles in the wider Scheme area is limited to boundary hedgerows and a small area of scrub, the likelihood that these areas support reptiles was assessed as low. However, the area around the former High Marnham Power Station has confirmed presence. However, no significant populations of reptiles are considered to be present within the Scheme due to the Scheme being predominantly arable, and the dry grassland in the LWS and woodland habitats to the north is considered more suitable.

Birds

- 3.2.34 The desk study returned records of 5786 protected and/or notable birds within 2km of the Scheme, the closest of which was an osprey in flight (*Pandion haliaetus*) located approximately 0.04km south of the scheme. Other species included common swift (*Apus apus*), mute swan (*Cygnus olor*), greylag goose (*Anser anser*), grey heron (*Ardea cinerea*), kestrel (*Falco tinnunculus*), sedge warbler (*Acrocephalus schoenobaenus*), reed bunting (*Emberiza schoeniclus*), golden plover (*Pluvialis apricaria*), bullfinch (*Pyrrhula pyrrhula*), chiffchaff (*Phylloscopus collybita*), cuckoo (*Cuculus canorus*), house martin (*Delichon urbicum*), meadow pipit (*Anthus pratensis*), yellowhammer (*Emberiza citrinella*), hobby (*Falco subbuteo*) and spotted flycatcher (*Muscicapa striata*) some of which are in the Nottinghamshire LBAP (Nottinghamshire Biodiversity Action Group, 2016).
- 3.2.35 The Scheme contains key habitats for breeding birds, including arable land, scrub, hedgerows and the woodland adjacent to the north.
- 3.2.36 Several signs of barn owl (*Tyto alba*), including a confirmed barn owl roost with breeding potential within 50m of the land required to construct the Scheme, plus pellets and white droppings, were observed in the southern area. A nesting box was also recorded 50m south of the land required to construct the Scheme. Farm buildings to the north east of the land required to construct the Scheme and west could also have potential to be used by barn owl. Barn owl is a species of conservation concern as listed on the Nottinghamshire BAP.

- 3.2.37 Habitats within the land required to construct the Scheme predominantly comprised large arable fields with boundary hedgerows. These habitats were suitable for nesting birds, particularly those that favour farmland habitats, such as yellow wagtail, skylark (*Alauda arvensis*) and lapwing (*Vanellus vanellus*).
- 3.2.38 Osprey and hobby are Schedule One birds under the Wildlife and Countryside Act 1981 (Amended). Osprey are usually found near large bodies of water or streams/ivers. Waterbodies within the land required to construct the Scheme are unlikely to support osprey. Hobby are usually found within open landscape such as lowland farmland, which is present on-site. The Scheme is likely to support hobby.
- 3.2.39 Farmland such as arable fields can also provide habitat suitability for some wintering bird species, such as Eurasian skylark, which have been recorded as present on the Scheme during breeding bird season.
- 3.2.40 The overall value of the Scheme for breeding birds is nevertheless still considered to be low. This is because key habitats present on-site are limited and the majority of bird species were recorded in hedgerows subject to disturbance through management. The intensely managed arable fields also provide limited suitability for breeding.

Roosting bats

- 3.2.41 The desk study returned 1126 records of bat species within 5km of the Scheme, including common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pygmaeus pipistrellus*), *Myotis* sp., brown long-eared bat (*Plecotus auritus*), *Nyctalus* sp., barbastelle (*Barbastella barbastellus*), noctule (*Nyctalus noctula*) and Leisler's bat (*Nyctalus leisleri*). There were several records of common pipistrelle bat activity within the land required to construct the Scheme. The nearest record of roosts were approximately 1.1km away from the land required to construct the Scheme of brown long-eared bat.
- 3.2.42 A total of 14 trees within or adjacent to (within 15m) of the Scheme were recorded as having Potential Roosting Features (PRFs) for bats, and one building was assessed as PRF-M/moderate suitability following the Bat Conservation Trust (BCT) Good Practice Guidelines (BCT, 2023).
- 3.2.43 Eight trees were assessed as 'PRF-I' which refers to a feature/tree that is only suitable for individual bats or small numbers of bats. Six trees were assessed as 'PRF-M'. One structure (a church) was assessed as PRF-M/moderate suitability.
- 3.2.44 The likelihood that the Scheme supports roosting, commuting and/or foraging bats was assessed as high.
- 3.2.45 The importance of the roosting bat species assemblage recorded within the entire survey area to date was assessed in line with the UK Bat Mitigation Guidelines (Reason and Wray, 2025).

Commuting and foraging bats

- 3.2.46 No bat surveys have yet been undertaken specifically for the Scheme, however, commuting and foraging bat surveys were undertaken for the new 400kV High Marnham substation. Bats are highly mobile, so the surveys may provide insight into

the surrounding Scheme areas, however, the survey results below are not directly representative of the Scheme bounds.

- 3.2.47 Full details regarding the results of the those bat surveys and the Bat Activity Survey Map are recorded in Appendix K of this EAR.
- 3.2.48 Three Night-time Bat Walk (NBW) and automated static monitoring surveys were undertaken following BCT Good Practice Guidelines (BCT, 2023), to understand bat activity on the Scheme. The results show the highest level of activity was predominantly focused to the east of the Scheme, with the occasional common pipistrelle foraging to the west and one *Nyctalus* sp. to the north. Commuting activity was mainly found in areas where linear features were present, providing good connectivity between adjacent habitats. Such features included areas of the woodland edge (adjacent to the north of the land required to construct the Scheme), tree lines, hedgerows and dense scrub to the east and north of the Scheme.
- 3.2.49 During the three NBW surveys between September 2023 and June 2024, a total of 169 bat calls were recorded. No bat activity was recorded on the night of 24 April. The majority of bat passes recorded came from the September survey, with nearly all identifications over the survey period being of common pipistrelle (72.78%); 17.16% soprano pipistrelle passes and 5.92% noctule and *Nyctalus* sp. passes.
- 3.2.50 During the deployment period (May to September), a total of 4,462 bat passes were recorded. Of the five nights of data analysed, the calls recorded were largely pipistrelle bats (common, soprano pipistrelles and *Pipistrellus* sp. combined), totalling 95% of calls, followed by <3% noctule, *Nyctalus* sp. and Leisler's and the remainder *Myotis* sp. and brown long-eared bats.
- 3.2.51 Overall, the results show that the Scheme had generally a low level of activity, predominantly used by common species such as common and soprano pipistrelle, with the occasional commuting noctule, Leisler's, *Nyctalus* sp., brown long-eared and *Myotis* sp. with the summer season having the highest recorded activity on the Scheme.
- 3.2.52 The importance of the bat species assemblage recorded within the entire survey area to date was assessed in line with the UK Bat Mitigation Guidelines. The species assemblage recorded within the survey area to date scored 12 out of a possible 26 points for locations within the Midlands region. This is assessed as being of County level importance.

Badger

- 3.2.53 The desk study returned 96 records of badger (*Meles meles*). A total of 55 records of badger setts and several other signs of activity were located 500m south of the Scheme. Two more badger setts were located on the west bank of the River Trent.
- 3.2.54 A main badger sett was recorded (in 2023 and updated in 2025 and 2026) within the Scheme to the east, on the west bank of the River Trent. There were signs of badger activity, including footprints, a latrine and mammal paths, within the land required to construct the Scheme at the end a hedgerow. There were further badger signs just outside the land required to construct the Scheme including a scratching post, badger couch and snuffle holes north of the easternmost part of the Scheme, near TN9. The adjacent existing substation site had two badger setts recorded. Other

signs of badger activity, such as footprints, push-throughs and snuffle holes, have been recorded off-site near to the setts.

- 3.2.55 Two disused and one partially used badger sett entrances were identified in June 2026 under one of the existing pylons within the northern area of the Scheme, and another well used and disused sett entrance under a second pylon in the same field, south east of the first. There were also multiple field signs on the boundary scrub on the south of the same field, including soil heaps, latrines, push throughs and hairs.
- 3.2.56 The hedgerows, scrub belts and woodland within and adjacent to the Scheme provided suitable foraging and dispersal habitat for badgers.
- 3.2.57 Badgers have been confirmed to use the land required to construct the Scheme for foraging, commuting and sett creation.

Otter and water vole

- 3.2.58 The Otter and Water Vole Survey Map can be found in Appendix D High Marnham New Overhead Lines Drawings; Figure 3.2.6.
- 3.2.59 The desk study returned two records of otter (*Lutra lutra*), the closest was approximately 2km south-east the Scheme. There were no granted EPS licence applications for otter within 2km of the Scheme.
- 3.2.60 The desk study returned four records of water vole (*Arvicola amphibius*), 180m north east of the Scheme.
- 3.2.61 The desk study returned six records of American mink (*Neovison vison*), a known predator of water vole and listed on Schedule 9 of the WCA 1981. The closest record was located approximately 1.3km south west of the land required to construct the Scheme. There is connectivity to the Scheme through the surrounding drain system.
- 3.2.62 The habitat assessment concluded that ditches surveyed provided sub-optimal habitat to support water vole, and poor habitat to support otter. Since both original surveys and the updated survey in 2026 did not record any conclusive signs of either species, they are presumed likely absent. However, the ditches do provide connectivity to the wider area where there are records of water vole.

European hedgehog

- 3.2.63 The desk study returned six records of hedgehog (*Erinaceus europaeus*) within 2km of the Scheme, the closest of which was approximately 0.82m south-west of the Scheme.
- 3.2.64 The scrub and hedgerows on-site provide suitable areas for commuting and foraging for hedgehog. It is likely that hedgehog is present on-site.

Brown hare

- 3.2.65 The desk study returned 15 records of brown hare (*Lepus europaeus*) within 2km of the Scheme. The closest record was 0.17km south of the Scheme.
- 3.2.66 A dead brown hare was recorded within arable fields on-site. Brown hares are commonly found on open farmland, grassland habitats and at woodland edges,

favouring a mosaic of arable fields, grasses and hedgerows. Brown hare are confirmed present on-site.

Baseline summary

- 3.2.67 A summary of the receptors within the Zol of the Scheme is included within Table 3.2.3. As it is not necessary to carry out detailed assessment of features that are sufficiently widespread, unthreatened and resilient to project impacts and will remain viable and sustainable (Chartered Institute of Ecology and Environmental Management, 2018), where receptors have been assessed as being of less than Local importance, or where the Scheme is not considered to have any impacts upon the receptors, these have been scoped out of further assessment.
- 3.2.68 Despite being scoped out of further assessment, many of the receptors will benefit from the control measures detailed below.

Table 3.2.3 Summary of baseline receptors and scoping impacts in absence of mitigation

Receptor	Importance	Scoped In/Out	Justification for Scoping Out
Designated Sites			
Marnham Railway Yard candidate LWS	Local	In	N/A
Fledborough to Harby Dismantled Railway LWS	Local	In	N/A
Skegby Road Triangle LWS	Local	In	N/A
Fledborough Holme LWS	Local	In	N/A
Weston Road Verge LWS	Local	Out	The qualifying features for designation will not be affected by the Scheme due to type, level of potential impact, distance (900m south east of the Scheme) and lack of feasible impact pathways.
Old Trent, Marnham LWS	Local	Out	The qualifying features for designation will not be affected by the Scheme due to type, level of potential impact, distance (260m south east of the Scheme) and lack of feasible impact pathways.
Dunham Oxbow LWS	Local	Out	The qualifying features for designation will not be affected by the Scheme due to type, level of potential impact, distance (1.2km north east of the Scheme) and lack of feasible impact pathways.

Receptor	Importance	Scoped In/Out	Justification for Scoping Out
Dunham Dubs LWS	Local	Out	The qualifying features for designation will not be affected by the Scheme due to type, level of potential impact, distance (1.3km north east of the Scheme) and lack of feasible impact pathways.
North Clifton Church LWS	Local	Out	The qualifying features for designation will not be affected by the Scheme due to type, level of potential impact, distance (540m east of the Scheme) and lack of feasible impact pathways.
South Clifton Grassland LWS	Local	Out	The qualifying features for designation will not be affected by the Scheme due to type, level of potential impact, distance (760m south east of the Scheme) and lack of feasible impact pathways.
Old Trent Oxbow Spalford LWS	Local	Out	The qualifying features for designation will not be affected by the Scheme due to type, level of potential impact, distance (1km south east of the Scheme) and lack of feasible impact pathways.
Meadow Lane Grasslands, Normanton on Trent LWS	Local	Out	The qualifying features for designation will not be affected by the Scheme due to type, level of potential impact, distance (1.5km south east of the Scheme) and lack of feasible impact pathways.
Grassthorne Corner LWS	Local	Out	The qualifying features for designation will not be affected by the Scheme due to type, level of potential impact, distance (1.5km south east of the Scheme) and lack of feasible impact pathways.
Goosemoor Dyke LWS	Local	Out	The qualifying features for designation will not be affected by the Scheme due to type, level of potential impact, distance (1.8km south east of the Scheme) and lack of feasible impact pathways.
Habitats			
Scrub	Less than Local	Out	Scrub habitat is of limited ecological importance and is entirely replaceable. As such, this habitat is scoped out of further assessment within this document.

Receptor	Importance	Scoped In/Out	Justification for Scoping Out
Open mosaic habitat on previously developed land	Local	In	Open Mosaic Habitat HPIE has not been confirmed on-site but is noted in draft form on MAGIC Maps. Land access was not available for survey to assess whether it meets the HPIE criteria. It is therefore scoped in on a precautionary basis.
Cultivated/ disturbed land – Arable	Less than Local	Out	This habitat is of limited ecological importance and is entirely replaceable. As such, this habitat is scoped out of further assessment within this document.
Mixed woodland plantation	Local	In	N/A
Semi-natural broadleaved woodland	Local	In	N/A
Woodland broadleaved plantation	Local	In	N/A
Hedgerows	Local	In	N/A
Other habitat – urban and bare ground	Less than Local	Out	This habitat is of limited ecological importance and is entirely replaceable. As such, this habitat is scoped out of further assessment within this document.
Poor semi-improved grassland	Less than Local	Out	This habitat is of limited ecological importance and is entirely replaceable. As such, this habitat is scoped out of further assessment within this document.
Improved grassland	Less than Local	Out	This habitat is of limited ecological importance and is entirely replaceable. As such, this habitat is scoped out of further assessment within this document.
Unimproved lowland calcareous grassland	National	In	N/A
Other tall ruderal	Less than Local	Out	This habitat is of limited ecological importance and is entirely replaceable. As such, this habitat is scoped out of further assessment within this document.
Areas of cultivated/ disturbed land	Less than Local	Out	This habitat is of limited ecological importance and is entirely replaceable. As

Receptor	Importance	Scoped In/Out	Justification for Scoping Out
(ephemeral/short perennial)			such, this habitat is scoped out of further assessment within this document.
Scattered trees	Local	In	N/A
Ditches	Less than Local	In	N/A
Protected and Notable Species			
Protected and local notable plants	Local	Out	There were no records of protected/notable plant species within the land required to construct the Scheme at the time of the survey. The habitats within the Scheme are unlikely to support important assemblages of protected or notable plant species.
INNS	N/A	In	N/A
Reptiles	Local	In	N/A
Amphibians – great crested newt	Less than local	Out	The great crested newt surveys concluded that great crested newt are likely absent from the Scheme.
Common amphibians	Local	In	N/A
Otter	Local	Out	No evidence of presence was found within the two ditches and so otters are assumed absent.
Water vole	Less than local	In	N/A
Breeding/wintering birds	Local	In	N/A
Roosting bats	Local	In	N/A
Commuting and foraging bats	Local	In	N/A
Badger	Local	In	N/A
Invertebrates	Less than Local	Out	The Scheme itself is mainly arable with some areas of scrub, therefore it is not likely to support notable/protected invertebrate assemblages. However, general precautions will be carried out to mitigate any potential direct

Receptor	Importance	Scoped In/Out	Justification for Scoping Out
			impacts on terrestrial invertebrates during construction.
European hedgehog	Local	In	N/A
Brown hare	Local	In	N/A
Fish	Less than Local	In	N/A

Potential Construction Impacts

- 3.2.69 The works required will include installations of haul roads; laydown/working platforms around existing pylons and proposed pylon locations; conductor/earth wire pulling; installation of new permanent structures; dismantling of existing structures; installation of temporary structures; erection and use of scaffolding; and laydown areas. These may cause impacts on the ecological features described below.
- 3.2.70 Designated sites (Marnham Railway Yard candidate LWS, Fledborough to Harby Dismantled Railway LWS, Skegby Road Triangle LWS and Fledborough Holme LWS): Construction activities taking place directly within non-statutory designated sites could result in direct disturbance and degradation of habitats through dust deposition from vehicle movements and earthworks, vegetation removal, accidental spillages (e.g. fuels/oils), silt-laden runoff entering vegetation, and indirect impacts where temporary working areas are established close to site boundaries. Increased human activity could also temporarily disturb fauna associated with these sites.
- 3.2.71 Woodland (mixed woodland plantation; semi-natural broadleaved woodland; woodland broadleaved plantation): Works could require removal of trees/understorey vegetation, with associated loss of nesting/roosting opportunities and changes in woodland structure. Groundworks and traffic close to retained trees could compact soils and damage rooting zones, while changes to drainage patterns from excavations could affect woodland ground flora.
- 3.2.72 Hedgerows: Hedgerow sections could be removed or trimmed back to facilitate access, laydown areas or conductor pulling, resulting in habitat loss and fragmentation of linear features used for commuting/foraging by bats and dispersal by other wildlife. Construction dust and accidental contamination could reduce hedgerow foliage quality and invertebrate availability along retained lengths.
- 3.2.73 Unimproved lowland calcareous grassland: Grassland could be affected by temporary habitat loss where vegetation is cleared or stripped to facilitate access, laydown areas or working corridors. Construction activity could also result in soil compaction, disturbance to the sward, and changes in local drainage, which may reduce habitat quality and affect the floristic composition of retained areas. Dust deposition and accidental contamination could further degrade sensitive vegetation and associated invertebrate interest.
- 3.2.74 Open Mosaic Habitat on previously developed land: This habitat could be affected by temporary habitat loss where vegetation is cleared or stripped to facilitate access, laydown areas or working corridors. Construction activity could also result in soil

compaction, disturbance to the sward, and changes in local drainage, which may reduce habitat quality and affect the floristic composition of retained areas. Dust deposition and accidental contamination could further degrade sensitive vegetation and associated invertebrate interest.

- 3.2.75 Scattered trees: Individual trees could be affected by direct felling/pruning where access is required, or indirectly through root damage, compaction and changes to surrounding ground levels. Lighting of working areas and night-time activity near retained trees could alter their value to bats and birds using the canopy edge.
- 3.2.76 Reptiles: Vegetation clearance, soil stripping and creation of working platforms could result in direct injury or mortality of reptiles using field margins, scrub and refugia (e.g. debris/concrete slabs). Disturbance from plant, vibration and repeated vehicle movements could displace individuals into less suitable habitat and increase road mortality risk along haul routes.
- 3.2.77 Common amphibians: Ground disturbance and trenching could lead to direct harm to amphibians using damp margins, ditches and rough grass/scrub for shelter. Works near ditches could also temporarily reduce habitat suitability through siltation and disturbance, and amphibians could be at increased risk of mortality from open excavations or vehicle movements, particularly during seasonal movements.
- 3.2.78 Water vole: Potential soil compaction from construction activities could affect burrows if undertaken in riparian zones of watercourses. Potential spillage or pollution of waterways could indirectly affect water voles not present on the Scheme.
- 3.2.79 Breeding/wintering birds: Clearance of scrub, hedgerows and woodland edge could result in direct loss of nesting habitat and disturbance to breeding birds through visual presence. Construction lighting and increased activity could also affect foraging behaviour, while temporary loss of field margin habitat could reduce availability of seed and invertebrate prey for farmland birds. Loss of arable habitat could affect habitat availability for ground-nesting birds and foraging habitat for barn owl. Construction lighting at night could affect barn owl nesting and foraging behaviour.
- 3.2.80 Roosting bats: Works that require removal, pruning or disturbance of trees could affect PRFs such as cracks, cavities, rot holes, lifted bark and/or ivy cover. Where such features are present, construction activity could result in temporary disturbance to roosting bats (e.g. from vibration and noise during felling/pruning or works in close proximity), or permanent loss of roosting opportunities if PRF trees are removed.
- 3.2.81 Commuting and foraging bats: Bats may use linear features (e.g. hedgerows, woodland edge, tree lines and scrub) within and adjacent to the Scheme as commuting and foraging routes. Construction could result in severance or temporary degradation of these linear features through vegetation removal, creation of access/haul routes and working areas, and increased activity at potential crossing points. Artificial lighting associated with night-time working or security lighting could affect bat activity and movement behaviour, particularly for light-sensitive species, and may reduce use of otherwise suitable routes. Increased vehicle movements along access tracks/haul routes could also increase collision risk where bats cross at low height or concentrate activity along connecting features.
- 3.2.82 Badger: Groundworks and vegetation clearance could disturb badgers using the Scheme for foraging and commuting and could risk damage to setts if works occur

close to sett locations. Increased traffic and night-time activity could alter movement patterns and increase collision risk, particularly where haul routes intersect established badger paths.

- 3.2.83 European hedgehog: Vegetation clearance, strimming and movement of materials could result in direct injury to hedgehogs sheltering in scrub/hedgerows. Temporary fencing, open trenches and increased vehicle movements could impede movements and increase mortality risk within working areas and along access tracks.
- 3.2.84 Brown hare: Construction activity within arable fields could temporarily displace hares from foraging and resting areas through increased visual disturbance and vehicle movements. Groundworks and temporary working areas could reduce available cover in field margins, and traffic movements could increase collision risk.
- 3.2.85 Fish: If construction activity were to take place within 15m of the River Trent this could impact the riparian zone of the river, through changes to bankside vegetation, bank erosion, or pollutants entering the watercourse.

Potential Operational Impacts

- 3.2.86 Woodland (mixed woodland plantation; semi-natural broadleaved woodland; woodland broadleaved plantation): Operational requirements for safe asset management could result in ongoing vegetation management and potential temporary access routes around pylons and overhead lines, which could affect woodland structure and understorey composition.
- 3.2.87 Scattered trees: Trees retained adjacent to overhead lines or pylons could be subject to ongoing pruning or clearance to maintain statutory safety clearances, resulting in a reduction in canopy extent and potential roost/nesting opportunities.
- 3.2.88 Breeding/wintering birds: There will be minimal negative impacts on breeding/wintering birds due to the limited footprint of the pylon. The presence of pylons could also increase potential nesting sites for corvids and other birds that may favour pylons.
- 3.2.89 Roosting bats: Where trees with PRFs are retained near pylons or overhead lines, intermittent maintenance (including vegetation management for safety clearances) could affect PRFs through pruning or altered tree condition over time.

Construction Control Measures

- 3.2.90 The control measures listed in Table 3.2.4 will be applied during the construction phase of the Scheme. National Grid is committed to implementing the identified control measures to reduce or avoid any potential impacts that may occur during the construction of the Scheme. The control measures will be included in the CEMP and their implementation will be monitored by National Grid.

Table 3.2.4 Construction control and monitoring measures for ecology

Potential Receptor and/or Impact	Control, Enhancement and Monitoring Measures
Designated Sites	
Marnham Railway Yard candidate LWS Fledborough to Harby Dismantled Railway LWS Skegby Road Triangle LWS Fledborough Holme LWS	<p>Brief all staff at site induction.</p> <p>Implement dust controls on haul routes and during earthworks (e.g. damping down; covering stockpiles where required).</p> <p>Spill prevention/response procedures for fuels and oils; refuelling in designated areas only.</p> <p>Routine environmental inspections: record and report any incidents/near misses.</p> <p>Notify local authority of works taking place.</p> <p>All habitats removed or impacted by the works will be reinstated in the same condition or better.</p>
Habitats	
Woodland (mixed woodland plantation; semi-natural broadleaved woodland; woodland broadleaved plantation)	<p>Mark retained woodland edge and tree root protection areas; prohibit tracking/storage within protection zones.</p> <p>Limit vegetation clearance to the minimum required footprint; avoid encroachment beyond agreed working areas.</p> <p>Standard pollution protection measures, for the management of risk of runoff, dust and spills.</p> <p>Toolbox talks for working near trees/woodland; ecological support during site set-up as required.</p>
Open Mosaic Habitat on previously developed land	<p>Fence/mark retained areas of potential open mosaic habitat; clearly define no-go areas.</p> <p>Restrict access, storage and vehicle movements to approved working areas and routes; avoid unnecessary encroachment.</p> <p>Confirm the extent of any temporary or permanent habitat loss prior to works; minimise working widths wherever practicable.</p> <p>Use ground protection measures where works are required adjacent to retained grassland to reduce compaction and sward damage.</p> <p>Manage drainage, runoff and pollution risks to avoid degradation of retained grassland during construction.</p> <p>Standard pollution protection measures, for the management of risk of runoff, dust and spills.</p>

Potential Receptor and/or Impact	Control, Enhancement and Monitoring Measures
Hedgerows	<p>Fence/mark retained hedgerows; restrict crossings to approved locations.</p> <p>Confirm extent of any hedgerow removal/trimming prior to works; maintain minimum working widths.</p> <p>Standard pollution protection measures, inclusive of runoff, dust and spills.</p> <p>Nesting bird check of vegetation scheduled for clearance during nesting season; record outcomes.</p>
Unimproved lowland calcareous grassland	<p>Fence/mark retained areas of unimproved lowland calcareous grassland; clearly define no-go areas.</p> <p>Restrict access, storage and vehicle movements to approved working areas and routes; avoid unnecessary encroachment.</p> <p>Confirm the extent of any temporary or permanent habitat loss prior to works; minimise working widths wherever practicable.</p> <p>Use ground protection measures where works are required adjacent to retained grassland to reduce compaction and sward damage.</p> <p>Manage drainage, runoff and pollution risks to avoid degradation of retained grassland during construction.</p> <p>Standard pollution protection measures, for the management of risk of runoff, dust and spills.</p>
Scattered trees	<p>Tree protection fencing and exclusion of plant/stockpiles from root protection areas.</p> <p>Confirm constraints (e.g. nesting birds/bat roost potential) prior to felling/pruning.</p> <p>Standard pollution protection measures, for the management of risk of runoff, dust and spills.</p> <p>If night working is required, manage lighting to minimise light spill onto tree lines/edges.</p>
Ditches	<p>Maintain 10m buffer to ditch edges; restrict crossings/culvert works to agreed locations and methods.</p> <p>Install and maintain silt controls where earthworks/drainage works are adjacent to ditches.</p> <p>Standard pollution protection measures for the management of risk of runoff, dust and spills.</p> <p>Inspect drainage and silt controls regularly, including after heavy rainfall; record findings.</p>

Potential Receptor and/or Impact	Control, Enhancement and Monitoring Measures
Protected and notable species	
Reptiles	<p>Sensitive clearance of suitable habitat (e.g. staged strimming or cut) within working areas; Ecological Clerk of Works supervision where required.</p> <p>Pre-works checks of refugia (e.g. debris/concrete slabs) within working areas.</p> <p>During reptile brumation season (October-March inclusive) there should be no removal of potential refugia/hibernacula.</p> <p>Brief site teams on stop-work procedure if reptiles are encountered; record sightings.</p>
Common amphibians	<p>Sensitive clearance of suitable habitat (e.g. staged strimming or cut) within working areas.</p> <p>Check open excavations regularly where practicable; provide egress (e.g. ramps/graded ends) for trenches left open.</p> <p>Store materials to minimise creation of refugia within active working areas. Potential hibernacula habitat should be dismantled by hand by a suitably experienced ecologist, outside the winter period.</p> <p>Record amphibian encounters and any ecological attendance required.</p>
Water vole	<p>Maintain 10m working buffer from ditches where possible. Where this is not possible, preconstruction surveys to check for signs of water vole.</p> <p>Standard pollution protection measures, for the management of risk of runoff, dust and spills.</p> <p>Site induction/toolbox talks on legal protection; record sightings.</p>
Breeding/wintering birds	<p>Nesting bird checks of construction areas, vegetation scheduled for clearance and pylons to be removed during nesting season; record outcomes. Should any active nests be found on pylons or in construction working areas, consult further ecological advice.</p> <p>Manage night-time lighting to minimise spill onto hedgerows/woodland edge where practicable.</p> <p>Site induction/toolbox talks on legal protection and reporting procedure.</p>
Roosting bats	<p>Confirm PRF status and any survey/constraint requirements prior to felling/pruning of trees with bat roost potential.</p>

Potential Receptor and/or Impact	Control, Enhancement and Monitoring Measures
	<p>Maintain exclusion zones around retained PRF trees where works could cause disturbance.</p> <p>Record tree works undertaken and any bat-related observations/incidents.</p>
Commuting and foraging bats	<p>Locate compounds/haul routes to minimise severance of linear features where practicable; limit vegetation removal to minimum needed.</p> <p>Apply a lighting management approach for night works (directional, low-spill lighting) to reduce illumination of hedgerows/woodland edges.</p> <p>Undertake checks of lighting placement/operation during periods of night working; record any issues.</p>
Badger	<p>Pre-works walkover for badger setts/field signs within/adjacent to working areas and within 30m buffer of works; record findings. Ensure any active setts are adequately protected from works by an appropriate buffer as defined by Ecological Clerk of Works. Should any active setts be impacted by works, a Natural England licence may be required.</p> <p>Implement site speed limits and driver briefings to reduce collision risk, particularly at night.</p> <p>Record sightings and any new setts/signs identified during works.</p>
European hedgehog, brown hare	<p>Manage vehicle speeds on access/haul routes and brief drivers on wildlife collision risk.</p> <p>Minimise the extent/duration of open working areas in arable fields where practicable.</p> <p>Sensitive clearance of scrub/rough grass where present; check beneath materials prior to moving where practicable.</p> <p>Check open excavations and pipes/culverts prior to backfilling; provide escape where trenches are left open.</p> <p>Site inductions to include hedgehog awareness and reporting procedures.</p> <p>Record incidents and sightings to inform adaptive site management if repeated issues occur.</p>
Fish	<p>Maintain an exclusion zone of 15m from the River Trent during construction phase.</p> <p>No vehicles or storage of materials should come within 20m of the River Trent where practicable.</p> <p>Standard pollution protection measures, for the management of risk of runoff, dust and spills.</p>

Operational Control Measures

- 3.2.91 The measures listed in Table 3.2.5 will be implemented during the operational phase of the Scheme and the appraisal has been undertaken assuming these measures are in place.

Table 3.2.5 Operational control and monitoring measures for ecology

Potential Receptor and/or Impact	Control, Enhancement and Monitoring Measures
Habitats	
Woodland (mixed woodland plantation; semi-natural broadleaved woodland; woodland broadleaved plantation)	<p>Ensure woodland management underneath the overhead line is maintained within defined limits (avoid incremental loss from repeated cutting/back-trimming).</p> <p>Avoid storage/parking within root protection areas where practicable; maintain ground protection where access is required.</p> <p>Schedule routine vegetation management to minimise disturbance where practicable; record vegetation management activities.</p> <p>Inspect retained trees adjacent to operational infrastructure for condition and safety and record any required arboricultural works.</p>
Open Mosaic Habitat on previously developed land	<p>Ensure any temporary access during maintenance through areas of potential open mosaic habitat is kept to a minimum where possible and any access required uses temporary trackways to ensure no habitat is lost, seedbank is retained and soil is not compacted.</p> <p>Implement appropriate remedial management where operational effects are identified on retained habitat.</p>
Hedgerows	<p>Ensure hedgerow management underneath the overhead line is maintained within defined limits (avoid incremental loss from repeated cutting/back-trimming).</p>
Unimproved lowland calcareous grassland	<p>Ensure any temporary access during maintenance through areas of unimproved lowland calcareous grassland is kept to a minimum where possible and any temporary loss is appropriately restored.</p> <p>Implement appropriate remedial management where operational effects are identified on retained grassland.</p>

Potential Receptor and/or Impact	Control, Enhancement and Monitoring Measures
Scattered trees	Avoid storage/parking within root protection areas where practicable; maintain ground protection where access is required.
Protected and notable species	<p>Prior to any proposed overhead line maintenance works including any vegetation clearance, a pre-works ecological assessment should be undertaken in order to assess if the works could potentially impact protected and/or notable species.</p> <p>Any proposed vegetation management underneath the overhead lines should ideally be undertaken outside the nesting bird season (March to August inclusive) unless an appropriately qualified ecologist confirms active nests to be absent.</p>

3.3 Landscape and Visual

Introduction

- 3.3.1 This section details the Landscape and Visual baseline conditions and the environmental appraisal of the potential Landscape and Visual impacts associated with the construction and operation of the Scheme. Where potential environmental impacts are identified, relevant control measures are prescribed to reduce or avoid these impacts.
- 3.3.2 This section should be read in conjunction with Appendix A High Marnham New Overhead Lines Glossary and Abbreviations; Appendix B Methodology; Appendix D High Marnham New Overhead Lines Drawings; and Appendix E High Marnham New Overhead Lines Type 1 Photographic Survey.

Study area

- 3.3.3 The study area for the Landscape and Visual Appraisal, as shown in Appendix D High Marnham New Overhead Lines Drawings; Figure 3.3.1, comprises the land required to construct the Scheme plus a 2km buffer on all sides, hereafter referred to as the study area.

Consultation

- 3.3.4 In their response to the Form B consultation, BDC highlighted that, despite an EIA not being required, sufficient landscape information be provided to support the assessment of environmental effects. This section sets out the appraisal of impacts related to landscape and visual, thereby providing the requested information.

Baseline

Landscape designations

- 3.3.5 There are no landscape-related designated sites (National Landscapes or National Parks) within the study area.
- 3.3.6 There are a number of listed buildings (Grades I, II* and II) present in the north, east and south of the study area as shown in Appendix D High Marnham New Overhead Lines Drawings; Figure 3.3.2.
- 3.3.7 South Clifton Conservation Area is located towards the south eastern extent of the study area.
- 3.3.8 The River Trent, east of the study area is classified as a Green Corridor, as shown in Appendix D High Marnham New Overhead Lines Drawings; Figure 3.3.2.

Published landscape character

National landscape character

- 3.3.9 The study area lies within National Character Area (NCA) 48: Trent and Belvoir Vales (Natural England, 2013). The study area and its environs are therefore likely to exhibit characteristics of this NCA.
- 3.3.10 The key characteristics of NCA 48 are:
- *'A gently undulating and low-lying landform in the main, with low ridges dividing shallow, broad river valleys, vales and flood plains. The mature, powerful River Trent flows north through the full length of the area, meandering across its broad flood plain and continuing to influence the physical and human geography of the area as it has done for thousands of years;*
 - *The bedrock geology of Triassic and Jurassic mudstones has given rise to fertile clayey soils across much of the area, while extensive deposits of alluvium and sand and gravel have given rise to a wider variety of soils, especially in the flood plains and over much of the eastern part of the NCA;*
 - *Agriculture is the dominant land use, with most farmland being used for growing cereals, oilseeds and other arable crops. While much pasture has been converted to arable use over the years, grazing is still significant in places, such as along the Trent and around settlements;*
 - *A regular pattern of medium to large fields enclosed by hawthorn hedgerows, and ditches in low-lying areas, dominates the landscape;*
 - *Very little semi-natural habitat remains across the area; however, areas of flood plain grazing marsh are still found in places along the Trent;*
 - *Extraction of sand and gravel deposits continues within the Trent flood plain and the area to the west of Lincoln. Many former sites of extraction have been flooded, introducing new waterbodies and new wetland habitats to the landscape;*

- *Extensive use of red bricks and pantiles in the 19th century has contributed to the consistent character of traditional architecture within villages and farmsteads across the area. Stone also features, especially in the churches;*
- *A predominantly rural and sparsely settled area with small villages and dispersed farms linked by quiet lanes; and*

Regional landscape character

- 3.3.11 The East Midlands Regional Landscape Character Assessment (LCA) places the majority of the study area within ‘Group 3: River Valley Floodplain – 3a: Floodplain Valleys’ Landscape Character Type (LCT) but also partly within ‘Group 4: Lowland Vales – 4a: Unwooded Vales’ as shown in Appendix D High Marnham New Overhead Lines Drawings; Figure 3.3.3.
- 3.3.12 The key characteristics of Group 3: River Valley Floodplain – 3a: Floodplain Valleys are:
- *‘Deep alluvium and gravel deposits mask underlying bedrock geology to create wide, flat alluvial floodplains surrounded by rising landform of adjacent Landscape Character Types;*
 - *River channels, often along managed courses, bordered by riparian habitat;*
 - *Predominance of pastoral land use, with cereal growing increasing in some areas. ‘Warping’ areas subject to more intensive cereal growing;*
 - *Limited woodland cover; however, steep riverside bluffs and areas close to settlement or on former gravel extraction sites notable for a higher level of woodland cover;*
 - *Regular pattern of medium to large fields defined by hedgerows or post and wire fencing, breaking down and becoming open in some areas;*
 - *Hedgerow and riverside trees important component of landscape. Alder, Willow and Poplar are typical riverside trees;*
 - *Limited settlement and development in rural areas;*
 - *Sewage Treatment Works and power stations common close to larger settlements that fringe the floodplains;*
 - *Roads and communication routes often define the outer edges of the floodplain; and*
 - *Restoration of sand and gravel extraction sites to open water creates new character across many areas.’*
- 3.3.13 The presence of prominent electrical transmission infrastructure and in particular the former Marnham Power Station (now demolished) are cited as key characteristics of the landscape here, however, the predominantly rural setting of the wider LCT is such that it is considered to be of **medium** sensitivity to development of this nature.
- 3.3.14 The key characteristics of Group 4: Lowland Vales – 4a: Unwooded Vales are:
- *Extensive, low lying rural landscape underlain by Triassic and Jurassic mudstones and clays and widespread superficial deposits;*

- *Expansive long distance and panoramic views from higher ground at the margin of the vales gives a sense of visual containment;*
- *Low hills and ridges gain visual prominence in an otherwise gently undulating landscape;*
- *Complex drainage patterns of watercourses that flow within shallow undulations often flanked by pasture and riparian habitats;*
- *Limited woodland cover; shelter belts and hedgerow trees gain greater visual significance and habitat value as a result;*
- *Productive arable and pastoral farmland, with evidence of increasing reversion to arable cropping in recent times;*
- *Regular pattern of medium sized fields enclosed by low and generally well maintained hedgerows and ditches in low lying areas; large modern fieldscapes evident in areas of arable reversion; and*
- *Sparsely settled with small villages and dispersed farms linked by quiet rural lanes.*

3.3.15 Whilst electrical transmission infrastructure is not cited as a key characteristic of the landscape, it is clear that the existing overhead lines that cross the character area are a notable prominent feature within this part of the LCT. The predominantly open and rural nature of the LCT as a whole is such that it is considered to be of **medium** sensitivity to development of this nature.

Local landscape character

3.3.16 The Bassetlaw Landscape Character Assessment 2009 defines the landscape character of the administrative area of BDC. The assessment places most of the land required to construct the Scheme in the Mid-Nottinghamshire Farmlands – MN PZ 12 character area, as shown in Appendix D High Marnham New Overhead Lines Drawings; Figure 3.3.3.

3.3.17 The key characteristic features of this area include:

- *‘High Marnham Power Station (now demolished);*
- *Open arable farmland;*
- *Vernacular building style throughout the Policy Zone and at Normanton-on-Trent;*
- *Site of the medieval village of Woodcotes;*
- *Ditch/watercourse network across the area, sometimes alongside hedgerows;*
- *Long distance views;*
- *Pylons and high voltage overhead power lines;*
- *Railway line; and*
- *Narrow hedged lanes’.*

- 3.3.18 Due to the noted presence of existing electrical transmission infrastructure, the MN PZ 12 character area is considered to be of **low** sensitivity to development of this type.
- 3.3.19 The eastern extent of the study area extends into the Trent Washlands (Fledborough Holme River Meadowlands) TW PZ 44 character area.
- 3.3.20 The key characteristics features of this area include:
- *'Flat, open topography;*
 - *Irregular fields of species-rich flood meadow and pasture;*
 - *Small area of "holme" grassland;*
 - *Unimproved pasture with wetter areas containing Willow and Thorn;*
 - *Small oxbow;*
 - *Trees and riparian vegetation associated with ditches and watercourses;*
 - *Open views; and*
 - *The Trent Viaduct and the decommissioned High Marnham Power Station site, which are located to the south'.*
- 3.3.21 Due to the noted presence of existing electrical transmission infrastructure and other detracting features, the Trent Washlands (Fledborough Holme River Meadowlands) TW PZ 44 character area is considered to be of **medium** sensitivity to development of this type.
- 3.3.22 The northern extent of the study area extends into the Trent Washlands (Dunham on Trent Village Farmlands) TW PZ 20 character area.
- 3.3.23 The key characteristics of this area include:
- *'Predominantly a large-scale arable landscape;*
 - *Small-scale pastoral landscape around Dunham;*
 - *Views dominated by power stations (although mostly now demolished) and pylons;*
 - *Hedgerows often missing or gappy;*
 - *Some hedgerow trees and roadside trees present;*
 - *Busy road to the north (A57);*
 - *Nucleated village characterised by red brick and pantile roofed buildings; and*
 - *Long distance views across open landscape.'*
- 3.3.24 Due to notable detracting features including pylons and electrical transmission infrastructure the TW PZ 20 character area is considered to be of **medium** sensitivity to development of this nature.
- 3.3.25 A small section of the south western part of the land required to construct the Scheme extends into the Trent Washlands (Grassthorne River Meadowlands) TW PZ 43 character area.

- 3.3.26 The key characteristics of this area include:
- *‘Small to medium-sized irregular fields of species rich pasture;*
 - *Strong mixed species hedgerows;*
 - *Hedgerow trees including Ash, Sycamore and Horse Chestnut;*
 - *Large mature trees along Grassthorne Beck/Town Lane are a prominent feature;*
 - *Nucleated village characterised by red brick and pantile roofed buildings; and*
 - *Restricted views within Grassthorne and along roads/tracks with tall hedgerows.’*
- 3.3.27 Whilst not specifically mentioned, electrical transmission infrastructure is a notable detracting feature. When combined with other stated detracting features, the TW PZ 43 character area is considered to be of **low** sensitivity to development of this nature.
- 3.3.28 Further to the east beyond the River Trent, the study area extends into the ‘East Nottinghamshire Sandlands (ES01 and ES02)’ LCAs, set out within The Newark and Sherwood Landscape Character Assessment – Supplementary Planning Document (Newark and Sherwood District Council, 2013). However, the land required to construct the Scheme itself does not extend into this area.

The Scheme

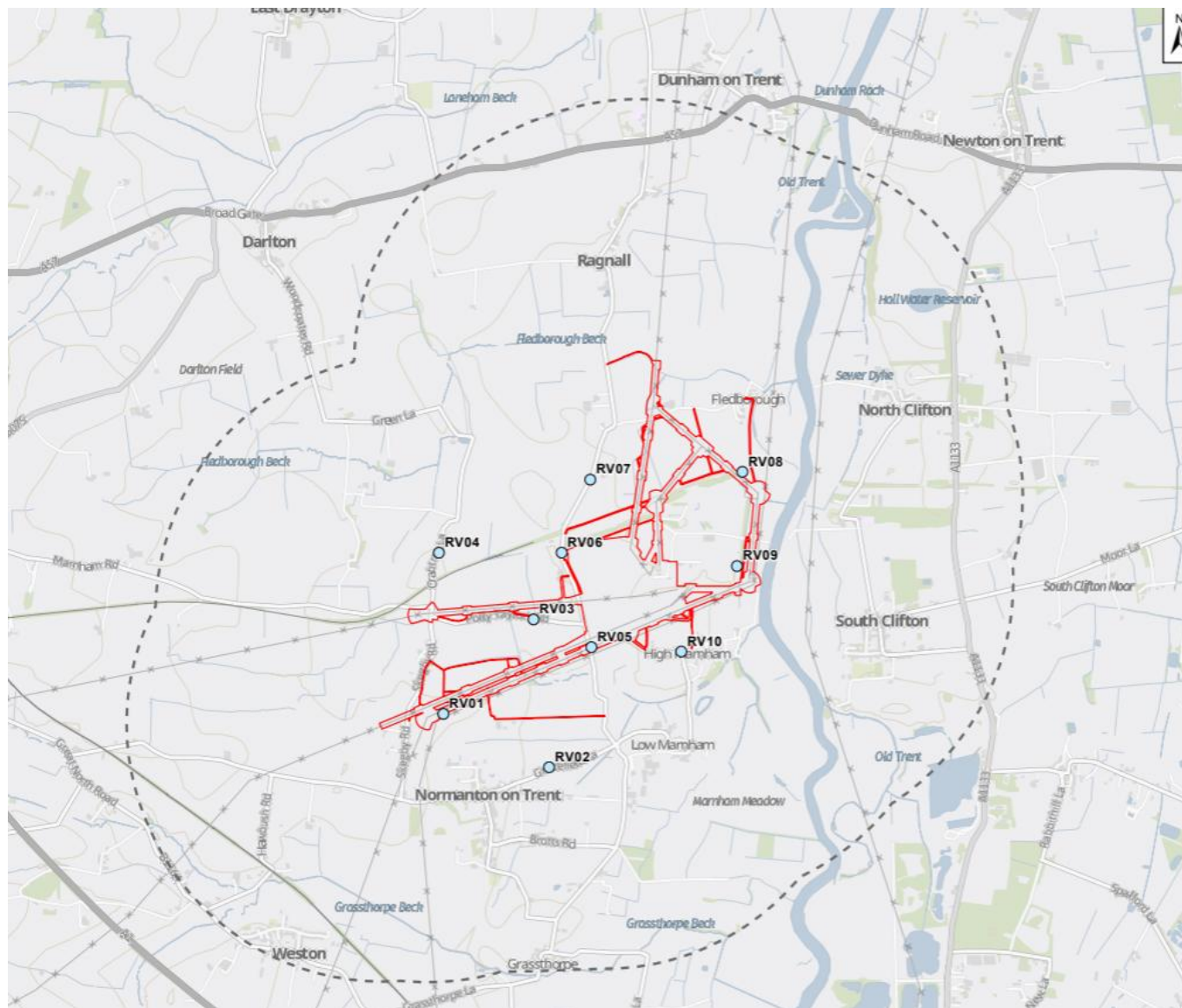
- 3.3.29 Within the land required to construct the Scheme, the physical landscape comprises a mixture of gently undulating irregular agricultural fields bounded by mature hedgerows, with a strong presence of electrical transmission infrastructure, as well as the existing High Marnham Substation and disused railway embankment to the north.
- 3.3.30 The landscape is considered to be of **low** sensitivity to development of this nature.

Visual amenity baseline

- 3.3.31 Currently, the land required to construct the Scheme, which includes the existing High Marnham Substation, is situated in a generally flat and open rural landscape, with irregular fields bounded by low hedgerows. Views towards the Scheme from the east, west and south are largely unobstructed given the flat nature of the topography, however, there is a railway embankment that runs east to west through the land required to construct the Scheme, which is heavily wooded, providing some screening, particularly from the north.
- 3.3.32 There are a number of visual receptors that are likely to experience views towards the Scheme to varying degrees, including residential properties, Public Rights of Way (PRoW), cycle routes and highways.
- 3.3.33 A provisional classification of the sensitivity of the visual receptors at this location is provided in Table 3.3.1. In accordance with the methodology set out in Appendix B Methodology, this sensitivity varies according to the interest receptors take in their visual environment (and hence their susceptibility to the type of change the development is likely to bring about) and the value receptors attach to the existing view.

3.3.34 The locations of Representative Viewpoints (RVs), from which viewpoint photography has been taken during field work, are shown in Figure 3.3.1 below:

Figure 3.3.1 Representative Viewpoints (RVs) for High Marnham



3.3.35 A description of the current amenity of the visual receptors at each of these RVs is included in Table 3.3.1 below. A suite of RV photography is presented in Appendix E, High Marnham New Overhead Lines Type 1 Photographic Survey.

Table 3.3.1 Visual receptors at each RV

RV No./Receptor details	Direction and distance from the land required to construct the Scheme	Sensitivity of visual receptors represented by this RV
RV01: Users of PRow FP7, Near Skegby	Within the land required to construct the Scheme Looking north east	Medium
RV02: Users of the secondary road between Normanton on Trent and Low Marnham	Approximately 390m to the south of the land required to construct the Scheme Looking north	Medium
RV03: Users of PRow FP4, NCN [National Cycle Network Route] 647 and secondary road (Polly Taylor's Road)	Adjacent to the south of the land required to construct the Scheme Looking north east	Medium
RV04: Users of Crabtree Lane and NCN 647 to the west of the land required to construct the Scheme	Approximately 330m to the north west of the land required to construct the Scheme Looking east	Medium
RV05: Junction of Hollowgate Lane and secondary road to the west of High Marnham	Within the land required to construct the Scheme Looking north east	Medium
RV06: Users of secondary road adjacent to land required to construct the Scheme	Adjacent to the west of the land required to construct the Scheme Looking east	Medium
RV07: Users of secondary road and residential receptors to north west of land required to construct the Scheme	Approximately 350m to the west of the land required to construct the Scheme Looking south east	Medium
RV08: Users of public access pathway and NCN 647 along the disused railway line embankment	Approximately 25m to the north east of the land required to construct the Scheme Looking south west	Medium
RV09: Users of PRow FP7 walking along western side of the River Trent	Approximately 50m to the south east of the land required to construct the Scheme Looking south west	Medium

RV No./Receptor details	Direction and distance from the land required to construct the Scheme	Sensitivity of visual receptors represented by this RV
RV10: Residents of High Marnham and users of secondary roads within the village.	Approximately 75m to the south west of the land required to construct the Scheme Looking north	Medium/High

Potential Construction Impacts

Landscape appraisal

- 3.3.36 The construction of the Scheme will introduce temporary incongruent elements to the existing landscape setting to varying degrees at different stages throughout the construction of the Scheme.

Landscape character

- 3.3.37 There are a number of landscape character studies at different scales within the study area, these are shown in Appendix D High Marnham New Overhead Lines Drawings; Figure 3.3.3.

National landscape character (NCA 38)

- 3.3.38 Given the relatively small scale of the Scheme in relation to the scale of the NCA, it is not anticipated that there will be any effects that are likely to materially alter the character of the wider NCA. Finer-grained assessments at regional or local scale are more suitable for establishing effects upon landscape character. These are considered below.

Regional landscape character

Group 3: River Valley Floodplain – 3a: Floodplain Valleys (medium sensitivity)

- 3.3.39 The bulk of the Scheme is located within this LCT.
- 3.3.40 This LCT is considered to be of **medium** sensitivity to development of this nature.
- 3.3.41 During the construction phase there are likely to be highly noticeable effects upon the character of the landscape locally, with the influence of construction areas and related activity, including noise, dust and a reduction in tranquillity extending beyond the land required to construct the Scheme into the wider LCT.
- 3.3.42 Physical effects upon notable landscape features and existing vegetation will be generally limited to temporary works to facilitate access routes and temporary construction areas, as well as the relatively localised working areas around proposed temporary/permanent structures and existing structures to be removed.

- 3.3.43 Overall, when considered in the context of the character area as a whole, this will cause a **low** magnitude of change, resulting in a **minor** adverse level of effect, which will be temporary in nature.

Group 4: Lowland Vales – 4a: Unwooded Vales

- 3.3.44 A limited part of the western extent of the Scheme is located within this LCT.
- 3.3.45 This LCT is considered to be of **medium** sensitivity to development of this nature.
- 3.3.46 During construction, regional landscape character will be noticeably affected by construction areas and associated activities. The open nature of the LCT means that these effects — including noise, dust and reduced tranquillity — will extend beyond the land required to construct the Scheme into the surrounding LCT.
- 3.3.47 Direct physical impacts on prominent landscape features and existing vegetation will be largely confined to temporary works required for access routes and construction areas, together with the relatively localised areas around temporary or permanent structures and any existing structures scheduled for removal.
- 3.3.48 Overall, when considered at the scale of the whole character area, these effects equate to a **low** magnitude of change, resulting in a **minor** adverse effect, which will be temporary in nature.

Local landscape character (LCA)

Mid-Nottinghamshire Farmlands – MN 12

- 3.3.49 Most of the Scheme is located within this LCA.
- 3.3.50 This LCA is considered to be of **low** sensitivity to development of this nature.
- 3.3.51 During construction, local landscape character will be noticeably affected by the presence of construction areas and associated construction activities which will include incongruent features such as machinery, noise and dust coupled with reduced tranquillity. The open nature of the landscape means that these effects will extend into the wider LCA.
- 3.3.52 Direct physical impacts on prominent landscape features and existing vegetation will generally be limited to temporary works required for access routes and construction areas, together with relatively localised areas around temporary or permanent structures and any existing structures scheduled for removal.
- 3.3.53 Overall, when considered at the scale of the whole character area, these effects will lead to a **medium** magnitude of change, resulting in a **minor** adverse effect, which will be temporary in nature.

Trent Washlands – TW 44

- 3.3.54 A small section of the land required to construct the Scheme extends into this LCA.
- 3.3.55 This LCA is considered to be of **medium** sensitivity to development of this nature.
- 3.3.56 During construction, local landscape character will be slightly affected by the presence of construction areas and associated activities which will include

incongruent features such as moving machinery, noise and dust coupled with some reduction in tranquillity. Because the landscape is relatively open, these effects may spread into the wider LCA.

- 3.3.57 Direct physical impacts to prominent landscape features and existing vegetation will be largely confined to temporary access works, construction compound footprints, and localised areas around existing structures that are to be removed.
- 3.3.58 Overall, when considered across the entire character area, these effects will lead to a **low** magnitude of change, resulting in a **minor** adverse effect, which will be temporary in nature.

Trent Washlands – TW 20

- 3.3.59 A small section of the Scheme extends into this LCA.
- 3.3.60 This LCA is considered to be of **medium** sensitivity to development of this nature.
- 3.3.61 During the construction phase there will be some localised effects due the presence of construction areas and associated activities, which will include incongruent features such as moving machinery, noise and dust coupled with some reduction in tranquillity. Existing established vegetation along the disused railway embankment provides some containment, slightly reducing the extent of effects across the wider LCA.
- 3.3.62 Direct physical impacts to prominent landscape features and existing vegetation will generally be limited to temporary access works, construction compound footprints and localised areas around existing structures that are to be removed.
- 3.3.63 Overall, when considered across the entire character area, these effects will lead to a **low to negligible** magnitude of change, resulting in a **minor to negligible** adverse effect, which will be temporary in nature.

Trent Washlands - TW 43

- 3.3.64 A small section of the Scheme extends into this LCA.
- 3.3.65 This LCA is considered to be of **low** sensitivity to development of this nature.
- 3.3.66 During the construction phase there will be some localised effects due the presence of construction areas and associated activities, which will include incongruent features such as moving machinery, noise and dust coupled with some reduction in tranquillity. These effects are not likely to extend noticeably into the wider LCA.
- 3.3.67 Direct physical impacts to prominent landscape features and existing vegetation will generally be limited to temporary access works, construction compound footprints and localised areas around existing structures that are to be removed.
- 3.3.68 Overall, when considered across the entire character area, these effects will lead to a **negligible** magnitude of change, resulting in a **negligible** adverse effect, which will be temporary in nature.

Local landscape character (the Scheme)

- 3.3.69 The physical landscape within the land required to construct the Scheme comprises a mixture of agricultural fields and mature hedgerows, with electrical transmission infrastructure and the existing High Marnham Substation and disused railway embankment to the north.
- 3.3.70 The landscape within the land required to construct the Scheme is considered to be of **low** sensitivity to development of this nature.
- 3.3.71 During the construction phase there will be noticeable effects due the presence of construction areas and associated activities, which will include incongruent features such as moving machinery, noise and dust coupled with some reduction in tranquillity. These effects are likely to be present throughout the land required to construct the Scheme.
- 3.3.72 Direct physical impacts on prominent landscape features and existing vegetation will generally be limited to temporary works required for access routes and construction compounds, together with relatively localised areas around temporary or permanent structures and any existing structures scheduled for removal.
- 3.3.73 These effects will lead to a **high** magnitude of change, resulting in a **moderate to minor** adverse effect, which will be temporary in nature.

Visual amenity appraisal

- 3.3.74 Movement and active change are more noticeable than fixed objects. The changing nature of the Scheme as it is being built and the presence of construction areas and large on-site machinery, often with hazard lights, will be highly noticeable. Also, the general noise and activity associated with construction sites may attract attention and cause viewers to notice and observe more than they otherwise would. These effects, however, will be temporary and short term in nature.
- 3.3.75 These impacts will be reduced with the implementation of the proposed considerate construction practices (such as appropriately sited construction areas, suitable control of construction lighting away from surrounding countryside, limiting material stockpile heights and implementing tree protection measures).
- 3.3.76 These construction phase effects will cease once the Scheme becomes operational.

Residential receptors

- 3.3.77 There are a number of residential receptors in close proximity to the land required to construct the Scheme, including some receptors that are holiday destinations. It is considered that all of these receptors are of **high** sensitivity due to their relatively rural location.
- 3.3.78 For the purposes of the appraisal, receptors that are likely to experience views are either considered individually or grouped together where effects are likely to be of a similar magnitude:
- Fledborough House Farm, Station Cottages and Station House located to the north west of the Scheme and properties accessed via Main Street towards the north of the Scheme, including Long Row Cottages, The Gables, North Farm, Top Farm, Manor Cottages and The Potteries are likely to experience clear views

towards the Scheme. Southerly views are partially obscured by established vegetation along the railway embankment; however, construction machinery such as cranes and associated activity are still likely to be visible (see RV07).

- Construction Phase: The scale of construction phase activity will lead to a **medium** magnitude of change, resulting in a **major to moderate** adverse level of effect, albeit temporary in nature.
- Properties to the north of Hollowgate Lane to the south of the land required to construct the Scheme, including Hill Farm, Woodlands, Rookery Cottage and Hawthorns, as well as park homes at Sparrow Lane Park are likely to experience clear westerly, northerly to north easterly views. Close proximity, coupled with limited intervening vegetation means that construction phase activity is likely to be highly noticeable, occupying a large proportion of the view (see RV10).
 - Construction Phase: The scale of construction phase activity coupled with the absence of intervening vegetation will lead to a **high** magnitude of change, resulting in a **major adverse** level of effect, albeit temporary in nature.
- Properties to the south and east of Hollowgate Lane, including Trent View Cottages and The Bungalow, as well as visitors to Marnham Meadows Holiday Park, are likely to experience glimpsed views partially obscured by intervening vegetation.
 - Construction Phase: Glimpses of construction phase activity through intervening vegetation will lead to a **low** magnitude of change, resulting in a **moderate to minor adverse** level of effect, albeit temporary in nature.
- Properties along the western urban fringe of South Clifton and North Clifton approximately 1km to the east, are likely to experience glimpses of construction phase activity, particularly in the area of the Scheme that is located adjacent to the River Trent.
 - Construction Phase: Views are likely to be partially obscured by existing intervening vegetation, such that magnitude of change will not exceed **low**, leading to a level of effect no greater than **moderate to minor adverse**, albeit temporary in nature.
- Properties along the northern urban fringe of Low Marnham approximately 600m to the south and the north eastern urban fringe of Normanton on Trent, approximately 500m to the south west and on Skegby Road (RV01 and RV02), are likely to experience glimpses of construction phase activity.
 - Construction Phase: Glimpses of construction phase activity through intervening vegetation will lead to no greater than a **low** magnitude of change, resulting in a **moderate to minor adverse** level of effect, albeit temporary in nature.

Recreational and access receptors

- 3.3.79 There are a number of recreational and access receptors including cycle routes, PRoWs and highways within the study area, which are likely to experience views of the Scheme to varying degrees. All of these receptors are considered to be of **medium** sensitivity.

3.3.80 For the purposes of the appraisal, receptors are grouped together in accordance with the degree to which they are likely to be affected:

- National Cycle Network (NCN) Route 647 runs broadly east-west through the study area, passing through the land required to construct the Scheme in places. Users are likely to experience views towards the Scheme to varying degrees along the length of the route within the study area.
 - Construction Phase: The scale of construction phase activity coupled with the absence of intervening vegetation along significant sections of the route will lead to a **high** magnitude of change, resulting in a **major to moderate adverse** level of effect, albeit temporary in nature (RV01, RV03, RV05, RV07 and RV08).
- PRowS Marnham/FP9 and Marnham/FP7 are located in close proximity to the east of the Scheme and as such, are likely to experience direct and largely unobstructed views.
 - Construction Phase: The scale of construction phase activity coupled with the absence of intervening vegetation will form a highly noticeable element, leading to a **high** magnitude of change, resulting in a **major to moderate adverse** level of effect, albeit temporary in nature (see RV08 and RV09).
- PRowS Marnham/FP4, Normanton on Trent/FP7, Normanton on Trent/FP8 and Marnham/FP5 are located in close proximity to the west and north and as such, are likely to experience direct views towards the Scheme to varying degrees (see RV01, RV03, RV05).
- PRowS Marnham/Byway Open to All Traffic (BOAT) 8 is to the west of the Scheme, Fledborough/FP7, Fledborough/FP8, Fledborough/FP9, Fledborough/FP10 and Fledborough/FP11 are located in close proximity to the north of the Scheme. The open nature of the landscape is such that construction phase activity associated with the aspects of the Scheme to the north of the railway embankment are likely to be highly visible from these receptors, with the area to the south of the railway embankment partially obscured.
 - Construction Phase: The scale of construction phase activity coupled with the absence of intervening vegetation will lead to a **high** magnitude of change, resulting in a **major to moderate adverse** level of effect, albeit temporary in nature.
- PRowS Ragnall/FP2, Ragnall/FP4 and Ragnall/BW3 are located to the north northwest of the Scheme. The aspects of the Scheme to the north of the railway embankment are likely to be readily noticeable from these receptors.
 - Construction Phase: The scale of construction phase activity coupled with the absence of intervening vegetation will lead to a **medium** magnitude of change, resulting in a **moderate adverse** level of effect, albeit temporary in nature.
- PRowS South Clifton/BOAT13, South Clifton/FP1, South Clifton/FP5, South Clifton/FP2 and South Clifton/FP12 are located to the east and south east of the Scheme beyond the River Trent. The openness of the landscape in this location is such that the more easterly aspects of the Scheme are likely to be readily noticeable in westerly views from these receptors.

- Construction Phase: The scale of construction phase activity coupled with the absence of intervening vegetation will lead to a **medium** magnitude of change, resulting in a **moderate adverse** level of effect, albeit temporary in nature.
- Fledborough Road, Hollowgate Lane, Polly Taylor's Road and to a slightly lesser degree Main Street, are located in close proximity to the Scheme, with limited roadside vegetation to obscure views. Construction phase activity is likely to be very noticeable for users of these routes (see RV03, RV05, RV06 and RV10).
 - Construction Phase: The scale of construction phase activity will lead to a **high** magnitude of change, resulting in a **major to moderate adverse** level of effect, albeit temporary in nature.

3.3.81 Whilst there are a number of additional PRoW, highways and access tracks that are likely to experience views of the Scheme, these views are likely to be sufficiently obscured by existing intervening vegetation, that the magnitude of change will not exceed **low**, leading a level of effect no greater than **minor adverse** during the construction phase.

Potential Operational Impacts

Landscape appraisal

- 3.3.82 The land required to construct the Scheme will introduce incongruent elements to the existing landscape setting during the operational phase of the Scheme. It will also remove a number of existing elements including overhead line routes and pylons.
- 3.3.83 The appraisal therefore considers likely landscape effects at Year 1 of the operational phase and at Year 15, once reinstatement or replacement of vegetation following construction has established (residual effects).

National landscape character (NCA 38)

- 3.3.84 Given the relatively small scale nature of the Scheme in relation to the scale of the NCA, it is not anticipated that there will be any effects that are likely to materially alter the character of the wider NCA.

Regional landscape character

Group 3: River Valley Floodplain – 3a: Floodplain Valleys

- 3.3.85 The bulk of the Scheme is located within this LCT.
- 3.3.86 This LCT is considered to be of **medium** sensitivity to development of this nature.
- 3.3.87 Once the Scheme becomes operational, and construction areas, access routes and temporary overhead line diversions have been removed/reinstated, physical effects upon locally characteristic landscape features such as pasture, arable fields, field boundary hedgerows and woodland will be largely eliminated within this LCT.
- 3.3.88 Whilst the presence of electrical transmission infrastructure will remain a notable characteristic, the removal of a considerable number of existing pylons, with far fewer proposed, will contribute to an overall improvement to the character of the landscape.

- 3.3.89 Years 1 and 15: There are likely to be some noticeable beneficial effects upon the character of the landscape within this LCT once the Scheme becomes operational. This will lead to a **low** magnitude of change resulting in a **minor to negligible beneficial** level of effect.

Group 4: Lowland Vales – 4a: Unwooded Vales

- 3.3.90 A limited part of the western extent of the Scheme is located within this LCT.
- 3.3.91 This LCT is considered to be of **medium** sensitivity to development of this nature.
- 3.3.92 Once the Scheme becomes operational, and construction areas, access routes and temporary overhead line diversions have been removed/reinstated, physical effects upon locally characteristic landscape features such as pasture, arable fields, field boundary hedgerows and woodland will be largely eliminated within this LCT.
- 3.3.93 The presence of electrical transmission infrastructure will remain a notable characteristic, with a similar number of pylons removed as are being proposed.
- 3.3.94 Years 1 and 15: There are likely to be few discernible effects upon the character of the landscape within this LCT once the Scheme becomes operational. This will lead to **no magnitude of change**, which will result in a **neutral** level of effect.

Local landscape character (LCA)

Mid-Nottinghamshire Farmlands – MN PZ 12

- 3.3.95 Most of the Scheme is located within this LCA.
- 3.3.96 This LCA is considered to be of **low** sensitivity to development of this nature.
- 3.3.97 Once the Scheme becomes operational, and construction areas, access routes and temporary overhead line diversions have been removed/reinstated, physical effects upon locally characteristic landscape features such as pasture, arable fields, field boundary hedgerows and woodland will be largely eliminated within this LCA.
- 3.3.98 Electrical transmission infrastructure will remain a key characteristic of this LCA, however, the removal of a considerable number of existing pylons, with fewer being proposed, will contribute to a slight improvement to the overall character of the landscape.
- 3.3.99 Years 1 and 15: There are likely to be some slight but noticeable beneficial effects upon the character of the landscape within this LCA once the Scheme becomes operational. This will lead to a **low** magnitude of change resulting in a **minor to negligible beneficial** level of effect.

Trent Washlands – TW PZ 44

- 3.3.100 A small section of the Scheme extends into this LCA.
- 3.3.101 This LCA is considered to be of **medium** sensitivity to development of this nature.
- 3.3.102 Once the Scheme becomes operational, and construction areas, access routes and temporary overhead line diversions have been removed/reinstated, physical effects

upon locally characteristic landscape features such as pasture, arable fields, field boundary hedgerows and woodland will be largely eliminated within this LCA.

- 3.3.103 The removal of several existing pylons will contribute to a notable improvement to the overall character of the landscape within the LCA.
- 3.3.104 Years 1 and 15: There are likely to be some notable beneficial effects upon the character of the landscape within this LCA once the Scheme becomes operational. This will lead to a **medium to low** magnitude of change resulting in a **moderate to minor beneficial** level of effect.

Trent Washlands – TW PZ 20

- 3.3.105 A small section of the Scheme extends into this LCA.
- 3.3.106 This LCA is considered to be of **medium** sensitivity to development of this nature.
- 3.3.107 Once the Scheme becomes operational, and construction areas and access routes have been removed/reinstated, physical effects upon locally characteristic landscape features such as pasture, arable fields, field boundary hedgerows and woodland will be largely eliminated within this LCA.
- 3.3.108 The removal of a number of existing pylons will contribute to a slight but noticeable improvement to the overall character of the landscape within the LCA.
- 3.3.109 Years 1 and 15: There are likely to be some slight beneficial effects upon the character of the landscape within this LCA once the Scheme becomes operational. This will lead to a **low** magnitude of change resulting in a **minor beneficial** level of effect.

Trent Washlands – TW PZ 43

- 3.3.110 A small section of the Scheme extends into this LCA.
- 3.3.111 This LCA is considered to be of **low** sensitivity to development of this nature.
- 3.3.112 Once the Scheme becomes operational, and construction areas and access routes have been removed/reinstated, physical effects upon locally characteristic landscape features such as pasture, arable fields, field boundary hedgerows and woodland will be largely eliminated within this LCA.
- 3.3.113 Years 1 and 15: There are likely to be no discernible effects upon the character of the landscape within this LCA once the Scheme becomes operational. This will lead to **no magnitude of change**, resulting in a **neutral** level of effect.

Local landscape character (the Scheme)

- 3.3.114 The physical landscape within the land required to construct the Scheme comprises a mixture of agricultural fields and mature hedgerows, with electrical transmission infrastructure and the existing High Marnham Substation and disused railway embankment to the north.
- 3.3.115 The landscape within the land required to construct the Scheme is considered to be of **low** sensitivity to development of this nature.

- 3.3.116 Once the Scheme becomes operational, and construction areas, access routes, and temporary diversions have been removed/reinstated, physical effects upon landscape features such as pasture, arable fields, field boundary hedgerows and woodland will be largely eliminated.
- 3.3.117 Electrical transmission infrastructure will remain a key characteristic of the landscape, however, the removal of a considerable number of existing pylons, with fewer being proposed, particularly towards the east and north, will noticeably reduce the overall presence of electrical transmission infrastructure.
- 3.3.118 Years 1 and 15: There are likely to be some noticeable beneficial effects upon the character of the landscape once the Scheme becomes operational. This will lead to a **medium** magnitude of change resulting in a **minor beneficial** level of effect.

Visual amenity appraisal

- 3.3.119 The appraisal considers likely visual effects at Year 1 of the operational phase and at Year 15, once vegetation reinstated or replaced following construction, has established (residual effects).
- 3.3.120 In the same way as during the construction phase of the appraisal, receptors that will experience views are either considered individually or grouped together where effects are likely to be of a similar magnitude.

Residential receptors

- Fledborough House Farm, Station Cottages and Station House located to the north west of the Scheme, and properties accessed via Main Street towards the north of the Scheme, including Long Row Cottages, The Gables, North Farm, Top Farm, Manor Cottages and The Potteries are likely to experience clear views towards the Scheme. Southerly views are partially obscured by established vegetation along the railway embankment; however, glimpses of taller structures are still likely (see RV07).
 - Once operational, construction areas, access routes and temporary overhead line diversions will be removed/reinstated and will no longer feature in views.

The Scheme involves the removal of a significant number of existing pylons (27 in total) and overhead line, most notably (for these receptors) in the area to the north of the railway embankment. Whilst there will be a number of pylons proposed to the south (eight permanent), there are considerably fewer than the number being removed. On balance, this will slightly reduce the visible presence of electrical transmission infrastructure within views.

 - Years 1 and 15: There are likely to be some slight beneficial effects for these receptors once the Scheme becomes operational. This will lead to a **low** magnitude of change resulting in a **moderate to minor beneficial** level of effect.
- Properties to the north of Hollowgate Lane to the south of the land required to construct the Scheme, including Hill Farm, Woodlands, Rookery Cottage and Hawthorns, as well as park homes at Sparrow Lane Park are likely to experience clear westerly, northerly and north easterly views. Close proximity, coupled with

limited intervening vegetation means that the Scheme is likely to be highly noticeable, occupying a large proportion of the view (see RV10).

- Once operational, construction areas, access routes and temporary overhead line diversions will be removed/reinstated and will no longer feature in views.

The Scheme involves the removal of a significant number of existing pylons (27 in total) and overhead line, in views from these receptors. Whilst there will be a number of pylons proposed (eight permanent), there are considerably fewer than the number being removed. On balance, this will noticeably reduce the visible presence of electrical transmission infrastructure.

- Years 1 and 15: There are likely to be some noticeable beneficial effects for these receptors once the Scheme becomes operational. This will lead to a **medium** magnitude of change resulting in a **major to moderate beneficial** level of effect.
- Properties to the south and east of Hollowgate Lane, including Trent View Cottages and The Bungalow, as well as visitors to Marnham Meadows Holiday Park are likely to experience glimpsed views, partially obscured by intervening vegetation.
 - Once operational, construction areas, access routes and temporary overhead line diversions will be removed/reinstated and will no longer feature in views.

The Scheme involves the removal of a significant number of existing pylons (27 in total) and overhead line, in views from these receptors, with considerably fewer proposed (eight permanent). Whilst views from these receptors are likely to be glimpses through existing vegetation, there will be a slight reduction in the visible presence of electrical transmission infrastructure.

 - Years 1 and 15: There is likely to be a slight beneficial effect for these receptors once the Scheme becomes operational. This will lead to a **low to negligible** magnitude of change resulting in a **minor beneficial** level of effect.
- Properties along the western urban fringe of South Clifton and North Clifton approximately 1km to the east, are likely to experience glimpsed views particularly of the area of the scheme that is located adjacent to the River Trent.
 - Once operational, construction areas, access routes and temporary overhead line diversions will be removed/reinstated and will no longer feature in views.

The Scheme involves the removal of a significant number of existing pylons (27 in total) and overhead line, with considerably fewer proposed (eight permanent). Most notably for these receptors, the three pylons immediately to the west of the River Trent will be removed, which will noticeably reduce the visible presence of electrical transmission infrastructure.

 - Years 1 and 15: There is likely to be a slight beneficial effect for these receptors once the Scheme becomes operational. This will lead to a **low to negligible** magnitude of change resulting in a **minor beneficial** level of effect.
- Properties along the northern urban fringe of Low Marnham approximately 600m to the south and the north eastern urban fringe of Normanton on Trent,

approximately 500m to the south west and on Skegby Road (RV01 and RV02), are likely to experience glimpsed views.

- Once operational, construction areas, access routes and temporary overhead line diversions will be removed/reinstated and will no longer feature in views.

The Scheme involves the removal of a significant number of existing pylons (27 in total) and overhead line across the Scheme, with considerably fewer proposed overall (eight permanent). Most notably for these receptors, the pylons towards the west of the Scheme will be replaced and an additional two will be introduced, so whilst there will be a reduction in the overall visible presence of electrical transmission infrastructure, the effect will not be so readily noticeable from these receptors.

- Years 1 and 15: There is likely to be a very slight beneficial effect for these receptors once the Scheme becomes operational. This will lead to a **negligible** magnitude of change resulting in a **minor to neutral beneficial** level of effect.

Recreational and access receptors

- NCN Route 647 runs broadly east-west through the study area, passing through the land required to construct the Scheme in places. Users of this route are likely to experience views towards the Scheme to varying degrees along the length of the route within the study area. It is considered to be of **medium** sensitivity.
 - Once operational, construction areas, access routes and temporary overhead line diversions will be removed/reinstated and will no longer feature in views.
 - The Scheme involves the removal of a significant number of existing pylons (27 in total) and overhead line, with considerably fewer proposed (eight permanent). Most notably for this receptor, a significant number of pylons within the east of the Scheme extent will be removed, which will noticeably reduce the visible presence of electrical transmission infrastructure from the eastern section of the route as it passes between North and South Clifton and crosses Fledborough Viaduct. Conversely there is likely to be a slight increase in the visible presence of electrical transmission infrastructure from the western section of the route as an additional two pylons will be introduced.
 - Years 1 and 15: On balance there is likely to be a slight beneficial effect for users of NCN Route 647 once the Scheme becomes operational. This will lead to a **low** magnitude of change resulting in a **minor beneficial** level of effect. See (RV01, RV03, RV05, RV07 and RV08).

3.3.121 There are a number of PRoWs within the study area, that are likely to experience views of the Scheme to varying degrees, all of which are considered to be of **medium** sensitivity.

3.3.122 For the purposes of the appraisal, these are grouped together in accordance with the degree to which they are likely to be affected:

- PRoWs Marnham/FP9 and Marnham/FP7 are located in close proximity to the east of the Scheme and as such, are likely to experience direct and largely unobstructed views.

- Once operational, construction areas, access routes and temporary overhead line diversions will be removed/reinstated and will no longer feature in views.
 - The Scheme involves the removal of a significant number of existing pylons (27 in total) and overhead line, with considerably fewer proposed (eight permanent). Most notably for these receptors, a significant number of pylons in close proximity, towards the east of the land required to construct the Scheme will be removed, which will noticeably reduce the visible presence of electrical transmission infrastructure there (see RV08 and RV09).
 - Years 1 and 15: There is likely be a noticeable beneficial effect for users of these routes once the Scheme becomes operational. This will lead to a **medium** magnitude of change resulting in a **moderate beneficial** level of effect.
- PRowS Marnham/FP4, Normanton on Trent/FP7 and Marnham/FP5 are located in close proximity to the west, as such users of these routes are likely to experience direct views towards the Scheme to varying degrees.
 - Once operational, construction areas, access routes and temporary overhead line diversions will be removed/reinstated and will no longer feature in views.
 - The Scheme involves the removal of a significant number of existing pylons (27 in total) and overhead line, with considerably fewer proposed (eight permanent), however, for these receptors there is likely to be a slight increase in the visible presence of electrical transmission infrastructure in the foreground as an additional two pylons will be introduced (see RV01, RV03, RV05).
 - Years 1 and 15: On balance, there is likely be a slight beneficial effect for users of these routes once the Scheme becomes operational. This will lead to a **low** magnitude of change resulting in a **minor beneficial** level of effect.
 - PRowS Marnham/BOAT8, Fledborough/FP7, Fledborough/FP8, Fledborough/FP9, Fledborough/FP10, Fledborough/FP11 and Fledborough/FP12 are located in close proximity to the north of the Scheme. The open nature of the landscape is such that the aspects of the Scheme to the north of the railway embankment are likely to be highly visible from these receptors, with the area to the south of the railway embankment partially obscured.
 - Once operational, construction areas, access routes and temporary overhead line diversions will be removed/reinstated and will no longer feature in views.
 - A significant number of pylons towards the northern extents of the land required to construct the Scheme will be removed (five in total), which will noticeably reduce the visible presence of electrical transmission infrastructure in close proximity views from these receptors. Although partially obscured, views to the south of the railway embankment will also feature less visible pylons and associated wire-scape above the tree line.
 - Years 1 and 15: There is likely to be a noticeable beneficial effect for users of these routes once the Scheme becomes operational. This will lead to a **medium to low** magnitude of change resulting in a **moderate to minor beneficial** level of effect.

- PRowS Ragnall/FP2, Ragnall/FP4 and Ragnall/BW3 are located to the north - north west of the Scheme. The open nature of the landscape here is such that the aspects of the Scheme to the north of the railway embankment are likely to be readily noticeable from these receptors.
 - Once operational, construction areas, access routes and temporary overhead line diversions will be removed/reinstated and will no longer feature in views.
 - A significant number of pylons towards the northern extents of the land required to construct the Scheme will be removed (five in total), which will noticeably reduce the visible presence of electrical transmission infrastructure in views from these receptors. Although partially obscured, more distant views to the south of the railway embankment will also feature less visible pylons and associated wire-scape above the tree line.
 - Years 1 and 15: There is likely to be a slight beneficial effect for users of these routes once the Scheme becomes operational. This will lead to a **low** magnitude of change resulting in a **minor beneficial** level of effect.
- PRowS South Clifton/BOAT13, South Clifton/FP1, South Clifton/FP5 and South Clifton/FP5 are located to the east of the Scheme beyond the River Trent. The openness of the landscape in this location is such that the more easterly aspects of the Scheme are likely to be readily noticeable from these receptors.
 - Once operational, construction areas, access routes and temporary overhead line diversions will be removed/reinstated and will no longer feature in views.
 - The Scheme involves the removal of a significant number of existing pylons (27 in total) and overhead line, with considerably fewer proposed (eight permanent). Most notably for these receptors, a significant number of pylons towards the east of the Scheme extents will be removed, which will reduce the visible presence of electrical transmission infrastructure from receptors there (see RV08 and RV09).
 - Years 1 and 15: There will be a slight beneficial effect for users of these routes once the Scheme becomes operational. This will lead to a **medium to low** magnitude of change resulting in a **moderate to minor beneficial** level of effect.
- Fledborough Road, Hollowgate Lane, Polly Taylor's Road and to a slightly lesser degree Main Street, are located in close proximity to the Scheme, with limited roadside vegetation to obscure views.
 - Once operational, construction areas, access routes and temporary overhead line diversions will be removed/reinstated and will no longer feature in views.
 - The Scheme involves the removal of a significant number of existing pylons (27 in total) and overhead line, with considerably fewer proposed (eight permanent). This will reduce the overall visible presence of electrical transmission infrastructure from these receptors (see RV03, RV05, RV06 and RV10).
 - Years 1 and 15: There will be a slight beneficial effect for users of these routes once the Scheme becomes operational. This will lead to a **medium to low** magnitude of change resulting in a **moderate to minor beneficial** level of effect.

- There are a number of additional PRoW, highways and access tracks that are likely to experience more distant views of the Scheme. Once construction phase activity is no longer visible, there is likely to generally be a decrease in the overall presence of electrical transmission infrastructure within the landscape.
 - It is anticipated that the magnitude of change will not exceed **low**, leading to a level of effect no greater than **minor beneficial**.

Construction Control Measures

- 3.3.123 The control measures listed in Table 3.3.2 will be applied during the construction phase of the Scheme. National Grid is committed to implementing the identified control measures to reduce or avoid any potential impacts that may occur during the construction of the Scheme. The control measures will be included in the CEMP prior to the construction, and their implementation will be monitored by National Grid.

Table 3.3.2 Construction control and monitoring measures for landscape and visual

Potential Receptor and/or Impact	Control, Enhancement and Monitoring Measures
Landscape and Visual amenity	<p>Production of a CEMP which will instil good practice construction working activities.</p> <p>Planning, positioning and directing construction lighting to reduce glare, light spill and skyglow, through such measures as are outlined in Guidance Note 01/26: The Avoidance of Obtrusive Light (Institution of Lighting Professionals, 2026):</p> <ul style="list-style-type: none"> • using directional lighting to minimise glare beyond the construction working area or compound; • using only appropriately designed luminaires for the task at hand; and • limiting the quantity and illumination of the lighting to the minimum necessary. <p>Complying with the lighting levels, uniformity and other parameters of current and relevant lighting standards (to avoid higher than recommended lighting levels):</p> <ul style="list-style-type: none"> • using visual screening such as on-site spoil, between more sensitive visual receptors and construction light sources where practicable; and • minimising light break-out above the horizontal (using 'low cut-off' and 'full cut-off' lighting systems), and using louvres, cowls and shields to prevent undesirable light break-out. • Reducing lighting levels outside working hours to suitable levels for safety and security. <p>Using automated devices to switch lights on and off according to activity/ambient light levels, and consider, if appropriate, using infrared floodlighting and CCTV systems for security.</p>

Potential Receptor and/or Impact	Control, Enhancement and Monitoring Measures
	Specifying a sufficient quantity of lighting units to avoid the need for a smaller quantity of tall, wide beam lighting units to illuminate large areas.
	Applying BS 5837:2012 to avoid harm to all retained existing trees, scrub and hedgerow vegetation and their root systems during construction.
	Reinstating land and vegetation disturbed to make way for construction compounds and the underground cable route to its existing land use following completion of the construction phase.
	Providing continuous access to local tracks and PRoWs throughout the construction phase as far as is reasonably practicable.

Operational Control Measures

- 3.3.124 The measures listed in Table 3.3.3 will be implemented during the operational phase of the Scheme and the appraisal has been undertaken assuming these measures are in place.

Table 3.3.3 Operational control and monitoring measures for Landscape and Visual

Potential Receptor and/or Impact	Control, Enhancement and Monitoring Measures
Embedded design measures	An iterative design process with other members of the design and environmental team to ensure that likely impacts have been identified and wherever possible avoided or minimised.

3.4 Cultural Heritage and Archaeology

Introduction

- 3.4.1 This section details the Cultural Heritage and Archaeology baseline conditions and the environmental appraisal of the potential Cultural Heritage and Archaeology impacts associated with the construction and operation of the Scheme. Where potential environmental impacts are identified, relevant control measures are prescribed to reduce or avoid these impacts.
- 3.4.2 This section should be read in conjunction with Appendix A High Marnham New Overhead Lines Glossary and Abbreviations; Appendix B Methodology; Appendix D High Marnham New Overhead Lines Drawings; Figure 3.4.1 Cultural Heritage Receptors.

Study area

- 3.4.3 A study area of 500m surrounding the land required to construct the Scheme was applied for all designated heritage assets and non-designated heritage assets. This assessment follows best practice guidance produced by the Chartered Institute for Archaeologists on the compilation of desk-based assessments (Chartered Institute for Archaeologists, 2020).

Consultation

- 3.4.4 In their response to the Form B consultation, Historic England highlighted the potential for below ground remains to be preserved beneath the site of the former High Marnham Power Station. The land required to construct the Scheme largely avoids the site of the former High Marnham Power Station, but measures to manage impacts to below ground archaeology will be included in the CEMP.
- 3.4.5 In their response to the Form B consultation, BDC also highlighted the potential for archaeology and recommended that archaeological investigations, including geophysical survey and field evaluation, be undertaken. The CEMP will provide for this to be undertaken to inform detailed design and construction of the Scheme.

Baseline

Designated heritage assets

- 3.4.6 There are no designated heritage assets located within the land required to construct the Scheme. Eight listed buildings (LB1-8) are recorded within the 500m study area and South Clifton Conservation Area, although located outside the study area on the south eastern extent of the Scheme. The assets are shown on Figure 3.4.1.
- 3.4.7 South Clifton Conservation Area (CA1) is a medium value asset located c.740m-1.3km south east of the land required to construct the Scheme and is separated from it by the River Trent. The history of the village dates from at least 1300 when it was recorded that King Edward I and his wife Eleanor of Castile crossed the River Trent. Much of its character is as a handsome Post Medieval village typified with red brick architecture and inward facing views. The significance of the asset is derived from its historical and evidential value.
- 3.4.8 Marnham Hall (LB1) is a large Grade II listed manor house and is set within large grounds and located close to the River Trent at High Marnham approximately 125m south from the southern access rights of the Scheme. The earliest part of the building dates from the 16th century and was remodelled and refaced in the early 18th century. Marnham Hall was the home of the Cartwright family who were the dominant family in the area and had familial connections with Thomas Cranmer. It is two storeys and built of red brick with a hipped pantile roof and has aesthetic value for its historic built fabric. It has inherent historical value as well as for its connections to families of note. The setting of Marnham Hall is informed by its well-maintained grounds (34), which are recorded by the Historic Environment Record (HER) data as a non-designated heritage asset (see further below) and contribute to the asset's significance. Marnham Hall (LB1) is of medium heritage value.

- 3.4.9 The Church of St Gregory (LB2) and associated headstones (LB3) are the closest listed buildings to the land required to construct the Scheme, approximately 10-20m north of a north eastern element of the proposed access. The Church of St Gregory is a Grade I listed building with the earliest part of the building dating to the 12th century. The church saw sequential phases of construction in later centuries and was restored in 1890. The setting of the church is informed by its associated churchyard containing five headstones dating between 1735-37 (LB3) which hold associative value to the church. The Church of St Gregory (LB2) is of high value, and the associated five headstones (LB3) are of medium value.
- 3.4.10 Crew Yard and Attached Barn Range at Grange Farm (LB4) is a Grade II listed building approximately 420m slightly south east from the land required to construct the Scheme. The building dates to the early 19th century, with later additions c.1860 and 20th century. The complex is constructed of red brick and comprises a wooden arched roof to the left range and arched corrugated iron roof to the right. It holds evidential and historical value as a good standing example of an agricultural complex from this time period. It is of medium value.
- 3.4.11 Skegby Manor (LB6) is a Grade II listed building approximately 62m west from the land required to construct the Scheme. It dates to the late 18th century and is constructed of red brick with a pantile roof. It stands at two and a half storeys, and has decorative architectural features such as coped gables, dentil eaves, banding and original openings. It holds evidential and historical value retaining original fabric and features and is a good example of a building from this time period. To the north of LB6 lies Pigeoncote At Skegby Manor (LB5), approximately 60m west of the land required to construct the Scheme. The Pigeoncote is a Grade II listed building of a mid-18th century date and red brick construction. It is of two and a half storeys plus attic and comprises a pantile roof with gables. It holds evidential and historical value as a good example of a unique building typology and holds associative value to Skegby Manor (LB6). Both buildings (LB5, LB6) are of medium value.
- 3.4.12 Grange Farm Farmhouse (LB7) is a Grade II listed building approximately 410m slightly south east from the land required to construct the Scheme. It is an early 19th century farmhouse constructed of red brick with a hipped pantile roof and finished with architectural detailing such as dogtooth eaves, panelled door, cornice moulding and original sash windows. The building is of evidential value due to its architectural detailing and historic built fabric as well as historical value as a good example of a building from this time period. It is of medium value.
- 3.4.13 Manor House (LB8) is a Grade II listed building situated approximately 30m west of the land required to construct the Scheme. It dates to the early 19th century, built of red brick construction finished with cement render and a hipped tile roof. It has evidential value and historical value as a good standing example of a building from this time period and therefore is of medium value.

Non-designated heritage assets

- 3.4.14 There are 42 non-designated heritage assets recorded by the HER within the 500m study area; of these, three assets (26, 27, 28) are located within the land required to construct the Scheme. The assets are shown on Figure 3.4.1.
- 3.4.15 Some assets recorded by the HER are of unknown date. Two potential enclosures (26) are located partially within the land required to construct the Scheme to the east,

at High Marnham Solar Farm. The enclosures, which are currently undated, were detected during a geophysical survey (Headland Archaeology 2023) on the edge of the river terrace and the floodplain of the River Trent. The anomalies detected were fragmentary and of low magnitude (i.e. there was little contrast to the background resulting in a subtle indication of archaeology) because of the overhead lines which cause magnetic disturbance. Based on this, it is possible that the potential archaeological remains may be more extensive than indicated by the survey. The enclosures hold historical and evidential value and are currently of low value/significance.

- 3.4.16 A cropmark enclosure (28) is recorded partially within the land required to construct the Scheme. The enclosure was identified from historic aerial photographs in the 1980s. At the time of analysis, there were three sides of a right-angled enclosure that were visible. It has not been targeted by geophysical survey to date. The asset has historical and evidential value and is of overall low value. As above, the value of this asset could potentially increase if additional information is ascertained.
- 3.4.17 A Roman fortress and camp existed at Newton on Trent some 3km north east of the land required to construct the Scheme (today a scheduled monument), suggesting archaeological potential for Roman activity in the surrounding area. A findspot of a Roman coin (1) dating from 43 Common Era (CE) to 409 CE is located to the east of the Scheme and 150m west of the access rights from the land required to construct the Scheme. According to the HER report, the coin was discovered in/on a bank of the River Trent around 1960. Based on this, the recorded location of the asset seems to be approximate. The asset is of negligible value on account of its limited historical value and significance. A potential Roman settlement (17) approximately 480m north of the Scheme has been identified by the HER. The extent of it is unknown, with limited data of a similar time in its surroundings. The asset is of low value due to its potential for further archaeology and historical value.
- 3.4.18 A findspot of an axe head (23) from the Neolithic period is recorded approximately 110m south west of the Scheme in Skegby. Little is known about the findspot and it appears to be an isolated find. The asset is of negligible value given the limited historic value and significance.
- 3.4.19 A shrunken village and associated earthworks (22) of Medieval date are recorded approximately 180m south west of the Scheme. These involve ridge and furrow, ditches, toft and fragments of a building platform linked to the use of the former medieval village. They have evidential value for their potential to reveal information about human activity in the area and the historical use of the land. They are of medium value.
- 3.4.20 Ridge and furrow (16) of Medieval to Post-Medieval date is recorded by the HER approximately 40m north of the Scheme. The asset demonstrates the agricultural activity in the area representing the usage of the historic landscape. It is of low value.
- 3.4.21 A series of assets are recorded around Ragnall including a hollow (14), bank (15) and possible quarry (19) between approximately 250m and 370m north west of the land required to construct the Scheme. The assets are of unknown date and therefore hold limited historical value. They are of negligible value.

- 3.4.22 A medieval or later road surface (12) is recorded approximately 400m south east of the land required to construct the Scheme. The asset is of Medieval to Post-Medieval date. It is an isolated find and holds limited historical value. It is of negligible value.
- 3.4.23 Several heritage assets recorded within the 500m study area date to the post-medieval period. This period saw an increase of industry, house building and infrastructure in High Marnham and the surrounding area. The infrastructure was associated with the River Trent and later the Fledborough Railway line. Marnham Ferry (11) was a river crossing that was recorded by 1774 on the J. Chapman map of Nottinghamshire. It was located on the eastern bank of the River Trent and is approximately 300m south east of the land required to construct the Scheme. The river crossing linked South Clifton with High Marnham. It was also shown on the later Sanderson map in 1835. There are no associated remains of this river crossing and it is only known from documentary evidence. The heritage asset is of low value.
- 3.4.24 Two clapper gates (9 and 10) were recorded along the River Trent approximately 280m and 230m east of the Scheme respectively. Clapper gates are a distinctive type of self-closing double gate which are unique to the area of the River Trent. They were built along the towpath of the river in the 18th century to allow people walking and on horseback to traverse the field boundaries on the riverbank, but they also served to inhibit livestock from wandering off. The assets (9 and 10) derive significance from their historical association with the river and are of low value.
- 3.4.25 The Fledborough Viaduct (27) is an extant structure crossing the River Trent, which once connected the towns of Fledborough and Clifton by train, and falls within the land required to construct the Scheme. It is of medium value.
- 3.4.26 A former railway station (5), signal box (4), and goods shed (3) are recorded from documentary sources; they are recorded adjacent to the western access rights of the Scheme and to the west of the Scheme. They all hold historical value through their association with the Fledborough Railway line and proliferation of the railway networks in the latter half of the 19th century. These assets are non-extant and are of negligible value.
- 3.4.27 A series of flood defence banks (7, 8, 18, 29, 32) were identified by the Ordnance Survey (OS) in 1974. Flood banks 7 and 8 are approximately 720m to 840m north of the Scheme respectively, and flood bank 18 is 200m north west of the northern access rights of the Scheme. Flood bank 29 is located approximately 375m south east of the Scheme, flood bank 32 is located approximately 410m east of the south eastern access rights of the Scheme. The remains of the flood banks are thought to date from broadly the post-medieval period into the modern period. Though assets 7, 8 and 18 hold some historical value as former flood defences, their evidential value has diminished due to the remains having been ploughed out. They are of negligible value. However, flood banks 29 and 32 have surviving earthwork elements which provide greater evidential value and are therefore of low value.
- 3.4.28 A further bank (6) is recorded approximately 30m east of the south eastern access rights of the land required to construct the Scheme. The earthwork predates 1920 as it was identified during the Ordnance Survey of that year. It was recorded on a track leading west from Low Marnham. The asset is of negligible value.
- 3.4.29 A brick kiln (2) was recorded on the 1830s Sanderson map. The asset is located approximately 40m south west of the Scheme. It is no longer extant. It has historical value for its demonstration of the use of resources within the historic landscape. It is of negligible value.

- 3.4.30 A site of a windmill (21) and possible round mound (24) are approximately 60m south west from the land required to construct the Scheme (south of Skegby). The assets are of Post-Medieval date identified on historic mapping but are no longer extant. They have historical value for representing the industrial landscape and processes of the area. They are of negligible value.
- 3.4.31 Along Hollowgate Lane in the village of High Marnham are several contemporaneous buildings (35, 36, 37, 38, 39, 40, 42) dating from the 18th to 20th century. The Brownlow Arms (42) is a two storeyed mid-late 18th century building located approximately 420m south east from the Scheme. It was initially built as an inn and stables to service traffic for barges on the River Trent. The adjoining Brownlow Arms Barn (35), located approximately 260m south from the land required to construct the Scheme, is a single storey 18th century barn. It has whitewashed brick walls and a ceramic tiled roof. The barn and the main building of the Brownlow Arms remain in use as a public house and still contain many of their original features both internally and externally. Both buildings have aesthetic value for their historic built fabric and historical value for their historic association with the River Trent; the river informs the setting of these assets and contributes to its significance on account of this association. The building (42) and barn (35) together are of medium value.
- 3.4.32 Rookery Cottage (40) is an 18th to 19th century cottage located approximately 250m south of the Scheme. The cottage is built of brick and is whitewashed. It has a red ceramic tiled roof and ranges from one to two storeys. The original windows have been replaced with white unplasticised polyvinyl chloride (UPVC) windows, and the cottage has undergone other modern refurbishments both internally and externally. Adjacent to Rookery Cottage are Outbuildings Adjoining Rookery Cottage (39). These consist of several 18th to 19th century farm buildings built of red brick. These buildings contain much of their original character both internally and externally including timber doors and lintels. There has been some modern intrusion with a low wall built of breezeblocks which separates the buildings from Rookery Cottage. Hall Cottage (38) is another 19th century two-storeyed red brick dwelling. It has a steep pitched roof with red ceramic tiles. It has an inscribed date stone above one of its second storey windows which reads '1894'. It still contains many of its original external features, however, its windows have all been replaced and modernised with white UPVC windows. It remains in use as a private dwelling. Continuing eastward along Hollowgate Lane is Sparrow Croft (39), located approximately 250m south of the Scheme. This is a two-storey 19th century cottage. It has some of its original external features but has largely been modernised.
- 3.4.33 The above-mentioned dwellings (35, 38, 39, 40, 42) have aesthetic value for their historic built fabric and relatively good level of preservation which maintains a handsome aesthetic along Hollowgate Road. The rear (north-facing) façades of these historic houses back on to agricultural land, the rural nature of which forms part of their setting and contributes to their overall significance. This also contributes to their group value. They have historical value for being representative of the increase in settlement in this area during the late post-medieval to early modern period. The setting of these buildings is informed by their location on Hollowgate Road which contributes to their significance. These assets are of low value.
- 3.4.34 Fledborough house and outbuildings (31) and Fledborough House Farm Barn (30) are located approximately between 250 and 270m west of the land required to construct the Scheme. They date from at least the 1830s as they appear on the

Sanderson map where they are listed as 'Fledbore House'. Their significance is derived from their historical value as examples of the built environment from the early 1800s. They are of low value.

- 3.4.35 Crew Yard and Attached Barn Range at Grange Farm (41) are extant buildings which date to the Georgian period. The asset is within the settlement of Low Marnham located approximately 610m south of the Scheme and the significance of the asset is derived from its historical value and is of low value.
- 3.4.36 The grounds of Marnham Hall (34), unlike Marnham Hall (LB1), are not listed but are recorded within the HER. They stretch from 100m to 350m south east of the Scheme. The extent of the grounds which are recorded in the HER are based on the 1774 Chapman map. It was recorded again on the 1835 Sanderson map. The grounds of Marnham Hall are not as extensive as they would have been in their original state, and along Hollowgate Road they have been subject to development. However, at the entrance point to Marnham Hall, the grounds remain a handsomely kept garden with well-maintained trees, hedges and grasses, all of which are characteristic of a post-medieval garden and grounds of a stately home. They have aesthetic value for their continued maintenance as the formal grounds and gardens of Marnham Hall. They have historical value for their association with Marnham Hall. The Hall and grounds have a shared setting informed by each other and hold group value, which contributes to the significance of the asset. The grounds are of medium value.
- 3.4.37 The site of the former High Marnham Power Station is not recorded by the HER but is a notable part of the area's industrial development in the modern period. Construction of the coal fuelled power station began in 1954. High Marnham Power Station became fully operational in 1962. After it opened, it was the largest power station in Europe and consumed coal from 17 collieries. The power station closed in 2003 after four decades in operation. The station's chimneys were demolished in 2004, and the 150-foot-high boiler house was demolished in 2006. The final phase of demolition was for the station's five cooling towers in 2012. Notably, prior to the demolition of the cooling towers, they were featured in the Warner Brothers production, Harry Potter and the Deathly Hallows Part 1.
- 3.4.38 An enclosure and ridge and furrow at Marnham (33) are recorded approximately 200m south of the Scheme in Skegby. The asset is recorded by the HER as undated, however, the presence of ridge and furrow attests to the long-term use of the land for agriculture and is likely to be of medieval or post-medieval origin. They have evidential value for their potential to reveal information about the historical use of the land. These are of low value.
- 3.4.39 Cropmarks of an unknown date (13, 25) are located approximately 400m south of the south eastern access rights of the land required to construct the Scheme and 320m south east of the southern access rights of the land required to construct the Scheme, respectively. Asset 13 comprises linear features of an unknown date rendering it of negligible value due to the limited historical and evidential value. Asset 25 comprises several rectangular and ring ditch shapes and were identified from aerial photography analysis. While these cropmarks suggest potential archaeological remains it is unclear precisely what period they may be representative of. The asset has historical and evidential value and is of overall low value.

Potential Construction Impacts

- 3.4.40 A potential temporary short-term impact was identified to the medium value Conservation Area of South Clifton (CA1) due to increased construction traffic noise and shared intervisibility with the Scheme. The setting is informed by its quiet and isolated position within a rural and agricultural landscape, and therefore potential increased noise levels could detract negatively from the way in which the assets can be experienced. Located approximately 1km to the east, there are likely to be glimpses of activity during the construction phase, particularly in the area of the Scheme that is located adjacent to the River Trent. However, views are likely to be partially obscured by existing intervening vegetation, and therefore the magnitude of change will not exceed **low**, resulting in a **minor** level of effect. Due to the temporary nature of this activity the potential impact is not considered to be significant and is reversible.
- 3.4.41 The assets (LB2, LB3) are situated adjacent to the northern access tracks of the Scheme. These assets would experience a temporary short-term impact from construction of the Scheme due to increased construction traffic noise. The Church of St Gregory (LB2 and LB3) will experience an indirect visual intrusion due to the absence of any visual screening to the south of the church and the increased noise levels could detract negatively from the experiential aspect of the assets. Similarly, asset (LB8) is situated west of the northern access track and would experience a temporary short-term impact from increased noise levels. The asset would be screened partially from view by natural vegetation and hedging which would limit this indirect impact. The temporary impacts would be fully reversible following the completion of construction works. However, traffic management measures such as controlling the level of traffic in the setting of the listed buildings at any one time could be beneficial (not essential) to reduce the potential temporary change to the setting of these assets. Overall, the magnitude of impact would be **low** resulting in a **minor** level of effect, which will be temporary in nature.
- 3.4.42 Similarly, listed buildings (LB5 and LB6) are situated adjacent west of the land used for access to construct the Scheme and would experience a temporary short-term impact to their setting from construction of the Scheme, primarily from increased noise levels. The assets will not have any visual impact due to natural screening from dense hedgerows and vegetation that border the assets to the east. The temporary impacts would be fully reversible following the completion of construction works. However, traffic management measures such as controlling the level of traffic in the setting of the listed buildings at any one time could be beneficial (not essential) to reduce noise levels and the potential temporary change to the setting of these assets. Overall, the magnitude of impact would be **low** resulting in a **minor** level of effect, which will be temporary in nature.
- 3.4.43 A potential temporary indirect impact was identified to LB1 and its associated medium value non-designated gardens (34) due to increased construction traffic noise. The grounds at Marnham Hall form an important element of the Hall's setting and therefore potential increased noise levels could detract negatively from the way in which both assets can be experienced. Due to the short-term indirect nature of this activity, the potential impact is not considered to be significant. The temporary impacts would be fully reversible following the completion of construction works. However, traffic management measures such as controlling the level of traffic in the setting of the listed buildings at any one time could be beneficial (not essential) to

reduce noise levels and the temporary change to the setting of these assets. Overall, the magnitude of impact would be **low** resulting in a **minor** level of effect, which will be temporary in nature.

- 3.4.44 Asset 26 would experience direct short-term impact during the removal of the overhead line. The potential enclosures (26) are located partially within the land required to construct the Scheme. The asset is undated and of low value/significance. Based on its current low value/significance, the construction impact would not be significant. However, any increase in the asset's value/significance on the basis of further investigation/evaluation would result in the impact being deemed as significant. Overall, the magnitude of impact would be **low** resulting in a **minor** level of effect, which will be temporary in nature and not significant.
- 3.4.45 Asset 28 would experience a direct short-term impact during the removal of overhead line. The enclosure lies partially within the land required to construct the Scheme and was identified from historic aerial photographs in the 1980s. As above, the value of this asset could potentially increase if additional information is ascertained. However, based on its current low value, the construction impact would not be significant, dependant on the potential change to the asset's value. Overall, the magnitude of impact would be **low** resulting in a **minor** level of effect, which will be temporary in nature and not significant.
- 3.4.46 Asset 27 runs across the northern access track within land required to construct the Scheme. The asset would only experience a temporary short-term impact from construction of the Scheme from increased noise levels. Overall, the magnitude of impact would be **low** resulting in a **minor** level of effect, which will be temporary in nature.
- 3.4.47 Several non-designated buildings have been identified for potential temporary impacts from construction activity, including visual impact of construction activity, construction noise and increased traffic flow due to construction. However, the temporary and reversible nature of these impacts would not be significant as the affected buildings are non-designated and of low value. Therefore, no heritage mitigation measures will be required for these assets.

Potential Operational Impacts

- 3.4.48 Given the type of works proposed, i.e. infrequent temporary use of an existing access for maintenance, it is not anticipated that there would be any likely significant direct or indirect level of impact on the Listed Buildings as a consequence of operation of the Scheme. Once the Scheme becomes operational, and construction compounds, access routes, working areas and temporary overhead line diversions have been removed/ reinstated, the setting of the designated assets will be reinstated.
- 3.4.49 Operation impacts have been identified for low value assets (26 and 28) where overhead lines are to be removed. The removal of several existing pylons where the assets are located will positively contribute to the experience of any potential unknown archaeology. Further, as the existing substation forms part of their existing setting, it is not anticipated that the Scheme will contribute a greater impact than one that already exists. Overall, there will be a **medium to low** magnitude of change resulting in a **minor beneficial** level of effect.

- 3.4.50 Potential operational impacts have been identified for three non-designated heritage assets (38, 39, 40) of low value located along Hollowgate Lane. The indirect impacts identified comprise beneficial changes to the setting of these assets through the removal of overhead line and several existing pylons, reverting the setting back to its former character. Although the existing substation is within view of these heritage assets adding an industrial component to their setting, the removal of the pylons and overhead line would be a benefit to the assets and a notable improvement from a visual perspective. The permanent change is anticipated to be **medium to low** magnitude of change resulting in a **minor beneficial** level of effect.
- 3.4.51 There remains potential for presently unidentified archaeological remains to be encountered during groundworks; however, given the limited extent of works and existing baseline information, the risk is considered low.

Construction Control Measures

- 3.4.52 The control measures listed in Table 3.4.1 will be applied during the construction phase of the Scheme. National Grid is committed to implementing the identified control measures to reduce or avoid any potential impacts that may occur during the construction of the Scheme. The control measures will be included in the CEMP prior to the construction, and their implementation will be monitored by National Grid.

Table 3.4.1 Construction control and monitoring measures for cultural heritage and archaeology

Potential Receptor and/or Impact	Control, Enhancement and Monitoring Measures
LB1, Asset 34 Increased noise levels	Standard traffic control measures will be included in a CTMP, to ensure the noise levels are kept to a minimum. Production of a CEMP which will instil good practice construction working activities.
CA1	No mitigation necessary
LB2, LB3, LB8 Increased noise levels and visual impact	Standard traffic control measures will be included in a CTMP, to ensure the noise levels are kept to a minimum. Production of a CEMP which will instil good practice construction working activities.
LB5, LB6 Increased noise levels	
Assets 2-8, 16 Asset 26 Asset 27 Asset 28	No mitigation necessary
Below ground archaeology	Production of a CEMP which will instil good practice construction working activities, including geophysical survey and field evaluation, to inform detailed design and construction of the Scheme.

Operational Control Measures

- 3.4.53 No operational phase control measures are proposed.

3.5 Air Quality

Introduction

- 3.5.1 This section details the Air Quality baseline conditions and the environmental appraisal of the potential Air Quality impacts associated with the construction and operation of the land required to construct the Scheme. Where potential environmental impacts are identified, relevant control measures are prescribed to reduce or avoid these impacts.
- 3.5.2 This section should be read in conjunction with Appendix A High Marnham New Overhead Lines Glossary and Abbreviations; Appendix B Methodology; and Appendix I High Marnham New Overhead Lines Construction Dust Assessment and Methodology.

Study area

Construction Dust Risk Assessment

- 3.5.3 In accordance with the IAQM construction dust guidance, the study area for the construction phase dust risk assessment will be:
- Up to 250m from the locations of demolition, construction and earthworks activities for human receptors and up to 50m for ecological receptors; and
 - Up to 50m from the route(s) used by construction vehicles on the public highway, up to 250m from the Schemes entrance(s).
- 3.5.4 The area within 250m of the land required to construct the Scheme and within 50m of the construction routes largely comprised rural uninhabited fields.

Construction and Operational Phase Vehicle Emissions: Human Receptors

- 3.5.5 The Air Quality study area for vehicle emissions is defined as the area within 200m of any roads that exceed the traffic change criteria detailed in the IAQM Development Control guidance (IAQM, 2017). The screening criteria for vehicle emissions assessment is as follows:
- A change in Light Duty Vehicle (LDV) flows of >100 Annual Average Daily Traffic (AADT) within or adjacent to an Air Quality Management Area (AQMA), or >500 AADT elsewhere; and
 - A change in Heavy Duty Vehicle (HDV) flows of >25 AADT within or adjacent to an AQMA, or >100 AADT elsewhere.

- 3.5.6 During the construction phase, the screening criteria are not exceeded at any point. Therefore, a construction phase air quality assessment of vehicle emissions is scoped out.
- 3.5.7 During the operational phase of the Scheme, it is understood that the only traffic generated would be associated with infrequent repair, routine maintenance and inspection activities (assumption of less than 10 vehicles per year). This number of vehicle movements is well below screening thresholds, therefore an operational phase air quality assessment of vehicle emissions is scoped out.

Consultation

- 3.5.8 Table 3.5.1 provides a summary of the issues raised and agreed during consultation with respect to the Scheme and how they have been addressed.
- 3.5.9 No air quality issues have been raised during consultation with stakeholders.

Table 3.5.1 Summary of consultation

Consultee/Date	Summary of Issues Raised/Agreed
Bassetlaw District Council, 24 April 26	A request was submitted to Bassetlaw District Council to view the latest air quality annual status report available. Bassetlaw District Council were able to provide the 2025 annual status report and confirmed that the 2026 annual status report has not yet been submitted for approval.
Bassetlaw District Council 12 August 26	As part of the Form B response, BDC raised the potential for construction dust. The appraisal of potential impacts from construction dust is set out in this section.

Baseline

- 3.5.10 As required by the Environment Act (1995, amended 2021), BDC have undertaken a review and assessment of air quality within their areas of jurisdiction, as part of their Local Air Quality Management (LAQM) duties. This process has indicated that within BDC's authority there are no declared AQMAs.
- 3.5.11 Air quality monitoring data within the vicinity of the Scheme have been reviewed to quantify the baseline concentrations of air pollutants. There are no relevant air quality monitors sited near the Scheme which would be considered representative of pollutant concentrations on-site, and in the immediate vicinity of the land required to construct the Scheme (which is a rural location).
- 3.5.12 The nearest monitors within the BDC network are those monitors located within the populated areas of Dunham and Tuxford, which are located 3.6km north east and 5.9km west of the land required to construct the Scheme respectively. This indicates that existing pollutant concentrations are not considered to be at sufficiently high levels to warrant ongoing monitoring as part of BDC's LAQM duties in the vicinity of the land required to construct the Scheme.

- 3.5.13 Within the study area, there are several sensitive human receptors. The majority of these receptors are located to the south of the Scheme, in the village of High Marnham. These properties are mixture of permanent residences and holiday caravans. There are several farms and farmhouses located within 250m west and north of the Scheme. The nearest sensitive human receptors are residential properties located approximately 50m south east of the land required to construct the Scheme.
- 3.5.14 There are no ecological receptors within the study area.

Air quality monitoring data

- 3.5.15 BDC currently monitors air quality across their authority using non-automatic monitoring sites (i.e. diffusion tube monitoring of nitrogen dioxide (NO₂) concentrations). The majority of these non-automatic sites are located within the urban areas of Worksop and Retford. BDC do not have any automatic monitoring sites within their network, which is typical in those local authority areas where there are no AQMA's or issues with meeting the Air Quality Strategy (AQS) objectives.
- 3.5.16 With regards to the Scheme, there are no relevant air quality monitoring sites in the vicinity which are representative of pollutant concentrations at the site. The monitors within the BDC network located within 10km of the Scheme are detailed in Table 3.5.2 below. It should be noted that Bassetlaw District Council's monitoring Site 46 was not deployed in 2024 and so the most recent data available for this site are from 2023. This monitoring site is denoted with an asterisk.

Table 3.5.2 Bassetlaw District Council non-automatic air quality monitoring NO₂ concentrations within 10km of the Scheme

Diffusion Tube (DT) ID	X	Y	Distance From Scheme (km)	Site Type	Annual Mean NO ₂ Concentration (µg/m ³)				
					2020	2021	2022	2023	2024
22	481341	374505	2.2	Roadside	17.6	18.1	17.2	15.1	13.2
29	473811	371146	4.7	Roadside	-	25.9	24.1	21.9	19.9
45	473600	371013	4.9	Urban Centre	-	25.8	26.8	24.2	22.0
46*	473900	370735	4.6	Roadside	-	-	12.1	11.8	-

- 3.5.17 Table 3.5.2 shows that between 2020 and 2024 (the most recent year of data made available by BDC) there were no exceedances of the AQS annual mean objective for NO₂ of 40µg/m³ at the sites within 10km of the Scheme.
- 3.5.18 The highest monitored NO₂ concentration for 2024 was Diffusion Tube 45, located 4.9km west from the land required to construct the Scheme in Tuxford. The concentration at DT45 was 22.0µg/m³. This site is an urban centre site in Tuxford, so it is likely to have higher concentrations of NO₂ than those which would be found in the rural area in and around the Scheme.

- 3.5.19 Although air quality monitoring data are available for 2020 and 2021, it is expected to have been heavily influenced by the COVID-19 pandemic where traffic flows decreased in response to restrictions including lockdowns and encouragement of home working. As such, 2020 and 2021 air quality monitoring data are likely to be representative of air quality under specific conditions and constraints which are not representative of a 'normal' baseline.
- 3.5.20 BDC does not monitor PM₁₀ and PM_{2.5} concentrations as a part of their air quality monitoring network. Baseline and future baseline concentrations for PM₁₀ and PM_{2.5} will be informed by use of Department for Environment, Food and Rural Affairs' (Defra's) modelled background concentration maps.

Background pollutant concentrations

- 3.5.21 Modelled predictions of background pollutant concentrations are periodically produced by Defra to assist local authorities in their review and assessment of air quality. These are produced for every 1km OS grid square in the UK.
- 3.5.22 The land required to construct the Scheme is located at grid square 480500, 370500. Data for this grid square was downloaded from the Defra website (Defra, 2026) for the purposes of appraising the existing baseline. Table 3.5.3 shows the background pollutant concentrations for the base year 2026. All concentrations are well below their respective objectives (which are detailed in Appendix B Methodology).

Table 3.5.3 2024 Defra modelled background pollutant concentrations

Pollutant	Concentration (µg/m ³)
NO ₂	5.6
PM ₁₀	13.6
PM _{2.5}	5.9

Statutory ecological sites

- 3.5.23 There is one statutory ecological site located within 3km of the Scheme. This site is the Spalford Warren Site of Special Scientific Interest (SSSI), located 2.8km south east of the land required to construct the Scheme.

Potential Construction Impacts

Construction dust

- 3.5.24 This appraisal considers the potential dust impacts of the Scheme during construction on local air quality. During the construction phase of the Scheme, there is a potential for dust to be emitted into the air through construction activities (demolition, earthworks, and construction) and from plant and road vehicles moving over temporary roads and open ground, and where mud is carried from construction vehicles onto the highway (known as 'trackout'). This appraisal also considers the potential dust effects from activities associated with areas from within the land required to construct the Scheme such as construction compounds, welfare facilities

and laydown areas, in accordance with the IAQM guidance. Airborne dust has the potential to cause a nuisance to local human receptors due to dust soiling, and it can affect local ecological sites that are sensitive to dust impacts.

- 3.5.25 A construction dust risk assessment has been carried out due to the presence of sensitive human receptors within 250m of the land required to construct the Scheme. The assessment was carried out in accordance with the IAQM Guidance on the assessment of dust from demolition and construction (IAQM, 2024). The assessment's purpose is to define the level of unmitigated construction dust risk as a means of defining proportionate control measures. The dust risk assessment is considered to be conservative as the screening distances are from the edge of the land required to construct the Scheme, with the assumption that dust emissions could take place across the entirety of the land required to construct the Scheme.
- 3.5.26 Table 3.5.4 below shows the potential unmitigated risks from the construction of the Scheme for dust soiling and human health impacts. There is a medium risk of dust soiling and a low risk to human health as a result of the proposed demolition (removal of the pylons), construction, earthworks and trackout activities.
- 3.5.27 There are no ecological receptors within the study area of the construction dust assessment, therefore impacts to ecological receptors have been screened out.
- 3.5.28 The level of activity specific mitigation for each of the four construction activities is chosen using a precautionary approach in those instances where the risk level is not uniform between dust soiling and human health. For the Scheme, all four construction activities represent a medium risk for dust soiling, but low risk to human health. Therefore, mitigation measures specific to each activity commensurate with a medium risk (rather than low risk) are to be utilised; this is a precautionary approach.

Table 3.5.4 Unmitigated risk of dust impacts from construction activities associated with the Scheme

	Risk by Construction Activity			
	Demolition	Earthworks	Construction	Trackout
Dust soiling	Medium	Medium	Medium	Medium
Human health	Low	Low	Low	Low
Level of activity – specific mitigation measures	Medium	Medium	Medium	Medium

- 3.5.29 The mitigation measures identified in Table 3.5.5 will reduce the potential impacts from the construction activities and therefore it would be considered that there would be no residual effects if the measures are effectively implemented and managed.
- 3.5.30 The full methodology and detailed results for the construction dust risk assessment are provided in Appendix J Construction Dust Assessment and Methodology.

Construction traffic

- 3.5.31 The construction traffic flows associated with the Scheme were screened against the traffic change thresholds in the IAQM (2017) Development Control guidance for human receptors.
- 3.5.32 The IAQM guidance presents two sets of flows change criteria; one for use in areas proximal to/within AQMAs, and a less stringent set for use in other locations away from AQMAs. As there is no AQMA declared by BDC, the less stringent criteria were applied.
- 3.5.33 This screening criteria is a change of LDV flows of more than 500 AADT and/or a change of HDV flows of more than 100 AADT. During the entire construction period for the Scheme, traffic flows are forecasted to not exceed the IAQM screening criteria for both LDVs and HDVs. From 2026 to 2031, the largest increase in traffic flows for LDVs occurs in 2028, 2029 and 2030, with an increase of 1 AADT. For HDVs, the largest increase in traffic flows occurs in 2026 with an increase of 2 AADT. Traffic data for the Scheme suggest that at a maximum, it is expected there would 10 HDV movements per day for a four-month period at the beginning of the construction programme, hence the low AADT values. These changes in flows are both well below the IAQM screening criteria. Therefore, an assessment of the effect of these traffic flows on human receptors was screened out.
- 3.5.34 There is the potential for the construction programmes of the Scheme and the High Marnham Substation to overlap. The combined traffic flows from the construction of both schemes could potentially exceed the IAQM screening criteria, requiring an assessment of the cumulative effects from the construction of both schemes.
- 3.5.35 The peak year of construction for the High Marnham Substation is in 2027, with a LDV flow of 83 AADT and an HGV flow of 43 AADT. This peak construction traffic flow from the substation, in combination with the construction traffic flow of the Scheme still does not exceed the IAQM screening criteria. Therefore, a cumulative assessment of the effect of these traffic flows on human receptors was screened out.

Potential Operational Impacts

- 3.5.36 During normal operation of the Scheme, it is understood that the only traffic generated would be associated with infrequent repair and routine maintenance and inspection activities and a small number of operational staff (assumption of less than 10 vehicles per year). This number of vehicle movements is well below the screening thresholds detailed in Section 3.5 - Construction Traffic; therefore, an operational phase air quality assessment is scoped out.

Construction Control Measures

- 3.5.37 The control measures listed in Table 3.5.5 will be applied during the construction phase of the Scheme. National Grid is committed to implementing the identified control measures to reduce or avoid any potential impacts that may occur during the construction of the Scheme. The control measures will be included in the CEMP prior to the construction, and their implementation will be monitored by National Grid.
- 3.5.38 These measures were calculated by undertaking a construction phase dust risk assessment in accordance with the Institute of Air Quality Management (IAQM)

(2024) construction dust guidance. This assessment utilises construction information, number and distances of receptors (those within 250m of the land required to construct the Scheme, and/or those within 50m of the haul routes up to a distance of 250m from the on-site entrances), and existing dust concentrations in order to calculate unmitigated dust risk for construction, earthworks, and trackout. The dust risk (either small/medium/large) is then used to define which control and management measures should be adopted to avoid residual effects.

- 3.5.39 The assessment is summarised in Section 3.5 – Potential Construction Impacts, and the measures commensurate with the calculated medium risk are listed in Table 3.5.5.

Table 3.5.5 Construction control and monitoring measures for Air Quality

Potential Receptor and/or Impact	Control, Enhancement and Monitoring Measures
Dust emissions from the excavation of materials, general construction activities and the movement of HGV vehicles on sensitive residential and human receptors.	<p>A Dust Management Plan (DMP) will be produced, by the contractor which will include, but not be limited to the following measures commensurate with a medium unmitigated dust risk:</p> <ul style="list-style-type: none"> • Site Management – Record all dust and air quality complaints, make the complaints log available to the local authority when asked, record and exceptional incidents. • Preparing and maintaining the site – Erect barriers, enclose site operations, keep haul roads and equipment damped down, avoid site runoff, remove materials with a potential to produce dust, cover, seed or fence stockpiles to prevent wind whipping; • Operating vehicle/machinery and sustainable travel – Ensure Non-Road Mobile Machinery (NRMM) complies with best practice standards i.e. no idling, speed limits, implement travel plan, avoid diesel generators; • Construction Operations – only use cutting/grinding equipment in conjunction with dust suppression, use enclosed chutes, minimise drop heights, ensure adequate water supply on-site; • Waste Management – Recycle and re-use waste materials, avoid bonfires and burning of waste; • Measures specific to Demolition – ensure effective water suppression is available, avoid explosive blasting, bag and remove biological debris; • Measures specific to Earthworks – Re-vegetate earthworks and exposed areas, use Hessian, mulches or tackifiers where re-vegetation is not possible; • Measures specific to Construction – avoid scabbling, ensure sand and aggregates are stored in bunded areas and are kept damp where possible, ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored suitably; and

Potential Receptor Control, Enhancement and Monitoring Measures and/or Impact

- Measures specific to Trackout; use of a water equipped road sweeper on access/local roads, avoid dry sweeping of large areas, ensure vehicles are covered, record inspections of haul routes and actions, install hard surface haul routes which are regularly damped down, implement wheel washing systems, where possible and practicable to do so apply dust suppressants to locations where vehicles enter/leave site, site access gates at least 10m from receptors.

Operational Control Measures

3.5.40 There are no operational control measures required.

3.6 Water Resources and Flood Risk

Introduction

- 3.6.1 This section details the Water Resources and Flood Risk baseline conditions and the environmental appraisal of the potential Water Resources and Flood Risk impacts associated with the construction and operation of the land required to construct the Scheme. Where potential environmental impacts are identified, relevant control measures are prescribed to reduce or avoid these impacts.
- 3.6.2 This section should be read in conjunction with Appendix A High Marnham New Overhead Lines Glossary and Abbreviations; Appendix B Methodology; Appendix D High Marnham New Overhead Line Drawings and Appendix L Flood Risk Assessment.

Study area

- 3.6.3 The study area for the water resources appraisal, as seen in Appendix D High Marnham New Overhead Line Drawings; Figure 3.6.1, comprises the area within the land required to construct the Scheme, plus a 250m buffer on all sides.

Consultation

- 3.6.4 Table 3.6.1 provides a summary of the issues raised and agreed during consultation with respect to Water Resources and Flood Risk and how they have been addressed.

Table 3.6.1 Summary of consultation

Consultee/Date	Summary of Issues Raised/Agreed
Nottinghamshire County Council: August 2023	No records of any internal flooding within properties from sewers within 1km of the land required to construct the Scheme.

Consultee/Date	Summary of Issues Raised/Agreed
Anglian Water: August 2023	No records of flooding within the vicinity of the land required to construct the Scheme attributed to the public sewerage system.
Environment Agency	There has been no consultation with the Environment Agency at the time of writing.
Trent Valley Internal Drainage Board (IDB)	There has been no consultation with the Trent Valley IDB at the time of writing due to a lack of direct Scheme interaction with IDB features.

Baseline

Water bodies

- 3.6.5 The High Marnham Drain, an IDB maintained watercourse, is located within the eastern extent of the land required to construct the Scheme and drains into the Environment Agency designated Main River, the River Trent, which flows from north to south adjacent to the land required to construct the Scheme. Within the land required to construct the Scheme, there are also several other waterbodies:
- the Fledborough Beck, an ordinary watercourse, in the north of the Scheme, that flows from west to east;
 - an unnamed watercourse which flows into the Old Trent, located to the south west of the land required to construct the Scheme; and
 - three unnamed drains that only supports flows in response to rainfall events, located to the north (an unnamed IDB drain), east and western sections of the land required to construct the Scheme.
- 3.6.6 These watercourses form part of the local drainage network and ultimately discharge to the River Trent.
- 3.6.7 The topography of the land required to construct the Scheme is such that elevations range from approximately 18m AOD to 8m AOD. Elevations decrease towards a topographical low point located at the centre of the north eastern part of the land required to construct the Scheme.
- 3.6.8 An overview of the waterbodies in the study area is shown in Appendix D High Marnham New Overhead Lines Drawings; Figure 3.6.1.

Water quality

- 3.6.9 The study area drains to two Water Framework Directive (WFD) surface water body catchments, namely the Trent from Carlton-on-Trent to Laughton Drain and the Fledborough Beck Catchment (tributary of the River Trent) (Environment Agency, 2023). Table 3.6.2 details the current status of these waterbodies and lists the Reasons for Not Achieving Good (RNAG) overall status.

Table 3.6.2 WFD surface water bodies within the study area

Name	ID	Ecological Status	Chemical Status	Overall Status	RNAG
Trent from Carlton-on-Trent to Laughton Drain	GB104028058480	Moderate	No assessment required (fail in 2019)	Moderate	Transport drainage, sewage discharge (continuous), natural conditions – other, poor soil management and others unknown but pending investigation.
Fledborough Beck Catchment (tributary of River Trent)	GB104028058290	Moderate	Does not require assessment (fail in 2019)	Moderate	Poor nutrient management, Land drainage, Drought

- 3.6.10 There is one groundwater body which underlies the land required to construct the Scheme, data for which are summarised below in Table 3.6.3. It should be noted that the Lower Trent Erewash groundwater body achieves a Good status but has a RNAG, this is because RNAG are not always tied to the current overall classification and are meant to show pressures on the WFD waterbody/sources of pollution.

Table 3.6.3 WFD groundwater bodies

Name	ID	Quantitative Status	Chemical Status	Overall Status	RNAG
Lower Trent Erewash - Secondary Combined Water Body	GB40402G99 0300	Good	Good	Good	Pollution from abandoned mine.

Hydromorphology

- 3.6.11 The River Trent (Trent from Carlton-on-Trent to Laughton Drain) is designated as an artificial water body. Whilst the Fledborough Beck (Fledborough Beck Catchment (tributary of River Trent)) is not designated as an artificial or heavily modified water body. Due to the low lying nature of the land required to construct the Scheme and its surrounds, several of the ditches and watercourses identified in this appraisal are assumed to serve a land drainage function and thus have been heavily modified (e.g. straightened and dredged) for this purpose, reducing their hydromorphological diversity.

Water Resources

- 3.6.12 The British Geological Survey (BGS) Geology Viewer (BGS, 2025) shows that the land required to construct the Scheme is underlain by bedrock of the Mercia Mudstone Group - Mudstone. The land required to construct the Scheme is overlain by both Holme Pierrepont Sand and Gravel Member- Sand and gravel and Alluvium-Clay, silt, sand and gravel superficial deposits.
- 3.6.13 The land required to construct the Scheme is underlain by a Secondary B aquifer, which comprises predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These aquifers have the potential to store and yield groundwater in limited amounts. The land required to construct the Scheme is not located within a groundwater source protection zone.
- 3.6.14 Details of existing abstractions from surface and groundwater sources and discharges to the water environment have been requested from the Environment Agency. There are no consented discharges to the water environment within 2km of the land required to construct the Scheme. There are seven surface water licensed abstractions within 2km of the land required to construct the Scheme.

Table 3.6.4 Licensed abstractions within 2km of the land required to construct the Scheme

Licence Number	Source	Abstraction Reach	Distance from Scheme	Purpose
03/28/69/0237	Defra	River Trent	1km	Agriculture
03/28/69/0191	Defra	River Trent	422m	Agriculture
03/28/69/0266/1/ R01	Defra	River Trent	905m	Agriculture
03/28/69/0172	Defra	River Trent	1km and 1.7km	Agriculture
03/28/69/0272	Defra	River Trent	1.3km	Agriculture
03/28/69/0236/1/ R01	Defra	River Trent	1.65km	Agriculture
MD/028/0069/019	Defra	River Trent	1.9km	Agriculture

Flood risk

- 3.6.15 The land required to construct the Scheme lies predominantly within Flood Zone 1, as illustrated in Figure 3.6.2 – Baseline Fluvial Flood Risk. This is land defined as having a low probability of flooding from rivers and the sea, with an annual chance of flooding of less than 0.1% (1 in 1,000). The northern, southern and eastern part of the land required to construct the Scheme lies partially within Flood Zones 2 and 3 (defined as having an annual chance of flooding from rivers of between 0.1% - 1% (1 in 100 to 1 in 1,000) and greater than 1% (1 in 100) respectively), with the extents located in the west of the land required to construct the Scheme associated with the unnamed tributary of the Old Trent, the River Trent and Fledborough Beck.

- 3.6.16 The land required to construct the Scheme is generally at very low risk of flooding from surface water (defined as land with a less than 0.1% annual chance of flooding), with areas within the western, eastern and northern part of the land required to construct the Scheme having a high risk (land with an annual chance of flooding greater than 3.33%). There are larger extents of land at medium risk (land with an annual chance of flooding between 1% and 3.33%) from this source, including an additional area along the northern boundary of the land required to construct the Scheme.
- 3.6.17 Further details of the flood risk from other sources, including groundwater, reservoirs and canals, are included within Appendix L Flood Risk Assessment, which concludes a generally low risk of flooding to the Scheme from these sources, with the exception of groundwater (medium risk). Mitigation measures are detailed in Appendix L, FRA to manage runoff from surface water sources during construction.

Potential Construction Impacts

- 3.6.18 The following potential impacts have been identified during the construction phase, based on the source–pathway–receptor principle and accounting for the control measures described above.
- 3.6.19 Surface water runoff from the Scheme has the potential to degrade the water quality of local drains and watercourses, via the High Marnham Drain, Fledborough Beck, unnamed watercourse that discharges into the Old Trent and the River Trent, through the mobilisation of site debris, silt and construction related pollution. This impact would be managed through construction mitigation measures outlined below in Table 3.6.5, ensuring that silty or polluted water is not discharged directly into any surface watercourse or drain without suitable treatment. In the event of a spillage or pollution incident, an emergency response plan would be in place prior to construction, detailing protocols to prevent detriment to the water environment.
- 3.6.20 The hydromorphology of watercourses within the land required to construct the Scheme may be affected by increased silt inputs. The accumulation of silt within channel beds, or scour arising from construction related discharges, could alter channel form and processes. Mitigation measures are outlined in Table 3.6.5 below.
- 3.6.21 An increase in surface water flood risk during construction is a potential impact, associated with changes in land permeability (for example, the formation of hardstanding associated with a construction compound). This would be mitigated by providing appropriate surface water drainage within construction compounds and reinstating the land drainage regime to its existing condition.
- 3.6.22 In relation to water resource and supply attributes, a non-depletive approach would be adopted, such that there is no net loss to the water resources. Mitigation measures are outlined in Table 3.6.5 below.
- 3.6.23 Considering the control, enhancement and monitoring measures set out in Table 3.6.5, the land required to construct the Scheme is anticipated to result in overall **low to negligible** effects on water environment receptors during the construction phase.

Potential Operational Impacts

- 3.6.24 Due to the nature of the Scheme, the expected increase in impermeable land cover associated with the feet of the new pylons during operation is minimal. Hence it is not expected that there will change to the local land drainage regime nor any increase in surface water flooding or flooding from any other sources.
- 3.6.25 During operation, the Scheme would not generate any runoff to the water environment that is likely to be contaminated or laden with silt. It is therefore not expected that the water quality of the surrounding environment will be impacted.

Construction Control Measures

- 3.6.26 The control measures listed in Table 3.6.5 will be applied during the construction phase of the Scheme. National Grid is committed to implementing the identified control measures to reduce or avoid any potential impacts that may occur during the construction of the Scheme. The control measures will be included in the CEMP prior to the construction, and their implementation will be monitored by National Grid.

Table 3.6.5 Construction control and monitoring measures for water resource and flood risk

Potential Receptor and/or Impact	Control, Enhancement and Monitoring Measures
Watercourses and drains (unnamed tributaries of Old Trent, Fledborough Beck, High Marnham drain and the River Trent) – degradation of surface water quality	<p>The Contractor would prepare detailed method statements as part of the CEMP and implement appropriate controls to protect water environment receptors and to manage surface water runoff from the construction footprint. Controls would include best practice pollution prevention measures for activities such as earthworks, excavation and dewatering, storage of fuels, chemicals and oils, vehicle washing, and emergency contingency.</p> <p>Construction machinery would be refuelled within bunded areas with sealed drainage systems, away from waterbodies. Wastewater generated from the construction compound would be disposed of via appropriate means, for example, pumped out and removed from site by tanker.</p> <p>An Environmental Emergency Response Plan would document protocols to be implemented to prevent pollutants infiltrating into the soils beneath the site and reaching surface water receptors. Appropriate equipment (e.g. absorption mats) would also be made easily accessible on-site to deal with accidental spillages, and the plan would provide a full list of protocols and communication channels with the Environment Agency in the event of an accidental surface water pollution incident. With all site staff trained in implementing the plans via toolbox talks.</p>

Potential Receptor and/or Impact	Control, Enhancement and Monitoring Measures
	<p>Materials would be stored in accordance with best practice in construction compounds, avoiding storage in close proximity to any watercourse or drain, to prevent pollution of the surface water environment. Any dewatering of excavations would be done in accordance with relevant permits (where applicable), and discharges would be made to ground, following suitable treatment where necessary. The above controls safeguarding water quality would also protect the integrity of any existing surface water abstractions and discharges</p>
<p>Surface and groundwater resources – consumptive water use</p>	<p>Measures would be implemented to promote general water use efficiency during construction and particularly to reduce the use of potable water, for example recirculating wheel washers and water efficient welfare facilities.</p>
<p>Watercourses (High Marnham drain, Fledborough Beck and unnamed drains/ watercourses located within land required to construct the Scheme) – impacts on hydromorphology (physical form, flow and sediment transport regimes)</p>	<p>Soil would be stored away from watercourses, thereby reducing the risk of sediment entry, together with management of silt-laden runoff, for example from construction access routes</p> <p>Any permitted discharges to watercourses or drains during the construction would be attenuated to ensure scour risk is minimised and treated where applicable to prevent sedimentation.</p>
<p>Floodplains and land drainage – increase in flood risk or impeded drainage</p>	<p>The temporary work sites would be managed in accordance with a CEMP, that will include protocols and procedures for a flood emergency, linked to receipt of Environment Agency flood warnings.</p> <p>Existing land drainage routes/key flow paths would be retained.</p> <p>As part of pre-construction works, a record of existing land drainage would be compiled and, subject to landowner/occupier agreement, new drains would be established to help prevent damage to soil structure, maintain work areas in a dry condition and to enable current drainage systems to continue to operate through the construction period.</p> <p>Any topsoil and/or excavated material would be reinstated to ensure no detriment to the existing land drainage regime.</p>
<p>Degradation of groundwater body (Lower Trent Erewash – Secondary Combined Water Body) quality</p>	<p>An Environmental Emergency Response Plan would document measures to be implemented to prevent pollutants infiltrating into the soils beneath the site and reaching the groundwater receptors.</p>

Potential Receptor and/or Impact	Control, Enhancement and Monitoring Measures
	<p>Appropriate equipment (e.g. absorption mats) would also be made easily accessible on-site to deal with accidental spillages and the plan would provide a full list of protocols and communication channels with the Environment Agency in the event of an accidental groundwater pollution incident.</p> <p>Materials would be stored in accordance with best practice in construction compounds, to prevent pollution of the groundwater environment.</p>
Water Resources – water efficiency	<p>Water efficiency measures would be implemented during construction, such as recycled wheel washers and low-use fittings within welfare facilities, resulting in minimal impact on local surface water resources.</p> <p>No consumptive use of groundwater is proposed, and there would be no change to the recharge regime of the underlying groundwater body.</p>

Operational Control Measures

- 3.6.27 Given the nature of the Scheme, it is proposed that no drainage works would serve the Scheme during its operation. Part of the land required for the Scheme will be situated in Flood Zone 2 and 3; however, in this area, there will be no new infrastructure, just activities to string new lines, and so there will be no changes to impermeable surface or changes to ground levels. As such the operation of the Scheme will not have any impact on flood risk.
- 3.6.28 Based on the above no control or monitoring measures are required for operation of the Scheme.

3.7 Land and Ground Conditions

Introduction

- 3.7.1 This section details the Land and Ground Conditions baseline conditions and the environmental appraisal of the potential Land and Ground Conditions impacts associated with the construction and operation of the above elements of the Scheme. Where potential environmental impacts are identified, relevant control measures are prescribed to reduce or avoid these impacts.
- 3.7.2 This section should be read in conjunction with Appendix A High Marnham New Overhead Line Glossary and Abbreviations; Appendix B Methodology; and Appendix D High Marnham New Overhead Lines Drawings, Figures 3.7.1, 3.7.2 and 3.7.3.

Study area

3.7.3 The study area for the Land Quality and Ground Conditions appraisal, as seen in Appendix D High Marnham New Overhead Lines Drawings; Figure 3.7.1, comprises the land required to construct the Scheme, plus a 250m buffer on all sides.

3.7.4 A walkover was undertaken on 25 April 2024, and the following observations were made of the land required to construct the Scheme and the immediate surrounding, where accessible. The centre of the land required to construct the Scheme is the existing substation which is a National Grid asset and agricultural fields. The eastern area of the land required to construct the Scheme is predominantly covered by the relicts of previous power station infrastructure within which there is hardstanding with 5 circular concrete pads present from the foundations for the former cooling towers. Directly north of the substation is an area of hardstanding with lorry containers, multiple intermediate bulk containers (IBCs) and tanks filled with unknown contents, however, given the time elapsed since the walkover, it may be that these are no longer present. North east of the lorry park there is a large recently constructed warehouse like building. Further to the north east there is a large, open area of scrubland which is the former coal stocking area with a large, ponded area also present, anecdotally, thought to be a potential pulverised fuel ash (PFA) settling pond, although this could not be confirmed during the walkover. Drainage channels were observed in the east of the former coal stocking area following the perimeter. Further to the north are abandoned railway tracks or sidings which are orientated from west to east close to a carpark. A track (cycleway) serving as a public right of way also crosses the land required to construct the Scheme west to east approximately 10m to the north of the railway tracks. Agricultural fields are present further to the north with overhead lines running up to the northern boundary.

Consultation

3.7.5 Consultation was undertaken with Bassetlaw District Council in 2024 for the separate substation development and the 'tie in' works were included within this. A summary of the consultation is presented in the Table 3.7.1 below.

Table 3.7.1 Summary of consultation

Consultee/Date	Summary of Issues Raised/Agreed
Bassetlaw District Council 20 August 2024	<p>Pertinent information provided is summarised below.</p> <p>On the list of potentially contaminated sites owing to use as former High Marnham Power Station:</p> <p>There is a publicly available intrusive site investigation on the council website under planning reference 2200707FUL.</p> <p>There are two landfills related to the former power station for which the council holds information:</p> <p>EAHLD22092 (outside the 250m study area, located approximately 366m west of the land required to construct the Scheme in the west filled 1978/79 with inert industrial waste from the power station); and</p> <p>EAHLD22091 (related to High Marnham Power Station) also filled in 1978/79.</p>

Consultee/Date	Summary of Issues Raised/Agreed
	<p>No information is held on pollution incidents in the vicinity of the land required to construct the Scheme.</p> <p>No awareness of any COMAH (Control of Major Accident Hazards Regulations 2015) sites in the near vicinity.</p> <p>The comments have been noted and incorporated into the baseline information.</p>
Bassetlaw District Council 12 August 26	<p>In their response to the Form B consultation, BDC raised the potential for impacts relating to historic land contamination future contamination risks. This section sets out the appraisal of impacts on this topic and the measures required to control and manage any impacts.</p>

Baseline

Published Geology

- 3.7.6 **Made Ground:** There are no mapped records of Made Ground within the land required to construct the Scheme (Groundsure, 2026). However, within the study area, some should be expected relating to the development of the former High Marnham power station and infilling of historical ponds within the land required to construct the Scheme. The historical Ground Investigations (GI) encountered Made Ground to a maximum depth of 5.70m below ground level (bgl) in the east of the land required to construct the Scheme around the former power station.
- 3.7.7 **Superficial geology:** BGS mapping (1966) indicates that there are no superficial deposits underlying the majority of the land required to construct the Scheme. The land required to construct the Scheme is underlain by the Holme Pierrepont Sand and Gravel Member, is mapped in the east, which is described as typically ‘poorly sorted sands and gravels’, however, bands of peat are also possible (BGS, 2025). Alluvium is also mapped on the eastern boundary, which is described as clay, silt, sand and gravel. The superficial deposits are presented in Appendix D High Marnham New Overhead Lines Drawings; Figure 3.7.2.
- 3.7.8 **Bedrock geology:** The land required to construct the Scheme is underlain by mudstone of the Mercia Mudstone Group (BGS, 2025). Linear bands of dolomitic siltstone also of the Mercia Mudstone Group are present within the south west of the land required to construct the Scheme. No other linear features are indicated within the study area. According to the BGS (2025) ‘*the Mercia Mudstone Group contains evaporite minerals, mainly halite (sodium chloride) and gypsum (hydrous calcium sulphate). These lithologies can cause significant problems for construction due to dissolution. Mercia Mudstone may contain aqueous solutions of sulphate and sulphuric acid in the ground in sufficient quantity for potential chemical attack on concrete*’. The deposits of bedrock are presented in Appendix D High Marnham New Overhead Lines Drawings; Figure 3.7.3.
- 3.7.9 Within the Groundsure reports, no significant ground hazards were identified other than a maximum rating of very low risk for shrink swell clays, collapsible deposits and landslides underlying the land required to construct the Scheme (Groundsure 2026).

3.7.10 There are four historical BGS boreholes available to review within the study area (BGS, 2026). The encountered geology is presented below in Table 3.7.2.

Table 3.7.2 BGS Boreholes (within the study area)

Borehole ID	Age	Location	Geology	Depth to Base (m Below Ground Level (bgl))	Groundwater Resting Level (m bgl)
SK77SE8	1980	75m south of the boundary of the land required to construct the Scheme	Mercia Mudstone	174	-
			Sandstone	377	
			Upper Marl	410	
			Dolomitic limestone	420	
SK87SW28	1984	Within study area	'Made-up' ground	2.0	23.24
			Soft red marl	7.0	
			Red marl with clay and pebbles	17.0	
			Soft red marl	50.5	
			Keuper marl	212.0	
			Soft sandstone	420.0	
SK87SW18	1984	Within study area	Red / blue clay	7.50	22.5
			Keuper Marl	185.0	
			Grey clay	200.0	
			Keuper Marl	212.0	
			Red / brown sandstone	418.0	
			Red / brown marl	431.0	
SK87SW18	1971	155m north of boundary of the land required to construct the Scheme	Older River Deposits (gravel)	1.6	-
			Keuper Marl (Mudstone)	2.5	

Encountered geology

- 3.7.11 Historical GI data are available for the land required to construct the Scheme with the majority summarised in the Jacobs report (2024) High Marnham New Air Insulated Substation (AIS) – Geotechnical Investigation Report, ref B2441B05-JAC-HM-XX-RP-C-02306, dated 11 July 2024. Four historical reports provided by National Grid relating to the existing High Marnham Substation have been summarized within 2024 Ground Investigation Report (GIR). The following reports have been reviewed in the 2024 GIR (Jacobs, 2024):
- **GI Report, 1964 (NG Ref.: SM0006).** Undertaken in 1964 has no borehole records and is not legible.
 - **Central Electricity Generating Board GI, 1984 (NG Ref.:SM546).** Undertaken in 1983 for additional storage tanks with all but one exploratory location inside the study area.
 - **Card Geotechnics Ltd GI, 2000 (NG Ref.:SM1289 / SM1288).** Undertaken in 2000 by Card Geotechnics Ltd for Overhead Line relocation. Both reports detail the same exploratory holes, in the north of the study area. A total of two cable percussive boreholes, two trial pits, five window sample holes and five dynamic probes were undertaken.
 - **CL Associates GI, 2004 (NG Ref.:SM1376).** Three window samples between 4.45 to 5.00m bgl were undertaken in 2004 in the centre of the land required to construct the Scheme, immediately east of the existing substation.
 - **2012 Geotechnical Engineering Ltd. GI.** The majority of exploratory positions in this GI were undertaken within the centre of the land required to construct the Scheme between 8 and 25 May 2012. This comprised 11 dynamic/rotary boreholes, 10 machine excavated and 7 hand excavated trial pits. The boreholes were formed using a track-mounted geotechnical pioneer rig with depths ranging from 6.80m to 20.30m bgl.
- 3.7.12 The 2024 GIR (Jacobs, 2024) summarised the above GI data producing a ground model with pertinent depths summarised below in Table 3.7.3.

Table 3.7.3 Summary of encountered geology

Strata	Min Top Depth (m bgl)	Max Top Depth (m bgl)	Thickness Range (m)
Topsoil	0.00	0.00	0.10 – 0.60
Made Ground ¹	0.00	0.00	0.30 – 5.70
Weathered Mercia Mudstone	0.1	5.7	2.95 – 7.85
Mercia Mudstone (bedrock)	3.4	8.35	2.00 ² – 16.65 ²

¹ Made Ground is not expected in the undeveloped fields where the Overhead Line is proposed.

² Full thickness not proven.

- 3.7.13 A historical GI was undertaken within the east of the study area but not directly underlying proposed overhead lines within the former High Marnham Power Station, between 15 and 19 May 2023, comprising 25 trial pits, 19 plate load tests, with geotechnical and geoenvironmental testing. The findings of the investigation are detailed in the third party report, Ref. 302535-R02(00) (RSK, 2023).
- 3.7.14 Approximately 50 to 100m north west of the proposed overhead lines in the south east, variable Made Ground was identified generally down to 1.4m bgl with a maximum depth of 2.2m bgl. This comprised granular brown-grey silty sandy gravel of subangular fine to coarse brick, limestone and chert and cohesive Made Ground of brown to dark brown locally grey to gravelly clay to slightly sandy slightly gravelly clay. No superficial deposits were observed, and bedrock of the Mercia Mudstone Group was encountered between depths of 0.15m to 2.10m bgl. The base of the mudstone was not proven and was encountered to 3.80m bgl. It was described as 'extremely weak to weak reddish brown de-structured to distinctly weathered mudstone and locally as extremely weak to weak green-grey de-structured to distinctly weathered siltstone' (RSK, 2023).

Hydrogeology

- 3.7.15 The desk study (Arcadis, 2025) and the Multi-Agency Geographic Information for the Countryside (MAGIC) maps database (Defra, 2026) indicate that the superficial deposits of the Pierrepont Sand and Gravel Member and the Alluvium, where present underlying the land required to construct the Scheme, are designated as a Secondary A aquifer. These are permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. The bedrock geology of the mudstone, underlying the land required to construct the Scheme, is designated as a Secondary B aquifer. Secondary B aquifers are described as '*Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering*'. The dolomitic siltstone deposits on-site are designated as Secondary Undifferentiated aquifers.
- 3.7.16 The groundwater vulnerability for the superficial and bedrock geology present beneath the land required to construct the Scheme is high. The Groundsure report (2026) also states that the land required to construct the Scheme is not within a Source Protection Zone, and there are no records of licensed groundwater abstractions within the study area.
- 3.7.17 Groundwater monitoring was undertaken as part of the 2012 GI in five boreholes between June and August 2012, as detailed in the 2024 GIR (Jacobs, 2024). The groundwater level was generally between 7.00–6.00m above ordnance datum (AOD), although it was reported to be as high as 4.50m AOD and as low as 10.00m AOD which means perched water tables may be present.

Hydrology

- 3.7.18 There approximately 27 surface water features recorded within the study area according to the Groundsure report (2026) of which 1 unnamed feature is within the land required to construct the Scheme, a tributary of the Old Trent. There are 31 watercourse records on-site with Fledborough Beck, in the north of the land required to construct the Scheme being the only named record.

3.7.19 No surface water abstractions were indicated within the study area.

Unexploded ordnance (UXO)

3.7.20 The Unexploded Bomb (UXB) risk maps (Zetica, 2026) indicate the land required to construct the Scheme is located within an area of low risk, *‘indicated as having less than 15 bombs per 1000 acres or less’*.

3.7.21 The Preliminary Desk Study Assessment (Zetica, 2024) obtained for the land required to construct the Scheme concluded that *‘a detailed desk study, whilst always prudent, is not considered essential in this instance’*.

Radon

3.7.22 The land required to construct the Scheme is located within an area where <1% of properties are estimated to be above the radon action level (UK Health Security Agency, 2026). Therefore, radon protection measures are not considered necessary for the land required to construct the Scheme, according to guidance in BRE Report BR 211 (BRE, 2015).

Historical review

3.7.23 A table detailing the historical development of the land required to construct the Scheme and surrounding area from the review of historic OS maps is included within Section 3 of the desk study (Arcadis, 2025).

3.7.24 From the earliest record in 1884 the land required to construct the Scheme remained largely undeveloped fields potentially associated with Barks Farm on-site until the Lancashire, Derbyshire & East Coast Railway line was constructed in the northern half of the land required to construct the Scheme in approximately 1898, with Fledborough Station and a goods shed in the west. In 1974 High Marnham Power Station was constructed on land now surround by land required to construct the Scheme, with railway sidings and other ancillary structures. A sewage works was also present in the east of the land required to construct the Scheme from 1974 until it was demolished prior to 2001. Between 2003 and 2012 the power station was demolished in phases with the substation and overhead lines remaining present.

3.7.25 The area surrounding the land required to construct the Scheme was predominantly rural from the first record in 1884 and has remained so until present day. There has been little development around the land required to construct the Scheme, other than minor residential development. The railway was constructed, present north west and north east of the land required to construct the Scheme until dismantled pre 2001 and a tank was depicted in the north west by the railway line from 1921 to 1974. In 1974 the caravan park, Hill Farm and Trent View Farm were developed in High Marnham, south of the land required to construct the Scheme. Little other development has taken place surrounding the land required to construct the Scheme.

3.7.26 The RSK GI report, Ref. 302535-R02(00) (RSK, 2023) presents further detail related to the history of the former High Marnham Power Station and discusses potential contaminative land uses within and around the land required to construct the Scheme. In the east of the land required to construct the Scheme former gas bottle storage, a shallow concrete bund containing water (tank) and a ‘Hyd store’ with unknown content were identified but later demolished (by 2008). The report also

identifies known historical tanks in the north east of the former High Marnham Power Station and an area of suspected waste dumps in the north, although these are outside the study area.

Environmental information

- 3.7.27 **Landfills and waste:** There are no historical landfills recorded within the land required to construct the Scheme and only one record (EAHLD22091) within the study area 79m west relating to High Marnham Power Station for industrial waste from 1979 (Groundsure, 2026). According to the Groundsure (2026) report there are also 12 on-site records of waste exemptions relating to The Gables and The Gables Bungalow (farm) spreading waste on agricultural land, waste storage and several other processes.
- 3.7.28 **Current industrial land use:** The Groundsure (2026) report states over 68 industrial land uses recorded on-site, predominantly relating to electricity infrastructure (pylons), and the existing substation in the east. A record of hazardous substance storage or usage is also present on-site, relating to JG Pears (Property) Ltd & Geopura Ltd, Land at Former High Marnham Power Station. No further details of what was stored, reference numbers or permit dates are provided, however, it is located in the east of the land required to construct the Scheme in the vicinity of the 'Hyd Store' (RSK, 2023).
- 3.7.29 Seven records of tanks are recorded within the study area, however, several more are likely to be on the concrete hardstanding towards the central point of the land required to construct the Scheme, as observed in the walkover. The RSK GI report, Ref. 302535-R02(00) (RSK, 2023) indicates that several of these tanks were recorded as above ground storage tanks. The Arcadis desk study (2025) also indicates a further tank related to the historical High Marnham Power Station was present to the north of the cooling tower pads. There is also a record of livestock farming relating to The Gables in the north of the land required to construct the Scheme.
- 3.7.30 **Pollution incidents:** The Groundsure (2026) report indicates that there are no pollution incidents recorded within the Environment Agency database which are within the study area.
- 3.7.31 **Discharge Consents:** There is one licensed discharge consents to controlled water within the land required to construct the Scheme relating to High Marnham Substation for site drainage effective since 2006.
- 3.7.32 **Environmental designations:** No recorded Sites of Special Scientific Interest (SSSI) are located within the study area, however, the land required to construct the Scheme falls within a SSSI impact risk zone relating to Spalford Warren SSSI, approximately 3km to the south east. An Impact Risk Zone is a zone around a SSSI which reflects particular sensitivities to certain development proposals (e.g. airports).

Mining, quarries and minerals

- 3.7.33 According to the Groundsure (2026) report, no close surface or underground mineral workings were recorded within the study area. 37 surface ground workings are recorded within the study area. Of these, four are located within the land required to construct the Scheme comprising ponds and an unspecified heap dating between

1884 – 1921. The Mining Remediation Authority Interactive Map (previously known as The Coal Authority) (2026) indicated that the land required to construct the Scheme is not within a coal mining reporting area.

- 3.7.34 Plan 4 within the Nottinghamshire Minerals Local Plan 2019-2036 (Nottinghamshire County Council, 2021) indicates that the land required to construct the Scheme lies on the border of the minerals safeguarding area, relating to alluvial sand and gravel. As observed in Appendix D High Marnham New Overhead Lines Drawings; Figure 3.7.2, the land required to construct the Scheme is underlain by sand and gravel deposits in the east. However, the limited development footprint will likely result in a limited potential of minerals being sterilised.

Contamination

- 3.7.35 As part of the 2012 GI, eight natural soil samples were collected and scheduled for chemical analysis located within the study area (Geotechnical Engineering Ltd, 2012). When compared to industrial / commercial assessment criteria, no exceedances were identified. No asbestos screening of Made Ground or reworked ground was undertaken.
- 3.7.36 Soil leachate testing was undertaken in 11 samples collected within the study area in the 2012 GI, and the testing was compared to the Drinking Water Standard (DWS, 2018) and the Environmental Quality Standard (EQS) in the 2024 GIR (Jacobs, 2024). Four exceedances in the 2012 soil leachate data were identified for aluminium, above the 200µg/l DWS limit (Jacobs, 2024).
- 3.7.37 Six groundwater samples were collected and tested from four wells (BH01, BH02, BH04 and BH08) as part of the 2012 GI and screened against the relevant DWS and EQS as above. Two minor exceedances were reported for ammoniacal nitrogen above the EQS limit of 0.3µg/l. Minor exceedances above the DWS for boron and nickel were also reported with one and two samples exceeding the DWS limits, respectively. An exceedance with a higher magnitude was detected for sulphate, reported with results ranging from 730 to 2,600mg/l with all six samples exceeding the 250mg/l DWS limit (Jacobs, 2024).
- 3.7.38 No visual or olfactory contamination was reported in the historical Ground Investigations; only anthropogenic materials such as brick were reported within the study area.
- 3.7.39 Ground gas monitoring was undertaken as part of the 2012 GI and was assessed by Jacobs in the 2024 GIR. Four rounds of gas monitoring were undertaken in BH02, BH03, BH04, BH08 and three rounds undertaken in BH01. The quantitative analysis of the flow rates and concentrations were reported as very low hazard potential in all boreholes with a Site Characteristic Situation (CS) classification of CS1 (Jacobs, 2024).

Key receptors and value (sensitivity)

- 3.7.40 Table 3.7.4 below provides a summary of the values assigned to receptors. These have been assigned using the criteria presented in the methodology section in Appendix B Methodology.

Table 3.7.4 Key land and ground condition receptors

Receptor Type	Receptors	Value (Sensitivity)
Geology	Holme Pierrepont Sand and Gravel Member & Alluvium	Negligible / Low
	Mercia Mudstone – bedrock	Negligible
Human health	Construction workers	Very high
	Existing off-site neighbours (commercial / residential properties and farmers)	Medium
	Users of development	Medium
Hydrogeology	Secondary A superficial aquifer. 'Predominantly permeable layers'	Medium
	Secondary B bedrock aquifer. Secondary B aquifers are described as 'Predominantly lower permeability layers'	Low
Surface water	Fledborough Beck and unnamed surface water receptors.	Medium
Buildings/structures and services	Proposed substation development	Medium

Future baseline

- 3.7.41 The existing baseline conditions with respect to ground conditions and hydrogeology are unlikely to change significantly within the time prior to the construction. Based on the available information, gross and widespread contamination is not anticipated, however, this is subject to completion of site-specific GI works to confirm if remediation is needed. Significant changes to ground conditions are not anticipated.

Potential Construction Impacts

- 3.7.42 The following sections outline the residual effects once the mitigation measures described below have been implemented.
- 3.7.43 Construction workers will be present during the construction of the Scheme. They will be exposed to localised soil and shallow groundwater (potentially contaminated) during earthworks including excavation, topsoil stripping, stockpiling, transportation and backfilling (limited). Exposure could be through accidental ingestion, inhalation of dust and dermal exposure. Nearby residents and adjacent agricultural land could also potentially be exposed to dust blown from earthwork activities. Construction workers are considered very high sensitivity and existing offsite neighbours (commercial and residential properties in the north and farmers on surrounding agricultural land) of medium sensitivity as widespread contamination is not expected and limited to the north. Assuming the adoption of appropriate mitigation measures detailed below, including adoption of a CEMP prior to the construction and

Construction Phase (Health and Safety) Plan, the magnitude of impact is considered to be **negligible**. The level of effect is assessed as an overall **slight adverse to neutral** effect.

- 3.7.44 During construction activities there is the potential for accidental, localised spillages of oils, chemicals, cement and fuels from the movement of construction traffic and the storage of chemicals. This could impact the underlying ground, with the potential for contamination to migrate into the water environment. Geology across the land required to construct the Scheme is considered to have a negligible value to medium value. If the design and mitigation measures detailed below are implemented, the magnitude of impact is considered to be **negligible** with an overall **neutral** level of effects. Groundwater underlying the land required to construct the Scheme is considered to have a low value associated with the bedrock aquifer and a medium value for superficial geology. With the implementation of the design and mitigation measures detailed below, the magnitude of impact is considered to be **negligible** with an overall **neutral** level of effects. Surface water receptors have been identified on-site including Fledborough Brook with an associated medium value. The magnitude of impact is considered to be **negligible** with an overall **neutral** level of effects. Preventative measures should be undertaken to prevent and mitigate accidental, localised spillages.
- 3.7.45 The mapped geology within the land required to construct the Scheme is considered to have a negligible to low value with the magnitude of impact considered to be negligible on the basis of no geological exposures and little and no change to geodiversity. During earthworks or foundation construction works, there is the risk of initiating ground failure therefore, a geotechnical focused ground investigation is recommended to inform the development and appropriate mitigation measures. Buildings / Structures and Services are considered to be of medium value and assuming the appropriate design measures and mitigation are adopted, the magnitude of impact is considered to be **negligible**. The level of effect is assessed as an overall **neutral** effect.

Potential Operational Impacts

- 3.7.46 Sustainable drainage system (SuDS) is not proposed as part of the Scheme, therefore the risk of contaminant infiltration will not change. Therefore, the magnitude of impact is considered to be negligible and does not warrant further consideration.
- 3.7.47 Previous ground gas monitoring undertaken indicated the land required to construct the Scheme and surrounding area is CS1 (very low risk); no gas protection measures required. Moreover, as there are no planned enclosed buildings, users (e.g. maintenance workers) will not be affected by potential ground gasses and therefore there will be no future risk.
- 3.7.48 Geology across the land required to construct the Scheme is considered have a negligible to low value. Given the Scheme end use, with limited additional footprint, the impact from continued operations is considered to be **negligible**. The level of effect is assessed as an overall **neutral** effect.
- 3.7.49 The Holme Pierrepont Sand and Gravel Member (in the east) is mapped in proximity to a MSA border. It is not certain if this crosses the land required to construct the Scheme, however, given the very limited footprint of the Scheme (towers of overhead

lines), significant mineral sterilisation is not likely to occur. Permanent structures may be affected by ground stability issues, however, no significant ground hazards were identified other than a maximum rating of very low risk for shrink swell clays, collapsible deposits and landslides underlying the land required to construct the Scheme (Groundsure 2026). Any structure is considered to be of medium value and assuming the appropriate design measures and mitigation are adopted, the magnitude of impact is considered to be **negligible**. The level of effect is assessed as an overall **neutral** effect.

Construction Control Measures

- 3.7.50 The control measures listed in Table 3.7.5 will be applied during the construction phase of the Scheme. National Grid is committed to implementing the identified control measures to reduce or avoid any potential impacts that may occur during the construction of the Scheme. The control measures will be included in the CEMP prior to the construction, and their implementation will be monitored by National Grid.

Table 3.7.5 Construction control and monitoring measures for land and ground condition

Potential Receptor and/or Impact	Control, Enhancement and Monitoring Measures
Human health – Construction Workers	Adoption of a CEMP and Construction Phase (Health and Safety) Plan.
Human Health – Nearby Residents (commercial / residential properties and agricultural land users)	Adoption of a CEMP and Construction Phase (Health and Safety) Plan.
Geology (contamination)	Adoption of a CEMP.
Geology (ground stability)	Appropriate geotechnical design. Adoption of a CEMP and Construction Phase (Health and Safety) Plan.
Hydrogeology (Secondary A ‘local supplies’ aquifers & Secondary B ‘limited yield’ aquifers)	Should piled foundations be required, it is recommended that a piling risk assessment would be undertaken to identify the possible risks to groundwater, surface water and potentially from ground gases. Adoption of a CEMP.
Surface Water	Should piled foundations be required it is recommended that a piling risk assessment is completed to assess possible risks to groundwater and surface water (unlikely). Adoption of a CEMP.
Buildings/structures and services	Appropriate design of buried concrete (BRE, 2005)

3.7.51 During the construction works, the following will be incorporated by way of the CEMP:

- During removal of vegetation, stripping of topsoil, excavation, earthworks and construction a watching brief protocol will be adopted as detailed in a CEMP, with site workers remaining vigilant such that visual or olfactory signs of contamination will be noted and that contaminated soil will be kept separate from other materials. Suspected contaminated material will be analysed to determine if it is suitable for re-use on the land required to construct the Scheme (in accordance with agreed strategies) or requires disposal off-site to an appropriate soil recycling or disposal facility.
- In line with best practice and as detailed in a CEMP, prior to any construction compound area being prepared, a baseline survey will be undertaken to determine the current land quality across the compound area. This will identify localised contamination present above risk-based suitable-for-use criteria. If required, such areas will be remediated prior to, or as part of, the soil stripping/enabling works. Alternatively, other measures will be applied, such as using an appropriate cover system/barrier to reduce the risk of exposure to site workers and to prevent pathways to sensitive receptors. This may include impermeable bunding and sheeting to prevent the spread of existing contamination and potential leaching.
- Within any construction site compounds, specific areas will be designated for the storage of chemicals, waste oils and fuel and refuelling activities. These areas will be bunded and placed on hardstanding to prevent downward migration of contaminants. Any transfer of fuel or other potentially contaminated liquids will only take place within a designated fuel transfer area. Drip trays will be provided to reduce the risk of impact of spillages. These areas will be designed with appropriate drainage to ensure any spillages can be isolated.
- An Environmental Emergency Response Plan will be produced by the Contractor. Appropriate equipment (e.g. spill kits, absorption mats) will be made easily accessible on-site and personnel will be trained in using them. Clear protocols and communication channels will be provided to ensure that any spillages are dealt with immediately and adequately. This will prevent large areas of soil/geology potentially becoming contaminated and, in turn, protect surface and ground water quality.
- A repeat baseline survey will be undertaken once the construction has finished and the compound dismantled to demonstrate the area has been returned to its previous state. If contamination has occurred during the lifetime of the compounds, remediation will be undertaken to return the land to its previous land quality state as detailed in a CEMP.
- During construction, excavated soils will be appropriately stored to ensure that if dust is generated in dry weather periods, it is not directed towards existing properties. Other best practice measures such as damping down areas, vehicle wheel washing, and covering stockpiles and lorries containing soils will be utilised to reduce the impacts from dust.
- To avoid the spread of contaminants, contaminated soils (where identified by investigation) within areas to be excavated will be removed prior to the main

works as detailed in a remedial method statement. Materials will be further assessed, and if necessary treated, for reuse within the land required to construct the Scheme, e.g. for use in areas of open space. Material that cannot be reused will be disposed of at an appropriate waste facility.

- If contaminated materials are proved suitable for use within less sensitive parts of the land required to construct the Scheme after agreement with the regulator, information will be included in the H&S file about their location and quality so that future works (i.e. in operational phase) know of their existence and can take the necessary precautions if they must work in that area.
- Any contaminated groundwater encountered during the construction phase will be treated/disposed of appropriately and with the necessary agreements in place. During the dewatering activities, consideration will be given to soil contamination in the locality to ensure that contaminants do not become mobilised and enter the water environment.
- To reduce the risk to surface water, excavated materials will be appropriately stored to ensure that water runoff from stockpiles does not enter the water environment via drains and nearby watercourses. If necessary, stockpiles will be covered. Pollution prevention best practice protocols will be adopted to ensure contamination does not enter surface water.
- A Site Waste Management Plan (SWMP) and an Outline Materials Management Plan (that will form part of a CEMP and will be developed by the Contractor) will be prepared following the protocols within the CL:AIRE Definition of Waste: Development Industry Code of Practice (CL:AIRE, 2011) to ensure that excavated materials are re-used appropriately and sustainably in line with the waste hierarchy, as required. Materials designated for re-use but classified as hazardous should be re-used in accordance with the Environmental Permitting Regulations and may require remediation or sorting/segregation, as required.
- During the construction phase, construction/site workers could be exposed to localised contaminated if present, via accidental ingestion, inhalation or dermal contact with soil and any contamination present. To mitigate risks from contaminated soils/materials, all persons engaged in site construction works will be made aware of the findings of the intrusive investigations and the hazards associated with handling potentially contaminated materials via a CEMP, Construction Phase (Health and Safety) Plan and toolbox talks.
- Suitable Personal Protective Equipment (PPE) including Respiratory Protective Equipment (RPE) (if necessary) will be available to all site workers as detailed in the H&S Plan. Appropriate site hygiene protocols will be adopted during the construction phase.
- Where hazardous chemicals are used in the construction works, risk assessments will be made and detailed in a CEMP.

Operational Control Measures

- 3.7.52 During the operational phase of the Overhead Lines, site activities will be unchanged and are considered unlikely to result in significant changes to the Land and Ground Conditions. The measures listed in Table 3.7.6 will be implemented during the operational phase of the Scheme and the appraisal has been undertaken assuming these measures are in place.

Table 3.7.6 Operational control and monitoring measures for land and ground condition

Potential Receptor and/or Impact	Control, Enhancement and Monitoring Measures
Geology (ground stability)	Implementation of the recommendations from the Jacobs 2024 GIR (foundations/concrete protection).
Hydrogeology (Secondary A 'local supplies' aquifers & Secondary B 'limited yield' aquifers)	Given the limited footprint of the infrastructure and no planned SuDS, no operational control measures are considered necessary.
Surface Water	Given the limited footprint of the infrastructure and no planned SuDS, no operational control measures are considered necessary.
New Buildings / Infrastructure	Given the limited footprint of the infrastructure, no operational control measures are considered necessary.

3.8 Noise and Vibration

Introduction

- 3.8.1 This section details the Noise and Vibration baseline conditions and the environmental appraisal of the potential Noise and Vibration impacts associated with the Scheme. Where potential environmental impacts are identified, relevant control measures are prescribed to reduce or avoid these impacts.
- 3.8.2 The residual impacts of construction noise and vibration have been scoped out of this EAR on the basis that this will be mitigated through the implementation of a Noise and Vibration Management Plan, via a CEMP, and due to the temporary nature of the construction impact. Operational maintenance activities will also be managed by the implementation of noise and vibration management measures.
- 3.8.3 Operational noise impacts are most likely to be associated with the new 400kV substation proposed alongside the Scheme. This substation has been appraised and consented separately (25/01302/FUL). Information about the operational noise impacts of the new 400kV substation is therefore presented as part of this appraisal alongside the appraisal of noise from the operation of overhead lines.
- 3.8.4 This section should be read in conjunction with Appendix A High Marnham New Overhead Lines Glossary and Abbreviations; Appendix B Methodology; and Appendix H Noise Impact Assessment.

Study area

- 3.8.5 Given the nature of the Scheme, the study area for Noise and Vibration comprises the land required to construct the Scheme, including the land required for the New 400kV High Marnham Substation, and 200m either side of the proposed overhead lines, as well as those to be retained.

Consultation

- 3.8.6 In their response to the Form B consultation, BDC raised the potential for noise impacts. This section sets out the appraisal of noise and the measures to control and manage impacts.

Baseline

Existing operational noise sources

- 3.8.7 The Scheme is centred around the existing High Marnham Substation. Items of equipment generally termed 'reactive plant', are usually the main sources of noise in high voltage substations. Reactive plant, such as SGTs and quad boosters, are predominantly responsible for the tonal 'hum' associated with substations.
- 3.8.8 The substation also comprises circuit breakers, disconnectors/isolators, and current/voltage transformers and high voltage plant equipment. This noise is generated by the operation of circuit breakers and isolators. This equipment operates very infrequently, typically only a few times a year for outages and maintenance, and in emergencies to protect the substation and electricity network infrastructure from lightning strikes or faults. Noise from this equipment is impulsive in character (i.e., of very short duration). It generally operates with a dull 'thud' while isolators would operate with a 'click'.
- 3.8.9 The existing energised AIS at the existing High Marnham substation include the short circuit connections from the overhead lines, and the terminal overhead line spans into the substation. Insulators, and AIBs, will under certain conditions 'crackle' or 'fizz' due to the occurrence of a phenomenon called corona discharge. Corona discharge may be audible when close to the substation, but it is not continuous and not considered to be a major source of noise.

Noise from overhead lines

- 3.8.10 Noise from high voltage overhead lines is primarily due to a phenomenon called corona discharge. Line noise is generated when the conductor surface voltage gradient (electric stress, or E_{max} expressed in kilovolts per centimetre (kV/cm)) exceeds the inception level for corona discharge activity which is released as acoustic energy and radiates into the air as sound. In UK conditions, the corona inception level is regarded to occur when electric stress is in the range 17 to 20kV/cm. Whilst most high voltage overhead lines are designed to operate below this level, those that operate close to this may produce audible noise when enhancement of conductor surface electric stress occurs due to rainfall (wet noise) or the presence of conductor surface contamination (dry noise). Overhead lines that operate below the corona inception level are much less likely to produce audible noise.
- 3.8.11 When it occurs, overhead line noise can be described as a 'crackle', which is sometimes accompanied by a tonal 'hum' in wet conditions. The highest noise levels generated by an overhead line generally occur during rainfall. Hum, if it occurs, is typically more annoying than crackle alone and therefore the occurrence of wet noise is considered worst-case.

Acoustic survey observations

- 3.8.12 During installation and collection of the noise monitoring equipment, the acoustic environment was dominated by local traffic noise, including HGVs along Fledborough Road and along the substation access road to neighbouring property. Distant transformer/humming sound from the existing High Marnham Substation was also noted.

Noise-sensitive receptors

- 3.8.13 Residential receptors surrounding the land required to construct the Scheme are considered to be the most exposed receptors that could be affected by the Scheme. These are:
- Sparrow Lane Park – park home estate located approximately 5m to the south east of the access road within the land required to construct the Scheme;
 - Hill Farm – residential property located approximately 85m to the south of the land required to construct the Scheme;
 - Station House – residential property approximately 40m to the north west of the land required to construct the Scheme; and
 - Fledborough Farm House – residential property located approximately 240m to the north west of the land required to construct the Scheme.
- 3.8.14 There are a number of other residential properties in the surrounding area to the south of the land required to construct the Scheme in High Marnham; however, the receptors listed above are considered the most sensitive due to their proximity to the Scheme.
- 3.8.15 Further details on the location of the noise sensitive receptors can be found in Appendix H Noise Impact Assessment.

Potential Construction Impacts

- 3.8.16 The construction phase of the Scheme may potentially introduce additional sources of noise and vibration, such as construction activities and construction traffic, plant and equipment. These impacts will be temporary and transitory in nature, due to the phased nature of removing and constructing overhead lines.

Potential Operational Impacts

- 3.8.17 National Grid has committed to embedded mitigation, set out in their Operational Audible Noise Policy for Overhead Lines (PS(T)134), in the form of a conductor system or alternative technology that performs to the same or better standard in relation to noise on standard lattice pylons for reducing operational noise. This would be a similar design to the existing 400kV overhead line. Due to its geometrical configuration the design is one of the least electrically stressed conductor system that National Grid uses, reducing the effects of dry and wet noise from the proposed 400kV overhead line during operation.

- 3.8.18 Where modifications for existing transmission overhead lines are required, like for like conductors are proposed. No change in noise is therefore expected in these situations and no further assessment has been undertaken.
- 3.8.19 Noise from the operation of the scale and type of overhead line proposed and to be retained, even in worst case wet weather conditions, would be below impact criteria for NSRs. NSRs within 200m of the proposed and retained overhead lines are therefore more likely to experience noise from operation of the existing and proposed substations than operation of the overhead lines. There would therefore be no noise impacts associated with the operation of the Scheme.
- 3.8.20 Based on the acoustic modelling undertaken for the proposed new 400kV substation, with the addition of an acoustic enclosure for SGT2 in the design of the new 400kV substation, the noise impacts are anticipated to be negligible to all receptors. Therefore, acoustic mitigation is considered suitable to mitigate potential noise impacts from the Scheme.

Construction Control Measures

- 3.8.21 National Grid is committed to implementing control measures to reduce or avoid any potential impacts that may occur during the construction of the Scheme.
- 3.8.22 The following measures contain outline proposals to manage noise and vibration during construction and will be included in the CEMP:
- Commitments for active control of construction noise and vibration, including issues such as specific and detailed complaint procedures, community liaison, compliance survey requirements and a Risk based mitigation scheme to control noise and vibration on an ongoing basis.
 - Mitigation strategies formulated on the basis of 'Best Practicable Means'.
 - Undertaking construction during the proposed working hours.
 - Recommendations and good practice as detailed in BS 5228:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites Part 1: Noise and Part 2: Vibration.
 - Measures as set out in BS 5228 Code of practice for noise and vibration control on construction and open sites including:
 - careful planning of methodology, programming of the works at less sensitive times and selection of plant to minimise adverse impacts;
 - selection of plant that conforms with relevant national or international standards, directives and recommendations on noise and vibration emissions;
 - location of construction plant as far as is reasonably practicable away from adjacent occupied buildings, or as close as possible to noise barriers or site hoardings where these are located between the plant and buildings;
 - selection and location of generators so as to minimise adverse impacts on the local community;
 - fitting static and semi-static plant/equipment with suitable enclosures where practicable;

- instruction of personnel on best practicable means to reduce noise and vibration, as part of induction training and prior to specific work activities;
 - shut down of plant and vehicles when not in use, i.e., no idling;
 - audible warning systems and alarms designed to minimise noise;
 - broadband reverse alarms fitted to all vehicles;
 - notification of local residents in advance of works commencing; and
 - use of localised mobile screening where reasonably practicable to reduce noise levels from handheld tools such as concrete saws.
- Implementation of appropriate construction traffic routeing to minimise noise impacts on sensitive receptors. Details of the routeing of construction vehicles and visitors to the construction areas will be agreed with BDC.
 - All construction traffic entering and leaving the construction areas will be closely controlled. Vehicles making deliveries or removing material will travel via designated routes. Measures will be taken to review and reduce, where possible, the numbers of construction vehicles accessing the construction areas during peak hours, by adopting measures such as ‘just-in-time’ deliveries.

Operational Control Measures

3.8.23 No further measures are proposed during operation of the Scheme.

3.9 Traffic and Transport

Introduction

- 3.9.1 This section details the Traffic and Transport baseline conditions and the environmental appraisal of the potential Traffic and Transport impacts associated with the construction and operation elements of the Scheme. Where potential environmental impacts are identified, relevant control measures are prescribed to reduce or avoid these impacts.
- 3.9.2 This section should be read in conjunction with Appendix A High Marnham New Overhead Lines Glossary and Abbreviations; Appendix B Methodology; Appendix C High Marnham Overhead Works Plans; and Appendix D High Marnham New Overhead Lines Drawings.

Study area

- 3.9.3 The study area for Traffic and Transport comprises roads along the proposed construction route including Main Street, the road connecting Main Street to Fledborough, Hollowgate Lane, Polly Taylor’s Road, Skegby Road and the A57 (non-strategic road network section). Beyond these roads, the construction traffic will be distributed onto the A1 which forms part of the strategic road network (SRN) dispersing further along numerous SRN routes and the impact of the additional traffic will be diluted. The proposed construction route and construction accesses where construction vehicles depart the public highway is shown in Appendix D High Marnham New Overhead Lines Drawings; Figure 3.9.1 Traffic and Transport Proposed Construction Route.

Consultation

- 3.9.4 Consultation was undertaken with NCC in 2024 for the separate substation development and the 'tie in' works were included within this. Table 3.9.1 provides a summary of the issues raised and agreed during consultation with respect to the Traffic and Transport.

Table 3.9.1 Summary of consultation

Consultee/Date	Summary of Issues Raised/Agreed
Nottinghamshire County Council – Local Highway Authority (LHA) 25 July 2024	<p>A request was submitted for an opinion on the traffic and transport proposed approach, which includes the methodology, the proposed construction route, and mitigation measures.</p> <p>The following response was received:</p> <p>The SRN A1 – A57 – Main Street Ragnall route appears to be the most appropriate access/egress strategy. The Local Highways Authority (LHA) will require a plan of categorised intended Heavy Goods Vehicles (HGVs)/crew buses/light vehicles access/egress routes that will form part of a Construction Traffic Management Plan (CTMP) to be provided as part of the CEMP for the Scheme. All road classifications/names and key settlements should be clearly annotated.</p> <p>The LHA agrees with the principle of using DfT data and applying TEMPRO growth factor to obtain a baseline and future years traffic flows.</p> <p>Distance of ATCs to establish 85th percentile speed data from main accesses need to be approximately 200m for national speed limit roads. Normal DMRB SSD of 2.4m x 215m.</p> <p>Appropriate forward visibility splays may need to be plotted on some chosen routes where roads are narrow and include bends.</p> <p>Consideration of abnormal load access routes.</p> <p>All new cables in public highway need to be installed by a statutory undertaker and use of a Section 50 licence under the NRSW Act for installation by other companies is not acceptable.</p> <p>Some sensitive rural roads will require dilapidation surveys and road condition prior to and after heavy construction work has been undertaken.</p> <p>The area may contain several environmental weight limits. The Highway Authority encourages early consultation with the LHA to limited environmental annoyance to affected villages/residents and to ensure works programmes are not hindered.</p> <p>After the construction and during the decommissioning works the LHA will expect the applicant to thoroughly clean the public highway and any road gullies for 500m either side the primary site accesses. This obligation needs to be contained in the CTMP or secured by planning condition.</p>

Consultee/Date	Summary of Issues Raised/Agreed
Nottinghamshire County Council – Public Rights of Way Officer 2 August 2024	<p>A request was submitted for an opinion on the PRowWs that will be affected by the new 400kV substation.</p> <p>The following response was received:</p> <p>Forwarded email to Nottinghamshire County Council rights of way colleagues at Via (East Midlands) Limited who will provide a response concerning Marnham Footpath Nos. 4 and 5.</p> <p>Highlighted four Definitive Map Modification Order (DMMO) applications received for public footpaths that cross the land required to construct the Scheme. These applications are for footpaths that are not shown on the Definitive Map (the legal record of public rights of way); however, evidence has come to light (provided by the applicant) that public rights of way may exist and, if the evidence is sufficient, these paths will be added to the Definitive Map. The four paths are listed below.</p> <ul style="list-style-type: none"> • Hollowgate Lane to Dunham Road, Marnham 1088; • Polly Taylor’s road to Grassthorpe – Dunham Road 1090; • Marnham Footpath No. 5 to Grassthorpe – Dunham Road 1092; and • Hollowgate Lane, Marnham to County Road Fledborough 1098. <p>Requested that these routes be considered and incorporated into any future development. As these are historic routes, they may no longer fit within the modern landscape. There may therefore be a requirement to divert the path(s) to follow a more suitable route should public rights be found to exist.</p> <p>Noted that Common Land CL54, Sparrow Lane falls within the land required to construct the Scheme and included details of the procedures for carrying works on common Land.</p> <p>Noted that NCN Route 647 is managed by Sustrans and provided additional contact details.</p>
Nottinghamshire County Council – Public Rights of Way Officer May 2026	<p>Email exchange and a virtual meeting on 13 May 2026 to confirm any changes since previous engagement, specifically in relation to the Scheme.</p> <p>The officer confirmed the presence of five DMMO application routes located within and in the vicinity of the land required to construct the Scheme.</p>
Bassetlaw District Council August 2026	<p>In their response to the Form B consultation, BDC provided a consultation response from Nottinghamshire County Council Highways, which requested that any subsequent Section 37 application be supported by a CTMP. A CTMP will be prepared. In line with the appraisal and incorporating the measures set out in this section.</p>

Baseline

Local highway network

- 3.9.5 The extent of highway network considered within this appraisal was informed by the proposed construction route identified for material and equipment delivery to the land required to construct the Scheme and by roads which will be used by construction staff traffic. The construction route consists of Main Street, the unnamed road connecting Main Street to Fledborough, Hollowgate Lane, Polly Taylor's Road, Skegby Road and the A57 connecting to the A1 which forms part of the Strategic Road Network (SRN). The A1 and this section of the A57 also forms part of the Heavy Load Route of the National Trunk Road Network. The proposed construction route is shown in Appendix D High Marnham New Overhead Lines Drawings; Figure 3.9.1.

A57 Cliff Gate/Broad Gate

- 3.9.6 The assessed section of the A57 is a single carriageway road between Markham Moor Interchange and the junction with Main Street/Laneham Road. For most of the route, there is one lane for each direction, although there are two eastbound lanes from Markham Moor Interchange for approximately 970m. The national speed limit applies for the sections of the route between Markham Moor Interchange and 95m west of junction with A6075, reducing to a speed limit of 40mph upon entering/exiting Darlton, and a speed limit of 30mph through Darlton. The remainder of the assessed section of the A57 between Darlton and the junction with Main Street has speed limits of 40mph and 50mph. Lighting is not consistently present along the route, with the lighting mainly being present on the western section of the route on the approach to Markham Moor Interchange, and through Darlton.
- 3.9.7 The character of the road changes between being rural in nature (when it routes between settlements and is fronted by agricultural fields and farms) and more urban (when it passes through settlements). Additionally, sensitive receptors are present along the A57 which include a playground, primary school, place of worship and homes fronting the carriageway. These are shown in Appendix D High Marnham New Overhead Lines Drawings; Figure 3.9.1.

Main Street

- 3.9.8 The assessed section of Main Street is a single carriageway with one lane in each direction, catering for northbound and southbound traffic. It is subject to the national speed limit on the approach to the A57, and 40mph through Ragnall, increasing to the national speed limit to the south of Ragnall.
- 3.9.9 A footway is periodically along this route, mainly where there are settlements present. Additionally, to the south of Ragnall, there are signs warning drivers of horse riders and cyclists along this route.
- 3.9.10 During the site visit and desktop study, it was noted that residential properties are in close proximity to the carriageway, and there are numerous low Overhead Lines through Ragnall.

Road connecting Main Street and Fledborough

- 3.9.11 The assessed section of the unnamed Road between Main Street and Fledborough is a single lane rural road with no through access and is subject to the national speed limit. There are no footways along the route but verges are located on either side of the road.

Hollowgate Lane

- 3.9.12 Hollowgate Lane is a single lane catering for eastbound and westbound traffic to and from High Marnham, with evidence of vehicle encroachment onto adjacent grassed verges. The road is subject to the national speed limit on the approach to Main Street, and a 30 mph speed limit through High Marnham to the east.
- 3.9.13 The road is in a predominately rural area with residential properties and holiday parks located to the east within High Marnham. No footways are provided and a warning sign for cattle in the road ahead is located on the approach to the farm to the west of the unnamed road to Low Marnham.

Polly Taylor's Road

- 3.9.14 Polly Taylor's Road is a single carriageway with one lane in each direction, catering for eastbound and westbound traffic. It is subject to the national speed limit.
- 3.9.15 The road is within a rural area, with grassed verges located on either side of the carriageway and no footways. Warning signs for cyclists in the road ahead are provided on the westbound approach to its junction with Skegby Road.

Skegby Road

- 3.9.16 Skegby Road is a single lane road catering for northbound and southbound traffic, with evidence of vehicle encroachment onto adjacent grassed verges. The road is within a rural area, subject to the national speed limit, and no footways are provided.
- 3.9.17 The road is within a rural area with a farm and residential properties set back from the carriageway.

Public transport

- 3.9.18 Public transport in the vicinity of the land required to construct the Scheme is limited with no bus services along the assessed section of Main Street. However, along the A57 there is a bus stop approximately 60m to the east of the junction with Woodcoates Road providing a bus service for Tuxford Academy.
- 3.9.19 The closest railway station is Saxilby Station, located to the north east, and is a driving distance of 15.2km from the land required to construct the Scheme. The station is on the Sheffield-Lincoln Line and the Doncaster-Lincoln Line and is operated by Northern Trains and East Midlands Railway. The former provides a service between Lincoln and Leeds via Retford and Sheffield, and the later provides a service between Doncaster and Peterborough via Lincoln and Sleaford.

Cycling, walking and equestrian provision

- 3.9.20 Key elements of the existing walking and cycling infrastructure along the proposed construction route are as follows.
- 3.9.21 Along the A57 between Markham Moor Interchange and the junction with High Street there are footways predominantly on the eastbound side of the carriageway, although there are sections where this alternates between the eastbound and westbound side. Additionally, there is a shared use pathway on the A57 to the west of the junction with Askham Road for approximately 70m.
- 3.9.22 There is a footway present along Main Street on the northbound side of the carriageway through Ragnall. Additionally, there is a short footway along Main Street adjacent to Long Row Cottages.
- 3.9.23 NCN Route 647, which follows the former Lancashire Derbyshire and East Coast railway line, is located to the north and falls within the land required to construct the Scheme.
- 3.9.24 The PRowS in the vicinity of the land required to construct the Scheme are shown in Appendix D High Marnham New Overhead Lines Drawings: Figure 3.9.1 Traffic and Transport Proposed Construction Route. There are seven PRowS within the land required to construct the Scheme:
- Fledborough FP10 and FP12 are located to the north east.
 - Marnham FP7 is located to the east.
 - Marnham FP4 and FP5 are located to the south west.
 - Normanton On Trent FP5 and FP8 are located to the south west.
- 3.9.25 There are also 17 footpaths, one bridleway and three byways open to all traffic located 500m from the land required to construct the Scheme.
- 3.9.26 There are four DMMO application routes located within the land required to construct the Scheme and one DMMO application route located 500m from the land required to construct the Scheme.
- 3.9.27 There is the potential that PRowS will require temporary diversion and potential temporary closure depending on the works required, but permanent closures are not anticipated. The DMMOs will be treated as PRowS for the purposes of managing Scheme impacts.
- 3.9.28 The Scheme would not permanently impact or change existing highway infrastructure or PRowS. It has been assumed that temporary PRow diversions and stone roads will be removed following construction. However, discussions with the LHA could be undertaken to identify locations where it may be favourable to retain such infrastructure.

National Cycle Network Route

- 3.9.29 NCN Route 647 routes in an east-west direction to the north of the land required to construct the Scheme. It reaches Main Street from the east and splits into two routes, one traffic-free, where it crosses Main Street adjacent to the second site access on this road. The other route heads south onto Main Street and then turns onto Polly

Taylor’s Road, overlapping with the proposed construction route along these roads. This National Cycle Network Route is a 12.7km route which follows the former Lancashire, Derbyshire, and East Coast railway line. The location of this route is shown in Appendix D High Marnham New Overhead Lines Drawings; Figure 3.9.1.

Traffic flows

- 3.9.30 Annual Average Daily Traffic (AADT) flow data have been obtained from the Department for Transport (DfT) website. The traffic count locations are shown on a plan in Appendix B. The AADT flows were converted into Annual Average Weekday Traffic (AAWT) flows and 12-hour flows (07:00-19:00) by applying an appropriate factor. This factor was derived from a standard daily traffic profile from the DfT’s online road traffic statistics Table TRA0307.
- 3.9.31 The additional traffic flows data were obtained via commissioning traffic surveys. These were undertaken for a one-week period, for 24 hours between 2 July and 8 July 2024 to avoid the school summer holidays. These data were collected via Automatic Traffic Counts (ATC) on Main Street. For Polly Taylor’s Road, ATC data have been used from an adjacent development site Crabtree Lane Energy Hub (planning application reference: 24/01138/FUL) which is an identified committed development reviewed as part of the transport appraisal.
- 3.9.32 Background traffic growth is anticipated to occur between 2019 (for which existing traffic flows are available) and 2027 (when peak HGV movements are predicted to occur). To account for this growth an appropriate growth factor derived from Trip End Model Presentation Program (TEMPro) has been applied to the traffic flow data.
- 3.9.33 The resultant predicted 2027 future baseline Annual Average Weekday Traffic (AAWT) 12-hour (07:00 – 19:00hrs) flows on road links along the construction routes are shown in Table 3.9.2.
- 3.9.34 For the road connecting Main Street and Fledborough, there are no publicly available traffic counts for this road, however, it is a no through road beyond Fledborough. Therefore, this road is not expected to be significantly trafficked, and the traffic data from the Department for Transport (DfT) 802514 counter on the nearby minor road, Skegby Road, have been used to represent a worst case for this road.
- 3.9.35 For Hollowgate Lane, there are also no publicly available traffic count data. This road connects to the village of High Marnham and is accessed from Main Street and Low Marnham, which also connects to Main Street. As a worst-case, the appraisal for Hollowgate Lane has used the traffic flow data from the DfT 940737 counter on Main Street which shares similar characteristics to Hollowgate Lane.

Table 3.9.2 Future baseline traffic AAWT flows, 12hrs (7am-7pm), both directions

DfT Counter Ref.	Roads	Two-way 12h (7am-7pm) flows	
		HGVs	Total Vehicles
DfT 36590	A57 (between A1 and A6075)	384	6,533
DfT 16549	A57 (to the east of junction with Main Street)	596	8,050

DfT Counter Ref.	Roads	Two-way 12h (7am-7pm) flows	
		HGVs	Total Vehicles
DfT 940737	Main Street (south of the A57)	69	1,006
ATC 1a	Main Street (north of substation construction access)	56	1,146
ATC 1b	Main Street (south of substation construction access)	92	1,245
ATC*	Polly Taylor's Road	93	359
DfT 802514	Skegby Road	6	161

*From planning application 24/01138/FUL

- 3.9.36 As can be seen from Table 3.9.2 average weekday 12-hour (07:00 – 19:00hrs) HGV flows on the roads that form the construction route are between 6 HGVs and 596 HGVs (on the A57). Average weekday 12-hour (07:00 – 19:00hrs) total vehicle flows are between 161 and 8,050 vehicles (on the A57).

Sensitive receptors

- 3.9.37 Table 3.9.3 provides a summary of key potential sensitive receptors and their sensitivity within 150m of the construction route, three of which are located along the A57 section of the route and one along the Unnamed Road. These are all shown in Appendix D High Marnham New Overhead Lines Drawings; Figure 3.9.1.

Table 3.9.3 Key environmental receptors and sensitivity along the construction route

Receptor Type	Name	Distance from Construction Route (m)	Sensitivity of Receptor
Primary School	East Markham Primary School	Within 100m	High
Playground	Darlton Playground	Within 100m	High
Church	St Giles' Church, Darlton	Within 100m	Low
Church	St Gregory's Church Fledborough	Within 100m	Low

Collision data

- 3.9.38 The latest three-year personal injury collision data (2022-2024) were obtained from Crashmap.co.uk (Crashmap, 2025) for the roads forming the construction route.
- 3.9.39 Table 3.9.4 provides a summary of all collisions by severity for each road link and junction on the construction route. All collisions along the proposed construction route are presented in Appendix D High Marnham New Overhead Lines Drawings; Figure 3.9.1.

Table 3.9.4 Summary of total collisions by severity on road links and junctions

Location	Severity			
	Slight	Serious	Fatal	Total
A57	6	1	1	8
A57/Main Street Junction	1	0	0	1
Main Street	1	1	0	2
Total	8	2	1	11

3.9.40 The analysis of the collision data along the construction route identified the following:

- A total of 11 collisions were recorded over the three-year period (2022 to 2024) of which eight collisions (73%) resulted in 'slight' injury.
- One 'fatal' collision (9%) was recorded on the A57 east of the junction with Farm Lane.
- Two 'serious' collisions (18%) were recorded: one located on the A57 to the east of the junction with Tuxford Road, and one on Main Street to the south of the junction with Hollowgate Lane.
- No collisions involving pedestrians or cyclists were recorded.
- No collision clusters were identified.

Traffic generation

3.9.41 Table 3.9.5 below shows the estimated maximum daily traffic movements associated with construction activities.

Table 3.9.5 Peak daily indicative maximum construction vehicle movements at High Marnham

Vehicle Type	Total Vehicles	Total Movements
HGVs	6	11*
Cars/LGVs	0	0
Total	6	11*

*inclusion of one crane (arrival or departure) daily as a worst case

3.9.42 As can be seen from Table 3.9.5, it is anticipated that there will be a total of six HGVs associated with the maximum construction activity, this would equate to 11 HGVs (two-way movements).

3.9.43 For the appraisal it has been assumed as a worst case that all construction vehicle movements occur on each of the minor roads (all construction scheme accesses) to

access the Scheme. However, it is unlikely that this would occur at the same time on each road during the peak construction period.

- 3.9.44 Based on the construction programme for the Scheme, construction will commence in January 2027 and end in October 2032. Peak construction traffic (11 HGV movements) is anticipated to occur over a four-month period in 2027 during the commencement of works.

Committed Developments

- 3.9.45 Committed developments identified within the Traffic and Transport study area included within the cumulative impact assessment are set out Table 3.9.6 and were considered as all the following criteria are met:
- Construction or operational traffic route coincide with the Scheme's construction traffic route;
 - Construction or operational traffic trips generated will occur during the peak construction period of the Scheme (2027).

Potential Construction Impacts

- 3.9.46 The peak daily (7am-7pm) construction activity for the Scheme is anticipated to occur over a four-month period during 2027. Table 3.9.7 presents the predicted increase in HGV and total traffic on road links that form the proposed construction routes as a result of this activity.
- 3.9.47 An assessment has been undertaken on the potential construction impacts of the Scheme when combined with other committed developments to represent the peak daily worst-case on all roads forming the proposed construction route. It was identified that this would occur over a one-month period within 2027.
- 3.9.48 Table 3.9.7 presents the future baseline traffic flows on all road links forming the proposed construction route derived from applying TEMPro growth factors and Table 3.9.8 identifies the combined flows associated with the Scheme and other committed developments. The increase in these combined total and HGV traffic flows and associated percentage increase against the future baseline has been presented.

Table 3.9.6 Short-List of committed developments included within the Traffic and Transport assessment

Reference	Name of Committed Development	Status	Construction Route Overlap	Description of the Committed Development	Traffic Included in Assessment
1	One Earth Solar Project (planning ref: 23/02003/CONSUL)	No Objection	A57 Main Street	Development Consent for the One Earth Solar Project	Construction trips - Development commencement anticipated in 2027 (92 HGVs, 289 Cars/LGVs on A57, 23 HGVs, 17 Cars/LGVs on Main Street)
2	Land At High Marnham Power Station Power Station Access Fledborough Road High Marnham Nottinghamshire (planning ref: 24/00033/FUL)	Granted	A57 Main Street	Construction and Operation of Additional Plant for Electrolytic Green Hydrogen Production and Associated Works	Operational trips - Assumed completion in 2024 and therefore operational by 2026 (40 HGVs, 24 Cars/LGVs)
3	Crabtree Lane Energy Hub Land East Crabtree Lane And Polly Taylor's Road Skegby (planning ref: 24/01138/FUL)	Granted	A57 Main Street Polly Taylor's Road	Battery Energy Storage System, Substation, Associated Infrastructure and Works	Construction trips – construction routing overlaps with the Scheme, although commencement date unknown, included to assess a worst case scenario (12 HGVs, 60 Cars/LGVs)
4	Land Adjacent To High Marnham Power Station Power Station Access Fledborough Road High Marnham Nottinghamshire (planning ref: 25/01302/FUL)	Granted	A57 Main Street	The Scheme is separate to this committed development, however, it sits within the same Project as part of the 'Great Grid Upgrade', which aims to provide additional resilience within the electricity network.	Construction trips – proposed construction period September 2026 – December 2030, peak construction anticipated to occur in 2027. (132 HGVs, 100 Cars/LGVs)

Table 3.9.7 Predicted increase from construction traffic against 2027 future baseline flows

DfT Counter/ ATC Ref.	Road	2027 Future Baseline 12 hr Flows (07:00 – 19:00hrs)		Construction Traffic Movements, per Day			% Increase in 12hr Flows (07:00 – 19:00hrs)		Road Sensitivity
		HGVs	Total	HGVs	Cars/Vans	Total	HGV	Total	
36590	A57	384	6,533	11	0	11	3%	0%	Not Sensitive
16549	A57	596	8,050	11	0	11	2%	0%	Not Sensitive
940737	Main Street	69	1,006	11	0	11	16%	1%	Not Sensitive
ATC 1a	Main Street	56	1,146	11	0	11	20%	1%	Not Sensitive
ATC 1b	Main Street	92	1,245	11	0	11	12%	1%	Not Sensitive
ATC*	Polly Taylor's Road	93	359	11	0	11	12%	3%	Not Sensitive
802514	Skegby Road	6	161	11	0	11	180%	7%	Not Sensitive
As 940737	Unnamed road	6	161	11	0	11	180%	7%	Not Sensitive
As 802514	Hollowgate Lane	69	1,006	11	0	11	16%	1%	Not Sensitive

*From planning application 24/01138/FUL

Table 3.9.8 Predicted increase from Scheme construction traffic and committed developments against 2027 future baseline flows

DfT Counter /ATC Ref	Road	2027 Future Baseline 12 hr Flows (07:00 – 19:00hrs)		Scheme and Committed Development Construction Traffic Movements, per Day			% Increase in 12hr Flows (07:00 – 19:00hrs)		Road Sensitivity
		HGVs	Total	HGVs	Cars/Vans	Total	HGV	Total	
36590	A57	384	6,533	287	473	749	75%	12%	Not Sensitive
16549	A57	596	8,050	287	473	749	48%	9%	Not Sensitive
940737	Main Street	69	1,006	218	201	408	316%	42%	Not Sensitive
ATC 1a	Main Street	56	1,146	218	201	408	387%	37%	Not Sensitive
ATC 1b	Main Street	92	1,245	218	201	408	237%	34%	Not Sensitive
ATC*	Polly Taylor's Road	93	359	23	60	83	25%	23%	Not Sensitive
802514	Skegby Road	6	161	11	0	11	180%	7%	Not Sensitive
As 940737	Unnamed road	6	161	11	0	11	180%	7%	Not Sensitive
As 802514	Hollowgate Lane	69	1,006	11	0	11	16%	1%	Not Sensitive

*From planning application 24/01138/FUL

- 3.9.49 It was identified that the predicted increase in total construction traffic movements on the A57 (west of Darlton) and Main Street exceed the 30% threshold increase for non-sensitive roads when compared with the future baseline as recommended in the Institute of Environmental Management and Assessment (IEMA) (2023) guidance. In addition, all roads, except for Polly Taylor's Road and Hollowgate Lane, exceed the 30% threshold increase in HGV construction movements when compared with the future baseline. As such, an appraisal of potential residual impacts on existing and future road users on potential receptors has been undertaken on the A57, Main Street, the unnamed road (between Main Street to Fledborough) and Skegby Road. No significant impacts are expected on Polly Taylor's Road or Hollowgate Lane.
- 3.9.50 The assessment of residual impacts assumes that all embedded (design measures) and standard practice measures, such as detailed within Table 3.9.9 are in place before assessing the effects. This is in accordance with guidance on preparing a proportional assessment (IEMA, 2023).

A57

- 3.9.51 The A57 is part of the SRN connecting to the A1 and is designated as a Heavy Load Route as part of the National Trunk Road Network with minimal sensitive resources acting as trip attractors within the 150m Study area along the construction route. As such, the A57 in general has been identified as not sensitive.
- 3.9.52 On the A57 there will be a total increase from future baseline of 12% which is well below the IEMA 30% threshold and equates to an additional 62 vehicle movements an hour, which is one vehicle movement every minute. However, it is anticipated that there will be a maximum increase of 287 HGV movements against the future baseline (75%). This is 24 HGV movements per hour, equating to one HGV movement every two and a half minutes. In general, there are negligible sensitive receptors along the construction route on the A57 and therefore the level of impact would be short-term, temporary, and is considered **slight** and **Not Significant**.
- 3.9.53 It is noted that East Markham Primary School and Darlton playground are set back to the south of the construction route along the A57 and accessed via an adjoining road as shown on the plan in Appendix D New Overhead Lines Drawings, Figure 3.9.1 Traffic and Transport Proposed Construction Route. At these locations on the construction route there may be sensitive receptors crossing the A57, although it is noted that the main residential area near the school is south of the A57 and there are a small number of residential properties north of the A57 near the playground. An Information Pack will be prepared as part of mitigation (to be included in a CEMP) as detailed in Table 3.9.9. This will highlight to construction drivers the need to be vigilant when travelling along the A57 particularly at these two locations where there is potential for cyclists and pedestrians to be crossing the road. In addition, temporary warning signs are to be provided on the A57 approaches to these locations. With this mitigation provided, the level of impact is considered **slight** and **Not Significant**.

Main Street

- 3.9.54 Main Street is to the south of the A57 and will be used to provide access during construction. It is predominantly rural in nature and is fronted by agricultural fields and farms with a small number of residential properties within Ragnall. The road is

deemed not sensitive as there are no sensitive receptors along Main Street. Although NCN Route 647 is located along a short section of this road, between the unnamed road leading to Fledborough and Polly Taylor's Road, the route itself is not considered a sensitive receptor, but cyclists are considered vulnerable road users and in this short section there may be a higher number of cyclists present. Existing warning signs of cyclists in the road ahead have been provided to warn motorists in advance of the cycle route crossing and joining Main Road. An Information Pack will be prepared as part of mitigation (to be set out in a CEMP) as detailed in Table 3.9.9. This will highlight to construction drivers the need to be vigilant when approaching the cycle route and its connections to Main Street.

- 3.9.55 While the projected increase in HGV traffic is large, it must be seen in the context of the future traffic baseline on Main Street which is notably low (56-92 HGV movements). During the peak construction activity over the 12-hour period (07:00-19:00hrs), it is anticipated that there will be a maximum increase of 218 HGVs (237%-387%) on Main Street, equating to 19 HGV movements per hour. This would only be one HGV movement every three minutes. The increase in total vehicles between 34%-42%, just over the 30% threshold for the three locations assessed on Main Street. No significant existing congestion has been identified along Main Street.
- 3.9.56 Therefore, based on the above, the potential effects on Main Street along the proposed construction route will be short-term and temporary in nature and is considered to be **slight** and **not significant**.

Skegby Road

- 3.9.57 Skegby Road indicates an increase of 180% HGV movements during peak activity. While the projected increase in HGV traffic is large, it must be seen in the context of the future traffic baseline on Skegby Road which is notably low (six movements). During the peak construction activity over the 12-hour period, it is anticipated that there will be a maximum of 11 HGVs movements on this road due to the Scheme, equating to one HGV per hour. The increase in total traffic due to the Scheme construction and committed development is 7% which is well below the 30% threshold.
- 3.9.58 The potential effects along the proposed construction route will be short-term and temporary in nature and are therefore considered to be **negligible** and **not significant**.

Potential Operational Impacts

- 3.9.59 During normal operation of the Scheme, it is understood that the only traffic generated would be associated with infrequent (assumption of 10 vehicles per year) repair and routine maintenance and inspection activities and a small number of operational staff. Operational traffic numbers will be dependent on any operational requirements of the Scheme. Therefore, movements are not anticipated to have a material effect on the transport network and receptors, and therefore, no further assessment will be required.

Construction Control Measures

- 3.9.60 The control measures listed in Table 3.9.9 will be applied during the construction phase of the Scheme. National Grid is committed to implementing the identified control measures to reduce or avoid any potential impacts that may occur during the construction of the Scheme. The control measures will be included in the CEMP and a constituent CTMP, and their implementation will be monitored by National Grid.

Table 3.9.9 Construction control and monitoring measures for Traffic and Transport

Potential Receptor and/or Impact	Control, Enhancement and Monitoring Measures
Site access and security	<p>Site access control:</p> <ul style="list-style-type: none"> A Traffic Marshal will be appointed to control access to and from site where required and ensure drivers have been through the site induction process. Appropriate security fencing will be established around the site including compounds, works areas and areas used for the storage of plant and machinery and hazardous substances. These will be subject to regular inspection. Where necessary, CCTV will be installed within construction areas. Remote cameras will be installed at compounds for security purposes when items of value are left, with permanent CCTV being installed at the primary compounds. Access to working areas will be restricted to approved personnel only, with the Site Supervisor to monitor and manage traffic and site visitors.
Pedestrian severance, amenity, fear and intimidation – Personnel and visitors access and safety	<ul style="list-style-type: none"> Security gates will be used to ensure that only authorised personnel and deliveries can enter and will remain closed at all other times on access to the Construction (Design and Management) Regulations CDM work area (gates within the site may remain open). Safe pedestrian access routes between car parking locations, access points, work areas, site offices and welfare facilities will be provided.

Potential Receptor and/or Impact	Control, Enhancement and Monitoring Measures
	<ul style="list-style-type: none"> Where pedestrian and vehicle routes interact, appropriate crossing points and segregation will be provided. Personnel requiring access to the site for reasons other than carrying out physical construction work will be treated as a site visitor. All visitors will be granted access by appointment only and must in all cases be authorised by a senior manager at the site and be required to attend a site induction session to maintain health and safety. All visitors, except for authorised collection or delivery drivers, shall always be the responsibility of the permanent pass holder whilst on-site and must sign in at security. Visitors must always use the pedestrian walkways and access gates provided for safe and easy access to site office. Compounds will be segregated into PPE and non-PPE areas. Personnel will not be allowed access into PPE areas without the appropriate equipment as per construction standards.
HGV environmental effects including road users, accidents and safety, resident, and air/noise quality	<p>HGV booking</p> <ul style="list-style-type: none"> A booking system (Delivery Management System) will be used to ensure deliveries to the site will be spread across the whole day where possible. Delivery vehicle dwell times will be kept to a minimum; vehicle engines will also be turned off to reduce noise and air pollution. Appropriate traffic management including clear and visible construction works signage will be implemented and used when/where required; this will be submitted by the Contractor prior to commencement, as requested by BDC. Banksman will also be in position as and when required. <p>HGV emissions</p> <ul style="list-style-type: none"> All vehicles used in the construction of the Scheme will be to Euro standard V class or better.
Seamless flow of movement, together with safety and security on-site	<p>Traffic Marshal:</p> <ul style="list-style-type: none"> Trained personnel (Traffic Marshal) will be in place at key locations when necessary, during the construction of the Scheme.
Parking and loading	<ul style="list-style-type: none"> Appropriate loading/unloading and parking areas for construction vehicles will be designated to avoid the need for parking or waiting on the highway. Upon arrival to the site compound, all deliveries will report to the coordinated delivery contact. This will be communicated to all suppliers and subcontractors at their site induction for all new drivers.

Potential Receptor and/or Impact	Control, Enhancement and Monitoring Measures
	<ul style="list-style-type: none"> • Whilst on-site, the delivery operation will be controlled by a trained Traffic Marshal, from the point of guiding a vehicle to its designated off-loading area to guiding the vehicle back onto the Local Road Network. Both the Traffic Marshal and drivers will follow relevant safety procedures and operate the same signalling systems. • Adequate parking will be provided to ensure that the safety and efficient operation of the public highway is not reduced. At no time will construction personnel, including Contractors and suppliers, be authorised to park outside the land required to construct the Scheme, including on the public highway, unless prior permission has been granted by either the relevant landowner or the local highway authority (LHA). • On-site parking will be managed to ensure safety of all personnel. Parking terms and regulations will be clearly displayed using signage displayed in the immediate vicinity of the parking provision.
Road safety	<ul style="list-style-type: none"> • Suitable space within the site will be provided for all vehicles to park, unload and manoeuvre, therefore enabling all egressing vehicles to exit onto the access road in a forward-facing direction. Reversing onto any public highway will not be permitted. • A 'Near Miss' reporting system will be implemented for all highways incidents. The Contractor will ensure that all accidents and near misses are recorded within this system and that drivers are instructed to report all issues recorded through the system. Any accidents or near misses involving vehicles travelling to/from the site will be recorded, investigated, and reported internally and to the client referring specific incidents to the LHA as deemed necessary. • The Contractor will retain records of all incidents (e.g. speeding and driver hours) and submit to the relevant authorities upon request. If emerging issues are identified, the Contractor and the LHA will initiate discussions with relevant stakeholders.
Ensuring the construction routes are adequate for AIL deliveries	<p>AIL deliveries</p> <ul style="list-style-type: none"> • Constraints along the construction route have been identified, which includes constrained widths, sharp turns, conflict with street furniture, and constrained junction geometry. Based on the outcome of the route appraisal, Swept Path Analysis at each of the 'pinch points' to inform mitigation measures that may be required. • All components have been identified as transportable using the Local Road Network. Depending on a type and size of the

Potential Receptor and/or Impact	Control, Enhancement and Monitoring Measures
	<p>equipment component, the following measures for abnormal loads could be required:</p> <ul style="list-style-type: none"> — marker boards; — escort vehicles; — police escort; — appropriate notice; — speed restriction; and — additional lights. <ul style="list-style-type: none"> • Discussions with LHA/National Highways to be undertaken regarding AIL Strategy and required permissions.
Road condition – ensure that the surface of the highway altered for the Scheme remains in good repair and safe for the public traffic using the highway	<p>Road condition surveys</p> <ul style="list-style-type: none"> • Each access point to the Local Road Network by any access road or track used by the Scheme will be inspected. These inspections shall take place before first use, regularly during use and following final use, to ensure that the surface of the highway altered for the Scheme remains in good repair and safe for the public traffic using the highway. Any repairs that are required to maintain the altered highway throughout the construction phase will be carried out in a timely manner. • Regular inspections will be carried out in all locations where the works corridor passes over a public highway, private road, or PRoW. These will be recorded, and remedial action will be taken to remove any dirt and debris resulting from construction operations. Any damage to the surface will be scheduled for repair at the earliest opportunity. • Wheel washing/dry rumble • When leaving the CDM construction site, all vehicles exiting the site will be checked and cleaned if required prior to using the Local Road Network. If required, a road sweeper will be utilised to further ensure that the Local Road Network remains safe and clear of debris.
Accidents and safety	<p>Tipper covers</p> <ul style="list-style-type: none"> • It is expected that all tippers importing or removing loose material will be covered if required and it is the responsibility of the Traffic Marshal to ensure vehicles do not leave site without the appropriate covers. Any vehicles arriving to site without appropriate covers will be reported immediately to ensure the supplier is informed and appropriate action taken.
Ensuring vehicles comply to minimise impact on road users and the public	<p>Vehicle identification</p> <ul style="list-style-type: none"> • Vehicles dedicated to the Scheme long-term, i.e. staff cars, Site Supervisor commercial LGVs, will also be inducted and their registrations stored on record.

Potential Receptor and/or Impact	Control, Enhancement and Monitoring Measures
	<ul style="list-style-type: none"> • If the public have any issues with the vehicles travelling to/from site, they will be able to report this to a free phone line, which will then be investigated. <p>Information packs</p> <ul style="list-style-type: none"> • Information packs will be provided to all Contractors, which will form part of the contractual agreement between the Contractors and National Grid. The information pack may contain the details of the following CTMP requirements: <ul style="list-style-type: none"> — site induction; — HGV restrictions; — construction routes; — non-compliance guidance; — complaints procedure; — CTMP protocols and indications required for all Contractors including a code of good practice; — guidance on standard communication procedures between Contractors and site; and — CTMP contacts (emergency and non-emergency). • Information packs and communications details will be shared with relevant local planning authorities (LPAs) and LHAs ahead of any construction works. • Information packs to provide details on potential hazard locations along construction route, e.g. locations where vulnerable road users will be on or crossing the construction route. • All construction HGVs will adhere to the designated construction traffic routes to and from the site. • Appropriate road signs warning all road users of the site access/egress and of construction HGVs turning in and out of the site will be provided. Appropriate signage will be provided where PRowS connect to the designated construction routes and at connections to adjoining PRowS to warn users of an increased presence of HGVs on the local highway network. • Appropriate signage will also be provided where PRowS are temporarily closed/diverted. • Appropriate warning signage of pedestrians and cyclists in the road ahead or crossing the road ahead to be provided where required.
Sustainable travel – manage and improve the way employees travel to, from, and during work	<p>Staff Travel Plan</p> <ul style="list-style-type: none"> • Based on the construction personnel numbers, it is not considered necessary to produce a travel plan for the Scheme.

Potential Receptor and/or Impact	Control, Enhancement and Monitoring Measures
	<ul style="list-style-type: none"> Notwithstanding the above, if deemed possible and appropriate, construction teams will be transported to the site from local accommodation or agreed pick-up points in personnel transport vans. These vans will only be parked on-site within the defined working areas, and only while construction staff are on-site during work hours. Outside working hours there will be no parking of personnel vans on-site.

Operational Control Measures

- 3.9.61 No operational control measures have been identified for Traffic and Transport within the Scheme or study area.

3.10 Agriculture and Soils

Introduction

- 3.10.1 This section details the Agriculture and Soils baseline conditions and the environmental appraisal of the potential Agriculture and Soils impacts associated with the construction and operation of the Scheme. Where potential environmental impacts are identified, relevant control measures are set out to reduce or avoid these impacts.
- 3.10.2 This section should be read in conjunction with Appendix A High Marnham New Overhead Lines Glossary and Abbreviations; Appendix B Methodology; Appendix D High Marnham New Overhead Lines Drawings; Appendix F High Marnham New Overhead Lines Agricultural Land Classification (ALC) Report; and Appendix G High Marnham New Overhead Lines Outline Soil Management Plan.

Study area

- 3.10.3 The study area comprises approximately 78.7ha of agricultural land, 9.9ha of non-agricultural land and 7.1ha of un-surveyed land for a total area of 95.7ha.

Consultation

- 3.10.4 In their response to the Form B consultation, BDC highlighted that, despite an EIA not being required, sufficient agricultural information be provided to support the assessment of environmental effects. This section sets out the appraisal of impacts related to agriculture and soils, thereby providing the requested information.

Baseline

Land use

- 3.10.5 Aerial imagery indicates that the land use across the land required to construct the Scheme is predominantly arable agriculture with hedgerows forming field boundaries. This was confirmed during the site visit between the third and fifth of March, 2025 by Arcadis Consulting Limited (UK) in line with the Guide to assessing development proposals on agricultural land from Natural England (Natural England, 2021) and Professional Competency in Soil Science No. 2 – Agricultural Land Classification – England and Wales (British Society of Soil Science, 2018).

Topography and relief

- 3.10.6 Available OS maps indicate that the land from the north to south east of the Scheme ranges between 6 and 11m AOD, sloping upwards towards the south west at 27m AOD.

Flooding

- 3.10.7 Government long-term flooding risk service information (Environment Agency, 2024) was consulted to assess the flood risk within the land required to construct the Scheme. Areas of low, medium and high flood risk have an annual probability of flooding of 0.1-1%, 1-3.3% and >3.3%, respectively.
- 3.10.8 The mapping indicates that the majority of the land required to construct the Scheme lies within Flood Zone 1, defined as land with a low probability of flooding from rivers and the sea (less than 0.1% annual probability). However, parts of the eastern extent of the land required to construct the Scheme, within agricultural fields adjoining the River Trent, extend into Flood Zones 2 and 3, where the annual probability of flooding is greater than 1% (1 in 100) or higher.
- 3.10.9 Agricultural fields north of the treeline bounding the northern edge of the existing substation are mapped as being at low risk of fluvial flooding, consistent with their location within Flood Zone 1. A small area bounding a drainage ditch in the fields east of Skegby is mapped as being at high risk of flooding.
- 3.10.10 Flood risk from surface water and small watercourses varies across the land required to construct the Scheme from low to high. Higher-risk areas are generally associated with watercourses and in the fields immediately north of the treeline bounding the northern edge of the existing substation and land surrounding Polly Taylor's Road. The remainder of the Scheme has very low flood risk.
- 3.10.11 In line with the Water Resources and Flood Risk baseline, the Scheme is generally at very low risk of surface water flooding (less than 0.1% annual probability), with localised areas of medium (1–3.3%) and high (>3.3%) risk present, particularly along the eastern boundary and in low-lying areas adjacent to drainage features.
- 3.10.12 The wider floodplain associated with the River Trent is located to the north, east and south of the Scheme, although the majority of the Scheme footprint remains outside these higher-risk areas.

Geology

- 3.10.13 The BGS Geology Viewer (BGS, 2025) indicates that bedrock geology within the land required to construct the Scheme is mapped as the Mercia Mudstone Group. This is described as Triassic sedimentary mudstone bedrock of fluvial, lacustrine and marine origin, formed between approximately 247.1 and 201.3 million years ago.
- 3.10.14 Superficial deposits are mapped across parts of the land required to construct the Scheme. The Holme Pierrepont Sand and Gravel Member is mapped across parts of the north east of the land required to construct the Scheme towards Fledborough. These deposits comprise Quaternary-age sand and gravel of fluvial origin formed between 11,800 and 126,000 years ago.
- 3.10.15 Alluvium is mapped within fields adjoining the River Trent, with a small section extending east towards Skegby along watercourses at field margins. These deposits comprise Quaternary-age clay, silt, sand and gravel of fluvial origin.

Previous Agricultural Land Classification (ALC)

- 3.10.16 Predictive Agricultural Land Classification (ALC) mapping (Defra, 2026) at a scale of 1:250,000, indicates that land within the land required to construct the Scheme is predominantly mapped as Subgrade 3a, with smaller areas of Grade 2, Subgrade 3b, and small, localised areas of non-agricultural and urban land. Grade 2 (very good quality) and Subgrade 3a (good quality) are classified as Best and Most Versatile (BMV) agricultural land, whereas Subgrade 3b (moderate quality) is not.
- 3.10.17 Land to the north, east, south and south west of the existing substation, extending towards High Marnham, is predominantly mapped as Subgrade 3a, with some localised unclassified areas. Land extending north east from the existing substation towards the land required to construct the Scheme near Fledborough is predominantly mapped as Grade 2. Fields adjoining the River Trent are mapped as Subgrade 3b.
- 3.10.18 Predictive ALC Mapping for the Scheme is shown in Appendix D High Marnham New Overhead Lines Drawings; Figure 3.10.1.

Previous soil survey data

- 3.10.19 Available national soil survey information (Cranfield, 2026) indicates that soils within the land required to construct the Scheme are predominantly characterised by the Whimple 3 Association across land north, south and east of the overhead line corridor around High Marnham. This association comprises deep reddish fine loamy or fine silty over clayey soils, developed in drift over Permo-Triassic and Carboniferous reddish mudstone, with slowly permeable subsoils and slight seasonal waterlogging.
- 3.10.20 Soils within the land required to construct the Scheme are characterised by the Dunnington Heath Association. This association comprises deep red loam to clay. Reddish coarse and fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging.
- 3.10.21 Soils towards the north east of the land required to construct the Scheme, extending towards Fledborough, are characterised by the Blackwood Association. This association comprises seasonally wet, deep permeable sandy and coarse loamy soils developed in glaciofluvial drift. These soils are naturally wet, very acid and of very low fertility, with groundwater locally controlled by ditches.

- 3.10.22 Fields adjoining the River Trent are characterised by the Fladbury 2 Association. This association comprises seasonally wet, stoneless clayey soils, variably affected by groundwater, with some sandy subsoils. These soils are developed in river alluvium and are associated with flat land, naturally high groundwater and flood risk.
- 3.10.23 Small, localised pockets of the Worcester Association are present within the south western part of the land required to construct the Scheme. This association comprises slowly permeable non-calcareous and calcareous reddish clayey soils developed over Permo-Triassic mudstone, locally with fine loamy soils over clay where superficial drift is present. These soils are typically seasonally waterlogged due to slowly permeable subsoils and have impeded drainage with seasonal waterlogging.
- 3.10.24 Soils towards the north west and west of the land required to construct the Scheme, are characterised by Compton Association. This association comprises seasonally wet deep clay. Stoneless mostly reddish clayey soils affected by groundwater.
- 3.10.25 National Soil Associations Mapping for the Scheme is shown in Appendix D High Marnham New Overhead Lines Drawings; Figure 3.10.2.

Climatological data

- 3.10.26 The climate data required for the ALC assessment are provided for 5km intersections of the British National Grid by the Meteorological Office. Interpolated data for the land required to construct the Scheme are set out in Table 3.10.1. The climate data cover the centre of the land required to construct the Scheme.

Table 3.10.1 Climatological data of the land required to construct the Scheme

Parameter	Value
British National Grid Reference	SK 805 707
Altitude (m)	12
Average annual rainfall (AAR) (mm)	570
Accumulated temperature (AT0) (day degrees)	1421
Moisture deficit for wheat (mm)	117
Moisture deficit for potatoes (mm)	112
Field Capacity Days (FCD)	112

Agricultural Land Classification

- 3.10.27 ALC surveys were undertaken between the third and fifth of March, 2025. Surveys were conducted across the majority of the land required to construct the Scheme and are reported in Appendix F: High Marnham New Overhead Lines Agricultural Land Classification Report. Three small areas, two extending directly north of the existing substation and one in south western corner of the land required to construct the Scheme were not surveyed as they were not within the boundary at the time of survey. The ALC grade distribution for these areas has been assessed using

professional judgement and surrounding detailed ALC surveyed data. A soil survey would be required post-consent / pre-construction of the Scheme in the areas where a detailed ALC survey was not undertaken, ground conditions and access permitting, as shown in Appendix D High Marnham New Overhead Lines Drawings; Figure 3.10.3, to inform a Soil Management Plan (SMP).

- 3.10.28 The ALC surveys identified variable, dominantly acidic loamy and clayey soils across the surveyed area. The main soil types comprise deep clay, medium to heavy clay loam over clay, silty clay loam over clay and more silty soils, including silt clay, silty clay loam and silt loam.
- 3.10.29 Soil texture varies across the Scheme, with heavier clayey soils generally recorded around the existing High Marnham substation, the southern part of the surveyed area and land adjoining the River Trent, while more silty soils are present locally to the west, north west and north east.
- 3.10.30 The southern part of the surveyed area, covered by auger points HM1-HM39, is characterised by generally acidic medium to heavy clay loam over clay and deep clay, with localised pockets of sandy clay loam, silty clay loam and silty clay. It is also assumed that the small, unsurveyed areas to the south west of the land required to construct the Scheme has the same characteristics.
- 3.10.31 The area extending west from the existing High Marnham substation, covered by auger points HM68-HM80, is dominated by generally acidic deep clay and clay loam close to the existing High Marnham substation, becoming siltier to the west.
- 3.10.32 Land adjoining the River Trent, covered by auger points HM40-HM48, is characterised by generally acidic deep clay soils.
- 3.10.33 The area covered by auger points HM47-HM55, is characterised by generally acidic medium silt loam in the south east, becoming more silty clay loam and silty clay to the north west with localised pockets of sandy clay loam.
- 3.10.34 The area covered by auger points HM56-HM67, is characterised by generally acidic silty clay loam over clay close to the existing High Marnham substation, becoming deep clay further north.
- 3.10.35 The un-surveyed area extending north east from the existing High Marnham substation is expected, based on professional judgement and adjacent survey findings, to comprise silty clay loam over clay close to the substation, becoming siltier towards the north east, including silt loam and silty clay.
- 3.10.36 Where possible, ALC grades for this area have been inferred.
- 3.10.37 The ALC surveys revealed the land within the land required to construct the Scheme to be dominated by Subgrade 3a and Grade 2, with areas of Grade 3b and non-agricultural land:
 - ALC Grade 2 (BMV land) accounts for 25.6ha (26.6%);
 - ALC Grade 3a (BMV land) accounts for 41.5ha (43.1%);
 - ALC Grade 3b (non-BMV land) accounts for 12.6ha (12.6%);
 - Urban (non-agricultural) accounts for 9.9ha (10.3%); and
 - Not surveyed 7.1ha (7.4%).

- 3.10.38 Therefore, approximately 67.1ha (approximately 69.7%) of the land required to construct the Scheme comprises BMV agricultural land, consisting of Grade 2 and Subgrade 3a (very good and good quality agricultural land). The remaining 29.2ha (approximately 30.3%), comprises Subgrade 3b (moderate quality agricultural land), non-agricultural land and land that has not been surveyed, including land associated with the existing High Marnham substation.

Potential Construction and Operational Impacts

- 3.10.39 Construction of the Scheme has the potential to affect agricultural land quality and soil resources. Potential impacts include topsoil and subsoil stripping, soil compaction and structural degradation from construction traffic, soil profile mixing, drainage disruption, and localised loss of agricultural land associated with infrastructure.
- 3.10.40 During operation, land taken temporarily will have been reinstated and returned to agricultural use, whilst land taken permanently will remain out of agricultural use. As the construction phase will account for both the temporary and permanent losses, there would be no further permanent losses of agricultural land as a result of operation.
- 3.10.41 Periodic maintenance activities (during operation) may result in temporary disturbance to soils and agricultural land, including access for plant and machinery and vegetation management beneath Overhead Lines. An Outline Soil Management Plan (SMP) has been prepared and is presented in Appendix G.
- 3.10.42 A detailed SMP will be prepared post-planning consent and implemented during construction and operation. The SMP will be developed in accordance with the Defra Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (2009) and the Institute of Quarrying (IQ) Good Practice Guide for Handling Soils (2021).
- 3.10.43 Following implementation of the control measures set out below, there will be no residual impacts on agriculture and soils.

Construction and Operational Control Measures

- 3.10.44 The control measures listed in Table 3.10.2 will be applied during the construction and maintenance (during operation) phases of the Scheme. National Grid is committed to implementing the identified control measures to reduce or avoid any potential impacts that may occur during the construction of the Scheme. The control measures will be included in the CEMP prior to the construction, and their implementation will be monitored by National Grid.

Table 3.10.2 Construction and operational control and monitoring measures for Agriculture and Soils

Potential Receptor and/or Impact	Control, Enhancement and Monitoring Measures
Agricultural land quality and soil resources	<p>A detailed SMP will be prepared post-planning consent and implemented during construction and operation. The SMP will be developed in accordance with the Defra Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (2009) and the Institute of Quarrying (IQ) Good Practice Guide for Handling Soils (2021). The SMP will set out a framework for soil resource management, including:</p> <ul style="list-style-type: none"> • identification and mapping of soil resources; • specification of soil stripping depths and methodologies; • segregation and storage of topsoil and subsoil; • measures to avoid handling soils in unsuitable (e.g. wet) conditions; • prevention of compaction, traffic damage and soil contamination; • design and management of soil stockpiles, including duration and protection; • reinstatement of soil profiles, including decompaction and restoration of drainage; • aftercare and monitoring to ensure recovery of soil function and agricultural capability.

3.11 Socio-economics and Human Health

Introduction

- 3.11.1 This section details the Socioeconomics and Human Health baseline conditions and the environmental appraisal of the potential Socioeconomics and Human Health impacts associated with the construction and operation of the elements of the land required to construct the Scheme. Where potential environmental impacts are identified, relevant control measures are prescribed to reduce or avoid these impacts.
- 3.11.2 This section should be read in conjunction with Section 3.3 Landscape and Visual; Section 3.5 Air Quality; Section 3.6 Water Resources and Flood Risk; Section 3.7 Land and Ground Conditions; Section 3.8 Noise and Vibration; Section 3.9 Traffic and Transport; Appendix A High Marnham New Overhead Lines Glossary and Abbreviations; and Appendix B Methodology.

Study Area

- 3.11.3
- The study area for Socioeconomics and Human Health comprises:
- Socioeconomics: This assessment is based on the local planning authority the Scheme falls within, Bassetlaw District Council;
 - Community facilities: This assessment is based on a 500m buffer from the land required to construct the Scheme;
 - Business, recreation and tourism assets: This assessment is based on a 500m buffer from the land required to construct the Scheme; and
 - Human health: This assessment is based on the local planning authority the Scheme falls within, Bassetlaw District Council.

Consultation

- 3.11.4
- Table 3.11.1 provides a summary of the issues raised and agreed during consultation with respect to socioeconomics and how they have been addressed.

Table 3.11.1 Summary of consultation

Consultee/Date	Summary of Issues Raised/Agreed
Nottinghamshire County Council – Public Rights of Way Officer 2 August 2024	<p>A request was submitted for an opinion on the PRowWs that will be affected by the Scheme.</p> <p>The following response was received:</p> <p>Forwarded email to Nottinghamshire County Council rights of way colleagues at Via (East Midlands) Limited who will provide a response concerning Marnham Footpath Nos. 4 and 5.</p> <p>Highlighted four DMMO applications received for public footpaths that cross the land required to construct the Scheme. These applications are for footpaths that are not shown on the Definitive Map (the legal record of public rights of way); however, evidence has come to light (provided by the applicant) that public rights of way may exist and, if the evidence is sufficient, these paths will be added to the Definitive Map. The four paths are listed below.</p> <p>Hollowgate Lane to Dunham Road, Marnham 1088;</p> <p>Polly Taylor’s road to Grassthorne – Dunham Road 1090;</p> <p>Marnham Footpath No. 5 to Grassthorne – Dunham Road 1092; and</p> <p>Hollowgate Lane, Marnham to County Road Fledborough 1098.</p> <p>Requested that these routes be considered and incorporated into any future development. As these are historic routes, they may no longer fit within the modern landscape. There may therefore be a requirement to divert the path(s) to follow a more suitable route should public rights be found to exist.</p> <p>Noted that Common Land CL54, Sparrow Lane falls within the land required to construct the Scheme and included details of the procedures for carrying works on Common Land.</p>

Consultee/Date	Summary of Issues Raised/Agreed
	Noted that NCN Route 647 is managed by Sustrans and provided additional contact details.
Nottinghamshire County Council – Public Rights of Way Officer May 2026 (Section 37 specific)	Email exchange and a virtual meeting on 13 May 2026 to confirm any changes since previous engagement. Confirmed the presence of five DMMO application routes located within and in the vicinity of the Scheme.

Baseline

Socioeconomics

- 3.11.5 Bassetlaw District has 124,937 residents, 60.0% of which were aged 16 to 64 (i.e. of working age), which is marginally lower than the East Midlands (62.1%), and Great Britain (62.8%) averages (Nomis, 2026).
- 3.11.6 The proportion of the working age population that was economically active between January 2025 to December 2025 in Bassetlaw District (75.7%) is slightly lower than the regional (78.6%) and national (79.2%) averages. Job density for Bassetlaw in 2024 (0.79) is in line with the East Midlands (0.79), but lower than the national average (0.85), indicating a lower availability of employment opportunities in the region.
- 3.11.7 There were estimated to be 55,000 jobs available in Bassetlaw District in 2024, of which 67.3% were full-time and 30.9% were part-time. The dominant industries in the District are ‘manufacturing’ (16.4%), ‘administrative and support service activities’ (16.4%), ‘wholesale and retail trade; repair of motor vehicles and motorcycles’ (12.7%) and ‘human health and social work activities’ (12.7%). The proportion of employees in ‘manufacturing’ (16.4%) in the District is more than double the national average (7.3%). This can also be seen in the ‘administrative and support service activities’ (16.4%), which is double the national average (8.6%).
- 3.11.8 The Indices of Multiple Deprivation (IMD) (Ministry of Housing, Communities and Local Government, 2025)¹ show that Bassetlaw District is ranked 111 out of the 296 local authorities in England in 2025, indicating the District exhibits higher levels of relative deprivation when compared to the broader context of England.

Community facilities

- 3.11.9 There are no community facilities located within the land required to construct the Scheme.

¹ The IMD uses a combination of information relating to seven ‘domains’: income; employment; health deprivation and disability; education, skills and training; barriers to housing; crime; and living environment; all of which are used to create an overall score of deprivation. Deprivation is scored between 1 and 317 (representing the 317 local authorities within England), with a score of 1 being most deprived and 317 being least deprived.

- 3.11.10 St Matthews Church of England Primary School is located approximately 300m south of the land required to construct the Scheme.

Business, recreation and tourism assets

- 3.11.11 Sparrow Lane Countryside and Rights of Way (CRoW) land is situated within the land required to construct the Scheme. The CRoW land is a linear hedgerow, and it is not expected to be used for recreation, except for walking, wheeling, cycling and horse-riding.
- 3.11.12 There are a number of businesses, recreation and tourism assets located 500m from the land required to construct the Scheme. These include:
- Sparrow Lane Park, a park home estate, is located directly adjacent to the southern extent of the land required to construct the Scheme;
 - Marnham Meadows Holiday Park, a park home estate, is located approximately 150m south of the land required to construct the Scheme;
 - Trentside Caravan Park, a caravan park and park home site, is located approximately 230m south of the land required to construct the Scheme;
 - Brownlow Arms Camp Site, a caravan site, is located approximately 260m south of the land required to construct the Scheme; and
 - Marnham Lakes Fishing and Camping, an angling site and camping site, is located approximately 350m south of the land required to construct the Scheme.
- 3.11.13 There are seven PRoWs (i.e., Marnham FP4, Marnham FP5, Marnham FP7, Normanton On Trent FP7, Normanton On Trent FP8 and Fledborough FP12) (Nottinghamshire County Council, 2026), NCN Route 647 and four DMMO application routes (i.e., 1098, 1088, 1090 and 1092) located within the Scheme. There is one DMMO application route located 500m from the land required to construct the Scheme.
- 3.11.14 There are further recreational routes located 500m from the land required to construct the Scheme. These include:
- 17 footpaths, one bridleway and three byways open to all traffic; and
 - Trent Valley Way long distance walk (The Long Distance Walkers Association, 2026).

Human health

- 3.11.15 Department of Health and Social Care (2025) data show that the majority of health indicators are categorised as 'similar' in Bassetlaw District when compared to the England averages, for example life expectancy at birth (male and female); under 75 mortality rate from all causes, cardiovascular diseases and cancer. The health indicators in Bassetlaw District that are significantly worse than England are related to children and adult classified as obese or overweight, under 18s conception rate, and children living in relative and absolute low-income families.

- 3.11.16 2021 Census shows that Bassetlaw has a slightly higher number of the population with limiting long-term illness or disability (20.4% compared to the regional rate of 18.3% and national rate of 17.3%).

Potential Construction Impacts

Socio-economics

- 3.11.17 Due to the nature of the Scheme, the capital cost of the Scheme will be relatively small in scale when compared with other large scale energy developments. Drawing on experience from similar energy developments, it is anticipated that the majority of the construction expenditure will be allocated to specialist Contractors, who may not be based in the local area. Therefore, the potential residual impacts on the local economy and local employment are anticipated to be temporary negligible beneficial.

Community facilities

- 3.11.18 There are no community facilities within the land required to construct the Scheme.
- 3.11.19 St Matthews Church of England Primary School are located approximately 500m from the land required to construct the Scheme. However, the community facility is situated at a distance from the land required to construct the Scheme where no land-take or disruption to direct access is anticipated. Therefore, no impact on community facilities is anticipated during construction.

Business, recreation and tourism assets

- 3.11.20 As noted in the baseline section, Sparrow Lane CRoW land is a linear hedgerow that falls within the land required to construct the Scheme and is not expected to be used for recreational purposes, except for walking, wheeling, cycling and horse-riding. Given that access will be maintained with managed access, a temporary negligible adverse residual impact is anticipated during construction.
- 3.11.21 Sparrow Lane Park, park home estate is located directly adjacent to the land required to construct the Scheme. Given that construction access will be via Sparrow Lane, direct access of Sparrow Lane Park would not be affected during construction. There may be a potential indirect perceived impact on the business due to the potential change in the surrounding environment, as a result of construction activities. However, the financial impact of any indirect perceived impact arising from property blight falls outside the scope of the EAR, and should be the subject of separate discussions with potentially affected property owners as appropriate.
- 3.11.22 Although there are other businesses, recreation and tourism assets within 500m of the land required to construct the Scheme, they are situated at a distance from the land required to construct the Scheme with no land-take or disruption to direct access anticipated during construction. Therefore, no impacts on assets located beyond the land required to construct the Scheme are anticipated during construction.
- 3.11.23 Temporary closure and diversion are likely to be required for seven PRoWs and four DMMO application routes located within the land required to construct the Scheme, due to safety reasons during construction, where practicable. Given that diversions will be in place, adequate accessibility will be maintained during construction, a temporary low adverse residual impact is anticipated.

- 3.11.24 A small section of the NCN Route 647 also falls within the land required to construct the Scheme, where the route would be used as construction access. Provided that access will be maintained with managed access, a temporary negligible adverse residual impact is anticipated during construction.
- 3.11.25 There are a further 17 footpaths, one bridleway, three byways open to all traffic, Trent Valley Way long distance walk and one DMMO application route located within 500m of the Scheme. As these PRowS are situated beyond or at a distance from the land required to construct the Scheme, and no direct impacts are predicted, no disruption to access is anticipated. Therefore, no impact on recreational routes located beyond the land required to construct the Scheme is anticipated during construction.

Human health

- 3.11.26 There are potential construction impacts on human health from changes in wider health determinants. These comprise:
- **Employment and income:** Potential employment opportunities will be limited due to the nature of the Scheme. However, there may be benefits to the local economy arising from potential additional spending in the local area from construction workers (although noting this is likely to be limited). This may result in potential beneficial health outcomes for the local community, such as improved mental health or opportunities for social contact. Therefore, a **temporary negligible beneficial** impact is anticipated on human health associated with employment and income;
 - **Physical activity:** PRowS provide opportunities for physical activity. The construction of the Scheme is not anticipated to result in temporary and/or permanent access disruption and diversion to PRowS and DMMO application routes. Section 3.3 Landscape and Visual identified potential adverse visual effects on PRowS ranging from minor to major adverse and moderate to major adverse effect on NCN Route 647 during construction. However, the potential adverse visual effects are anticipated to be temporary in nature. Provided that relevant construction information will be provided to the public, especially PRow users, to ensure transparency and facilitate a clear understanding of the proposed works, public expectations on views of a small section of the overall PRow network are expected to be effectively managed. Therefore, a **temporary low adverse** residual impact is anticipated on human health associated with physical activity;
 - **Air quality:** The potential decrease in air quality may adversely affect the population with preexisting respiratory and cardiovascular disease. Section 3.5 Air Quality identified no residual impacts on construction dust from construction activities, including earth works, construction and trackout. Given that mitigation will be in place to reduce construction dust, the potential change in air quality due to the Scheme will be within the statutory standard, resulting in a **temporary negligible adverse** residual impact on human health associated with respiratory and cardiovascular disease;
 - **Water quality and flood risk:** Section 3.6 Water Resources and Flood Risk identified a low to negligible impact on water environment receptors following the implementation of mitigation measures. Given that mitigation will be in place to

reduce pollution and risk of flooding, the potential change due to the Scheme will be within the statutory standard, resulting in a **temporary negligible adverse** impact on human health associated with water quality and flood risk.

- **Land quality:** Section 3.7 Land and Ground Condition identified a neutral to slight adverse impact effect from potential exposure to contaminated dust and neutral effect on potential spillages following the implementation mitigation measures. These include the adoption of appropriate CEMP and Construction Phase (Health and Safety) Plan. Given that mitigation will be in place to reduce exposure to contaminated dust, and potential spillages, the potential change due to the Scheme will be within the statutory standard, resulting in a **temporary negligible adverse** impact on human health associated with exposure to contamination.
- **Noise:** Changes in noise levels from construction work and construction traffic could lead to impacts on mental wellbeing. Section 3.8 Noise and Vibration identified a potential negligible impact from construction activities and construction traffic, plant and equipment. The Noise and Vibration assessment suggests that the potential impact will be temporary and transitory in nature. A CEMP will be implemented to reduce or avoid any potential impact that may occur during the construction of the Scheme. Given that mitigation will be in place to appropriately manage and reduce construction noise levels, the potential change due to the Scheme will be within the statutory standard, resulting in a **temporary negligible adverse** impact on human health associated with noise levels; and
- **Transport mode, access and connections:** Section 3.9 Traffic and Transport identified a neutral to slight adverse residual effects from the increase in construction traffic. Given that mitigation (i.e. CTMP) will be in place to manage construction traffic, there will be a **temporary negligible adverse** impact on human health associated with access.

Potential Operational Impacts

Socio-economics

- 3.11.27 Due to the nature of the Scheme, the proposed Overhead Lines will not require any operators to be permanently on-site. Therefore, no impact is anticipated on the local economy and local employment during operation.

Community facilities

- 3.11.28 There are no community facilities within the land required to construct the Scheme. Therefore, no impact on community facilities is anticipated during operation.
- 3.11.29 St Matthews Church of England Primary School is located approximately 500m from the land required to construct the Scheme. However, it is situated at a distance from the land required to construct the Scheme, therefore, no impact is anticipated during operation.

Business, recreation and tourism assets

- 3.11.30 The overhead lines proposed as part of the Scheme will be located above the Sparrow Lane CRow. Therefore, no access disruption is anticipated, and no impact on accessibility to the CRow land is anticipated during operation.
- 3.11.31 There are businesses, recreation and tourism assets located 500m from the land required to construct the Scheme. However, they are situated at a distance from the land required to construct the Scheme, no impact is anticipated during operation. Given that there are existing pylons and overhead lines in the area, potential indirect perceived impact on the visitor accommodations is not anticipated during operation.
- 3.11.32 There are a total of 28 PRowS, DMMO application routes, NCN Route 647 and Trent Valley Way long distance walk located within the land required to construct the Scheme or within 500m of the Scheme. Due to the nature of the Scheme (i.e., pylons and overhead lines), no disruption to access is anticipated. Therefore, no impact on recreational routes is anticipated during operation.

Human health

- 3.11.33 There are potential operational impacts on human health from the changes in the wider health determinants. These comprise:
- **Physical activity:** The Scheme is not anticipated to disrupt access to any recreational routes. Section 3.3: Landscape and Visual identified potential minor to moderate beneficial effects on visual amenity for PRow users, as well as minor beneficial effect on users of NCN Route 647. Therefore, a **permanent negligible beneficial** residual impact is anticipated on human health associated with physical activity;
 - **Radiation and mental health:** Although the Scheme is located away from major settlements, in a predominantly rural area, there are scattered residential properties located in the vicinity of the Scheme. There is potential for some local residents to experience anxiety about perceived adverse impacts associated with EMFs. The Scheme will be designed and operated in full compliance with established guidelines and requirements related to EMFs, including the International Commission on Non-Ionizing Radiation Protection (ICNIRP) Guidelines. Therefore, potential EMF impacts will be effectively mitigated and the Scheme will be in compliance with health and safety standards. Therefore, a **permanent negligible adverse** impact on human health associated with radiation and mental health is anticipated;
 - **Land quality:** Section 3.7 Land and Ground Condition identified a negligible impact from potential risk of contaminant infiltration during operation. Therefore, resulting in a **permanent negligible adverse** impact on human health associated with exposure to contamination; and
 - **Noise:** Section 3.8 Noise and Vibration identified a potential negligible impact from construction activities and construction traffic, plant and equipment. The Noise and Vibration assessment suggests that the potential impact will be temporary and transitory in nature. A CEMP will be implemented to reduce or avoid any potential impact that may occur during the construction of the Scheme. Therefore, a **permanent negligible adverse** impact on human health associated with noise is anticipated.

Construction Control Measures

- 3.11.34 The control measures listed in Table 3.11.2 will be applied during the construction phase of the Scheme. National Grid is committed to implementing the identified control measures to reduce or avoid any potential impacts that may occur during the construction of the Scheme. The control measures will be included in the CEMP and their implementation will be monitored by National Grid.

Table 3.11.2 Construction control and monitoring measures for socio-economics and human health

Potential Receptor and/or Impact	Control, Enhancement and Monitoring Measures
Temporary direct, indirect and induced employment opportunities from the construction works (beneficial)	Not required.
Temporary access disruption on businesses, recreation and tourism assets (adverse)	<p>Where businesses, recreation and tourism assets cannot be avoided and fall within the land required to construct the Scheme, access to the affected assets will be maintained where practicable.</p> <p>In the case of closures, appropriate access arrangements, including temporary diversion will be provided. Advance notice signage will be erected regarding route diversion. The notice boards will be erected prior to and throughout the construction phase.</p>
Temporary access disruption to recreational routes (adverse)	<p>Where recreational routes cannot be avoided and fall within the land required to construct the Scheme, access to the routes will be maintained where practicable.</p> <p>In the case of closures, temporary diversion will be provided. Any recreational route closures or diversions during the construction phase will be clearly communicated and advertised prior to and throughout the construction phase. Diversion routes will be equipped with appropriate signage to minimise route uncertainty and ensure clarity for users. The proposed recreational routes diversion will follow best practices to ensure safety of users.</p>
Temporary changes in visual amenity (adverse)	<p>Adoption and implementation of the CEMP and relevant construction practices (such as appropriately sited construction compounds, suitable control of construction lighting to prevent undesirable light break-out and implementing tree protection measures) as detailed in Section 3.3.</p> <p>Relevant construction information will be provided to the public to ensure transparency and facilitate a clear understanding of the proposed works, which</p>

Potential Receptor and/or Impact	Control, Enhancement and Monitoring Measures
	could assist in managing public expectations effectively.
Temporary changes in air quality (adverse)	A DMP will be produced and implemented by the Contractors as detailed in Section 3.5 to minimise dust emissions from the excavation of materials, general construction activities and the movement of construction vehicles.
Temporary changes in water quality and flood risk (adverse)	Adoption of mitigation measures, including best practice pollution prevention measures, dewatering operations in accordance with relevant permits, appropriate disposal of waste water, the implementation of sustainable drainage, Environmental Emergency Response Plan, best practice in material storage, best practice for water consumption, and attenuated water discharges outlined in Section 3.6.
Temporary changes in potential exposure to contaminated dust (adverse)	Adoption of best practice construction measures as detailed in CEMP and Section 3.5, as well as Construction Phase (Health and Safety) Plan.
Temporary changes in noise levels (adverse)	A Best Practicable Means approach will be adopted and secured in an CEMP.
Temporary changes in traffic (adverse)	A CTMP will be produced and implemented by the Contractor to minimise disruption from the construction traffic, including the compliance with safety measures, adherence to the designated construction route to and from the site, implementation of emergency access protocols, minimisation of debris deposits onto public roads, implementation of appropriate road signs warning, and implementation of site induction covering travelling through the construction route.

Operational Control Measures

- 3.11.35 The measures listed in Table 3.11.3 will be implemented during the operational phase of the Scheme and the appraisal has been undertaken assuming these measures are in place.

Table 3.11.3 Operational control and monitoring measures for socio-economics and human health

Potential Receptor and/or Impact	Control, Enhancement and Monitoring Measures
Permanent change in visual amenity along recreational routes (beneficial)	Reinstatement of areas of existing vegetation following the removal of construction areas and accesses.
Permanent changes in mental health due to perceived risk from EMFs (adverse)	The Scheme will be designed and operated in full compliance with established guidelines related to EMFs. Adherence to these guidelines will ensure that potential EMF impacts are effectively mitigated, maintaining compliance with health and safety standards.

3.12 Cumulative Impacts

Introduction

- 3.12.1 This section of the EAR reports the results of the appraisal of the intra-project and inter-project cumulative impacts associated with the construction and operation of the Scheme. There are two types of cumulative impacts, both of which are considered within this EAR:
- intra-project cumulative impacts: the combination of individual impacts from the Scheme on a particular receptor; and
 - inter-project cumulative impacts: the combination of impacts from several developments, in this case, and the Scheme together with other reasonably foreseeable developments, which individually might have negligible or slight impacts, but when considered together could create a moderate or major cumulative impact.
- 3.12.2 This section should be read in conjunction with Appendix A High Marnham New Overhead Lines Glossary and Abbreviations; Appendix B Methodology; and Appendix D High Marnham New Overhead Lines Drawings.

Consultation

- 3.12.3 No specific consultation for the appraisal of cumulative impacts has been undertaken at the time of writing.
- 3.12.4 An initial list of inter-project committed developments was included within the EIA screening letter. This list has been reviewed and refined as part of the EAR process, as set out below.

Potential Cumulative Impacts

Intra-project impacts

- 3.12.5 The outcome of the Stage 1 – Screening Assessment is presented in Table 3.12.1 below which summarises whether a sensitive receptor or group of receptors experiences more than one type of residual impact. Sensitive receptors or receptor groups have been identified based on professional judgement.
- 3.12.6 The following topics were identified as having no residual impacts during construction or operation, following implementation of control and mitigation measures, and have therefore been scoped out of further intra-project impact assessment:
- ecology;
 - air quality; and
 - noise and vibration.

Table 3.12.1 Summary of the interaction between common receptors

Receptor Table notes: M+ – Moderate or above impact NM – minor or negligible impact		Landscape and Visual	Cultural Heritage and Archaeology	Water Resources and Flood Risk *no operational impacts	Land and Ground Conditions	Traffic and Transport *no operational impacts	Agriculture and Soils* *no operational impacts	Socioeconomics and Human Health
Construction								
Regional Landscape Character: Group 3: River Valley Floodplain - 3a: Floodplain Valleys and Group 4: Lowland Vales – 4a: Unwooded Vales	NM							
Local landscape character: Mid-Nottinghamshire Farmlands – MN 12, Trent Washlands - TW 44, Trent Washlands - TW 20 and Trent Washlands - TW 43	NM							
Local landscape character: the Scheme	M+							
Fledborough House Farm, Station Cottages and Station House located to the north west of the Scheme and properties accessed via Main Street towards the north of the Scheme, including Long Row Cottages, The Gables, North Farm, Top Farm, Manor Cottages and The Potteries	M+							
Properties to the north of Hollowgate Lane to the south of the land required to construct the Scheme, including Hill Farm, Woodlands,	M+							

Receptor									
Table notes: M+ – Moderate or above impact NM – minor or negligible impact		Landscape and Visual	Cultural Heritage and Archaeology	Water Resources and Flood Risk *no operational impacts	Land and Ground Conditions	Traffic and Transport *no operational impacts	Agriculture and Soils* *no operational impacts	Socioeconomics and Human Health	
Rookery Cottage and Hawthorns, as well as park homes at Sparrow Lane Park									
Properties to the south and east of Hollowgate Lane, including Trent View Cottages and The Bungalow, as well as visitors to Marnham Meadows Holiday Park	M+								
Properties along the western urban fringe of South Clifton and North Clifton approximately 1km to the east	M+								
Properties along the northern urban fringe of Low Marnham approximately 600m to the south and the north eastern urban fringe of Normanton on Trent, approximately 500m to the south west and on Skegby Road (RV01 and RV02)	M+								
NCN Route 647	M+								NM
PRoWs, highways and access tracks: Marnham/FP9, Marnham/FP7, Marnham/FP4, Normanton on Trent/FP7, Marnham/FP5, Marnham/BOAT8, Fledborough/FP7, Fledborough/FP8, Fledborough/FP9, Fledborough/FP10, Fledborough/FP11,	M+								

Receptor	Landscape and Visual	Cultural Heritage and Archaeology	Water Resources and Flood Risk *no operational impacts	Land and Ground Conditions	Traffic and Transport *no operational impacts	Agriculture and Soils* *no operational impacts	Socioeconomics and Human Health
Table notes: M+ – Moderate or above impact NM – minor or negligible impact							
Ragnall/FP2, Ragnall/FP4, Ragnall/BW3, South Clifton/BOAT13, South Clifton/FP1, South Clifton/FP5, South Clifton/FP5, Fledborough Road, Hollowgate Lane, Polly Taylor's Road and to a slightly lesser degree Main St							
Agricultural land quality						NM	
Soils						NM	
Conservation Area of South Clifton (CA1)		NM					
LB1, Asset 34		NM					
LB2, LB3, LB8		NM					
LB5 and LB6		NM					
Asset 26, 27, 28		NM					
Water quality of High Marnham Drain, Fledborough Beck, unnamed watercourse, Old Trent and River Trent			NM				
Hydromorphology of water courses within the land required to construct the Scheme			NM				
Surface water flood risk			NM				

Receptor Table notes: M+ – Moderate or above impact NM – minor or negligible impact		Landscape and Visual	Cultural Heritage and Archaeology	Water Resources and Flood Risk *no operational impacts	Land and Ground Conditions	Traffic and Transport *no operational impacts	Agriculture and Soils* *no operational impacts	Socioeconomics and Human Health
Water resources and supply				NM				
Human receptors – construction works, residents, works and users of agricultural land, environmental change (physical activity, air quality, water quality and flood risk, land quality, noise, transport)					NM			NM
Sparrow Lane CroW								NM
Employment and income								NM (beneficial)
Operation								
Assets 26 and 28			NM (beneficial)					
Assets 38, 39 and 40			NM (beneficial)					
Regional landscape character: Group 3: River Valley Floodplain - 3a: Floodplain Valleys		NM						
Local landscape character: Mid-Nottinghamshire Farmlands – MN 12, Trent Washlands – TW 20 and the Scheme		NM (beneficial)						

Receptor											
Table notes:											
M+ – Moderate or above impact											
NM – minor or negligible impact											
		Landscape and Visual	Cultural Heritage and Archaeology	Water Resources and Flood Risk	*no operational impacts	Land and Ground Conditions	Traffic and Transport	*no operational impacts	Agriculture and Soils*	*no operational impacts	Socioeconomics and Human Health
Local landscape character: Trent Washlands - TW 44		M+ (beneficial)									
Fledborough House Farm, Station Cottages and Station House located to the north west of the Scheme and properties accessed via Main Street towards the north of the Scheme, including Long Row Cottages, The Gables, North Farm, Top Farm, Manor Cottages and The Potteries		M+ (beneficial)									
Properties to the north of Hollowgate Lane to the south of the land required to construct the Scheme, including Hill Farm, Woodlands, Rookery Cottage and Hawthorns, as well as park homes at Sparrow Lane Park		M+ (beneficial)									
Properties to the south and east of Hollowgate Lane, including Trent View Cottages and The Bungalow, as well as visitors to Marnham Meadows Holiday Park		NM (beneficial)									
Properties along the western urban fringe of South Clifton and North Clifton approximately 1km to the east		NM (beneficial)									
Properties along the northern urban fringe of Low Marnham approximately 600m to the		NM (beneficial)									

Receptor									
Table notes: M+ – Moderate or above impact NM – minor or negligible impact		Landscape and Visual	Cultural Heritage and Archaeology	Water Resources and Flood Risk *no operational impacts	Land and Ground Conditions	Traffic and Transport *no operational impacts	Agriculture and Soils* *no operational impacts	Socioeconomics and Human Health	
south and the north eastern urban fringe of Normanton on Trent, approximately 500m to the south west and on Skegby Road (RV01 and RV02)									
NCN Route 647		NM (beneficial)							
Marnham/FP9, Marnham/FP7, PRowS Marnham/BOAT8, Fledborough/FP7, Fledborough/FP8, Fledborough/FP9, Fledborough/FP10, Fledborough/FP11, Fledborough/FP12, South Clifton/BOAT13, South Clifton/FP1, South Clifton/FP5, South Clifton/FP5, Fledborough Road, Hollowgate Lane, Polly Taylor's Road and to a slightly lesser degree Main St		M+ (beneficial)							
Marnham/FP4, Normanton on Trent/FP7, Marnham/FP5, Ragnall/FP2, Ragnall/FP4, Ragnall/BW3		NM (beneficial)							
Human receptors								NM	

- 3.12.7 As outlined in Table 3.12.1, during construction, one receptor group, human receptors, has the potential to experience more than one type of residual impact. As such, an intra-project impact on human receptors during construction is anticipated as part of the Scheme.

Inter-Project Impacts

- 3.12.8 Based on the defined approach in Appendix B Methodology, the following committed developments listed in Table 3.12.2 below have been considered within this assessment of inter-project cumulative impacts.

Table 3.12.2 Shortlist of committed developments

Reference	Name of Committed Development	Status	Distance from the Site	Description of the Committed Development
1	Land At High Marnham Power Station Power Station Access Fledborough Road High Marnham Nottinghamshire (planning ref: 23/00801/FUL and 23/00748/HAZ)	Granted	Overlap	Construction and operation of an 8 MW electrolytic green hydrogen production plant, with associated infrastructure including HGV and multi cylinder pack (MCP) loading areas, vehicle maintenance unit, staff welfare facilities and control room, 11kV customer sub-station, boundary fencing, internal access roads, landscaping, external lighting and works. Application for hazardous substances consent for the proposed storage of a maximum of 3 tonnes of hydrogen
2	High Marnham Green Energy Business Park Fledborough Road High Marnham Nottinghamshire NG22 0FX (planning ref: 23/00243/SCR)	EIA required	Overlap	An 8 MW green hydrogen production plant, storage and distribution facility and green ammonia cracker demonstration unit on land comprising part of the former High Marnham Power Station
3	Land At High Marnham Power Station Power Station Access Fledborough Road High Marnham Newark Nottinghamshire	Conditionally approved	Overlap	The erection of unit A - a finished product despatch warehouse building (B8 use) and packaging plant (B2 use) including odour abatement plant and solar PV and unit B - raw animal by-product (ABP) intermediate storage building (B8 use) incorporating mechanical

Reference	Name of Committed Development	Status	Distance from the Site	Description of the Committed Development
	NG23 6SE (planning ref: 22/01071/FUL)			processing plant for crushing, freezing and reloading (B2 use) including odour abatement plant and solar PV on land comprising part of the former High Marnham Power Station at High Marnham
4	Land Adjoining Former High Marnham Power Station High Marnham Nottinghamshire (planning ref: 22/00707/FUL)	Conditionally approved	Overlap	The construction and operation of a solar photovoltaic (PV) farm with other associated infrastructure including sub stations, security cameras, fencing, storage containers, access tracks and landscaping
5	Land To The West Of Grassthorpe Lane Weston Nottinghamshire (planning ref: 22/00343/SCR)	Not EIA	2km	Installation of a solar farm and battery storage facility with associated infrastructure
6	Land Off Hawbush Road Weston (planning ref: 21/01577/FULM)	Application permitted	1.2km	Installation of a solar farm and battery storage facility with associated infrastructure.
7	Land North And South Tuxford Road Skegby Tuxford Nottinghamshire (planning ref: 21/01147/FUL)	Conditionally approved	1.84km	Installation of a solar farm and battery storage facility with associated infrastructure
8	Land At High Marnham Power Station Power Station Access Fledborough Road High Marnham Nottinghamshire (planning ref: 24/00033/FUL)	Granted	Overlap	Construction and operation of additional plant for electrolytic green hydrogen production and associated works
9	Land At High Marnham Power Station Power	Granted	Overlap	Construction and operation of a prototype facility for the production of hydrogen from ammonia, and

Reference	Name of Committed Development	Status	Distance from the Site	Description of the Committed Development
	Station Access Fledborough Road High Marnham Nottinghamshire (planning ref: 23/01135/FUL)			associated HGV loading and unloading Areas, staff welfare building, boundary fencing, internal access roads, external lighting and works (EIA Development)
10	Marnham Lake Fishing And Camping Low To High Marnham Road Low Marnham Nottinghamshire NG23 6SG (planning ref: 25/00523/FUL)	Awaiting decision	610m	Seven holiday lodges and shower block and retain two fishing pods
11	One Earth Solar Project (planning ref: 23/02003/CONSUL)	Awaiting decision	Overlap	A proposed solar farm with associated battery storage and infrastructure (a DCO)
12	North Humber to High Marnham (DCO)	Awaiting decision	Overlap	A new 400kV transmission connection between two proposed substations at Birkhill Wood and High Marnham
13	Land North Of Polly Taylor's Road High Marnham Nottinghamshire (planning ref: 25/00639/FUL)	Awaiting decision	Overlap	The construction, operation and decommissioning of a Battery and Energy Storage System (BESS) and associated infrastructure
14	Land South West Of National Grid High Marnham Substation And East Of Fledborough Road Fledborough Road High Marnham Newark NG22 0FX (planning ref: 26/00147/FUL)	Granted	Overlap	Installation of underground cable and associated works

Reference	Name of Committed Development	Status	Distance from the Site	Description of the Committed Development
15	H2East Pipeline Great North Road Tuxford Nottinghamshire (planning ref: 26/00260/SCO)	Awaiting decision	Overlap	Proposed application by Humber Hydrogen Transmission System Ltd (the applicant) for an order granting development consent for the Humber Hydrogen Pipeline
16	Land South Of America Farm East Of Woodcoates Road North And South Of Green Lane Darlton Nottinghamshire NG22 0TN (planning ref: 26/00293/FUL)	Awaiting decision	1.8km	The construction and operation of a 49.9MW Solar Photovoltaic (PV) farm, with associated infrastructure and landscaping
17	New 400kV High Marnham Substation (planning ref: 25/01302/FUL)	Granted	Overlap	Erection of a 400kV Air Insulation Switchgear (AIS) substation with one 400/275kv supergrid transformer (SGT) and one 400/33kv SGT and construction of 16 bays, gantries, control and amenities building, permanent access road, diesel generator, parking, drainage, lighting and CCTV, landscaping and biodiversity enhancement and security fencing.

- 3.12.9 In addition to the above inter-project committed developments, there is an additional Great Grid Upgrade project to consider, the Brinsworth to Chesterfield Project, which largely comprises the construction of a new 400kV substation at land off Long Lane, east of Brinsworth. Due to the distance between the Scheme and the Brinsworth to Chesterfield Project, the intervening topography and the nature of the Scheme, no inter-project impacts are anticipated.
- 3.12.10 Table 3.12.3 below outlines the conclusions of the qualitative evaluation of the inter-project impacts associated with the Scheme. This appraisal has been undertaken using professional judgement and environmental information relating to the committed developments available at the time of the appraisal.
- 3.12.11 The following topics have been scoped out of further inter-project assessment as they were identified as having no residual impacts during construction or operation, following the implementation of control and mitigation measures:
- ecology;

- air quality; and
- noise and vibration.

3.12.12 Agriculture and soils is scoped into the inter-project assessment for the construction phase. Agriculture and soils has been scoped out of further assessment for the operational phase as there are no residual operational impacts.

Landscape future baseline

3.12.13 The future landscape and visual baseline is anticipated to include a considerable amount of infrastructure development, predominantly in the form of solar farms and associated battery storage facilities.

3.12.14 The scale of these developments is likely to result in a reduction in landscape sensitivity and magnitude of change, which will result in a potentially lower overall landscape effect.

3.12.15 It is possible that this (and other) development may introduce additional visual receptors (i.e. an increased number of residents close to the land required to construct the Scheme), which could result in potentially heightened adverse visual effects overall, however, it is assumed that any proposed development within close proximity to the Scheme would incorporate its own visual mitigation measures.

Traffic and transport

3.12.16 Cumulative impacts relating to traffic and transport are set out in Section 3.9.

Table 3.12.3 Inter-project cumulative impacts

Committed Development	Inter-Project Cumulative Impacts
Construction	
1	<p>The spatially overlapping component of the committed development and the Scheme is in relation to the existing access track from Fledborough Road. The remainder of the committed development lies outside the Scheme, within the footprint of the former High Marnham Power Station.</p> <p>Landscape and Visual:</p> <p>The Landscape and Visual Impact Assessment (Aspect Landscape Planning Ltd, 2023) noted that the committed development would have no moderate or major impacts on landscape character or landscape setting within the immediate, localised or wider landscape. This was due to the highly contained and localised nature of the committed development, as well as the past and present industrial influences in the immediate surrounding area.</p> <p>In terms of the visual environment, it was also concluded that the committed development would have no moderate or major impacts. This was due to the previous land use, the size and scale of the proposals, and the nature of the committed development.</p> <p>During the construction phase, the Scheme is likely to contribute to an increase in the presence of noise and activity in an otherwise tranquil setting as well as noticeable impacts upon the character of the local landscape. Construction impacts for the Scheme will be mitigated as per the measures set out in this EAR. Moderate impacts are anticipated for a number of residential receptors during the construction phase of the Scheme.</p> <p>From a visual amenity perspective, the committed development is screened from sensitive residential receptors by intervening topography and the existing substation. Should the construction phases of both schemes coincide, there is the potential for an increase in noise and air quality levels, although this will be temporary in nature, limited to the construction phase. During construction, it is anticipated that there will be an inter-project cumulative visual amenity impact but this will be temporary in nature, limited to the construction phase, and managed by a CEMP for each scheme.</p> <p>Given the limited landscape and visual impact anticipated from the committed development, as well as the mitigation proposed by this Scheme, it has been concluded that there will be no inter-project cumulative impacts.</p> <p>Cultural Heritage and Archaeology:</p> <p>The Heritage Impact Assessment (HCUK Group, 2023a) identified that there would be no impact on the setting of heritage assets within a 1.5km radius of the committed development. Additionally, the Archaeological Impact Assessment (HCUK Group, 2023b) concluded that there would be no impact to archaeology for the committed development.</p> <p>Due to the highly localised nature of the committed development, and that no heritage or archaeological impacts are anticipated, it is expected that there will be no inter-project impacts during the construction phase.</p>

Committed Development	Inter-Project Cumulative Impacts
	<p>Water Resources and Flood Risk:</p> <p>Should the construction programme for the committed development and the Scheme overlap, there is the potential for pollution from construction activities to affect groundwater and surface water receptors. With the implementation of a CEMP for each scheme and a drainage strategy for the committed development, no inter-project cumulative impact is anticipated.</p> <p>Land and Ground Conditions:</p> <p>During construction, there is the potential for pollution to groundwater as a result of the committed development and the Scheme. Provided that a CEMP is appropriately implemented for each scheme, no inter-project cumulative impact is anticipated.</p> <p>Socioeconomics and Human Health:</p> <p>The committed development is likely to generate temporary small-scale employment during the construction phase, similar to the Scheme. As such, it is anticipated that there will be no inter-project cumulative impact on the local economy during construction.</p> <p>It is understood that no PRowS will be affected by the committed development. As such, no inter-project cumulative impacts are anticipated during construction.</p> <p>Following the implementation of a CEMP for the committed development and the Scheme, it is anticipated that there will be a no inter-project cumulative impact.</p> <p>Agriculture and Soils:</p> <p>The committed development is not within agricultural land and is predominantly on hardstanding. As such, it is anticipated that there will be no inter-project cumulative impact on agriculture and soils.</p>
2	<p>The spatially overlapping component of the committed development and the Scheme is in relation to the existing access track from Fledborough Road. The remainder of the committed development lies outside the Scheme, within the footprint of the former High Marnham Power Station.</p> <p>Landscape and Visual:</p> <p>The committed development is located within the footprint of the former High Marnham Power Station, and within the vicinity of the existing High Marnham substation and associated infrastructure. As such, the existing landscape in the immediate area is industrial in nature and the committed development will be of a similar land use within a related industry to the former High Marnham Power Station. Following the implementation of a CEMP, no inter-project cumulative landscape impacts are anticipated.</p> <p>From a visual amenity perspective, the committed development is screened from sensitive residential receptors by intervening topography and the existing substation. Should the construction phases of both schemes coincide, there is</p>

Committed Development	Inter-Project Cumulative Impacts
	<p>the potential for an increase in noise and air quality levels, although this will be temporary in nature. During construction, it is anticipated that there will be an inter-project cumulative visual amenity impact, but this will be temporary in nature, limited to the construction phase, and managed by a CEMP for each scheme.</p> <p>Cultural Heritage and Archaeology:</p> <p>The committed development has the potential to have an impact on the setting of heritage assets in the surrounding area. It is assumed that this impact can be appropriately managed through the implementation of a CEMP and industry best practice. As such, following the mitigation measures set out in this EAR, it is anticipated that there will be no inter-project cumulative impacts during construction.</p> <p>Water Resources and Flood Risk:</p> <p>Should the construction programme for the committed development and the Scheme overlap, there is the potential for pollution from construction activities to affect groundwater and surface water receptors. With the implementation of a CEMP for both schemes and a drainage strategy for the committed development, this is expected to cause no inter-project cumulative impacts.</p> <p>Land and Ground Conditions:</p> <p>During construction, there is the potential for pollution to groundwater as a result of the committed development and the Scheme. Provided that the CEMP is appropriately implemented for both schemes, no inter-project cumulative impact is anticipated.</p> <p>Socioeconomics and Human Health:</p> <p>The committed development is likely to generate temporary small scale employment during the construction phase, similar to the Scheme. As such, it is anticipated that there will be no inter-project cumulative impact on the local economy during construction.</p> <p>Following the implementation of a CEMP for the committed development and the Scheme, it is anticipated that there will be no inter-project cumulative socioeconomic impact during construction.</p> <p>Agricultural Land and Soils:</p> <p>The committed development is not located on agricultural land and is not anticipated to lead to the temporary or permanent loss of agricultural land during construction. As such, no inter-project cumulative impacts are anticipated.</p>
3	<p>Landscape and Visual:</p> <p>The committed development is located within the footprint of the High Marnham Power Station, and within the vicinity of the existing High Marnham substation and associated infrastructure. As such, the existing landscape in the immediate area is industrial in nature and the committed development will be of a similar land use within a related industry to the High Marnham Power Station. The Landscape and Visual Appraisal (Landscape Planning and Design Limited, 2022)</p>

Committed Development	Inter-Project Cumulative Impacts
	<p>concluded that the committed development will have a moderate impact to the local landscape character during construction. Following the implementation of CEMPs, it is anticipated that there will be an inter-project landscape impact during construction, but this will be temporary and limited to the construction phase.</p> <p>Regarding visual amenity, the committed development has a good degree of visual screening, and it was concluded by the Landscape and Visual Appraisal (Landscape Planning and Design Limited, 2022) that there would be a minor to moderate visual amenity impact, notably to users of the Sustrans trail and nearby residents in High Marnham and South Clifton. As a result, it is anticipated that there will be a visual amenity inter-project cumulative impact during the construction phase.</p> <p>Cultural Heritage and Archaeology:</p> <p>The Heritage Impact Assessment (HCUK Group, 2022) concluded that the visual impact of the committed development on heritage assets was negligible to minor. As such, following the mitigation measures set out in this EAR and the CEMP, it is anticipated that there will be no inter-project cumulative impacts during construction.</p> <p>Water Resources and Flood Risk:</p> <p>Should the construction programme for the committed development and the Scheme overlap, there is the potential for pollution from construction activities to affect groundwater and surface water receptors. With the implementation of a CEMP for both of the schemes and a drainage strategy for the committed development, this is expected to cause no inter-project cumulative impacts.</p> <p>Land and Ground Conditions:</p> <p>During construction, there is the potential for pollution to groundwater as a result of the committed development and the Scheme. Provided that the CEMP is appropriately implemented for both schemes, no inter-project cumulative impacts for land and ground conditions are anticipated.</p> <p>Socioeconomics and Human Health:</p> <p>The committed development is likely to generate temporary small-scale employment during the construction phase, similar to the Scheme. As such, it is anticipated that there will be no inter-project cumulative impacts on the local economy during construction. Following the implementation of a CEMP for each of the committed development and the Scheme, it is anticipated that there will be no inter-project cumulative impacts during construction.</p> <p>Agricultural Land and Soils:</p> <p>The committed development is not located on agricultural land and is not anticipated to lead to the temporary or permanent loss of agricultural land during construction. As such, no inter-project cumulative impacts are anticipated.</p>

Committed Development	Inter-Project Cumulative Impacts
4	This committed development would involve the construction of solar panels within the location of the key parts of the Scheme. If the Scheme is developed, this committed development would not be viable in its current location and would not be developed. As such, although this is a committed development, it has been de-scoped from this assessment
5	Due to the scale of the committed development, and the intervening topography between the Scheme and the committed development, it is deemed unlikely that there will be any inter-project cumulative impacts during the construction.
6	<p>Landscape and Visual: According to the Landscape and Visual Impact Assessment (Enso Energy, 2021c), the committed development is anticipated to have a moderate impact to landscape. Given the distance between the committed development and the Scheme, the intervening topography and following the implementation of best practice measures, no inter-project cumulative impacts are anticipated.</p> <p>Cultural Heritage and Archaeology: The committed development has the potential to have an impact to the setting of heritage assets in the surrounding area. It is assumed that this impact can be appropriately managed through the implementation of a CEMP and industry best practice. As such, following the mitigation measures set out in this EAR and the CEMP, it is anticipated that there will be no inter-project impacts during construction.</p> <p>Water Resources and Flood Risk: Should the construction programme for the committed development and the Scheme overlap, there is the potential for pollution from construction activities to affect groundwater and surface water receptors. With the implementation of a CEMP for both schemes and a drainage strategy for the committed development, this is expected to cause no inter-project cumulative impact.</p> <p>Land and Ground Conditions: During construction, there is the potential for pollution to groundwater as a result of the committed development and the Scheme. Provided that the CEMP is appropriately implemented for each scheme, it is anticipated that there will be no inter-project cumulative impact during the construction phase.</p> <p>Socioeconomics and Human Health: The committed development is likely to generate temporary small-scale employment during the construction phase, similar to the Scheme. As such, it is anticipated that there will be no inter-project cumulative impact during the construction phase.</p> <p>Agricultural Land and Soils:</p>

Committed Development	Inter-Project Cumulative Impacts
	<p>The Agricultural Land Classification report (Enso Energy, 2021e) sets out that the committed development will be located on 119ha of grade 3b agricultural land. As a result of the construction activities affecting agricultural land during the construction of the committed development and the Scheme, inter-project cumulative impacts are anticipated.</p>
7	<p>The majority of the committed development is located approximately 1.84km to the west of the Scheme. Part of the committed development includes an underground cable route which extends beyond the footprint of the solar farm, along local roads before ending at the location of the existing substation.</p> <p>Landscape and Visual:</p> <p>The committed development is anticipated to have a moderate impact to landscape character (Enso Energy, 2021a). Following the implementation of the planning conditions for the committed development, and in consideration of the distance between the Scheme and the majority of the committed development, no inter-project cumulative impacts are anticipated during construction.</p> <p>Cultural Heritage and Archaeology:</p> <p>An impact to the visual setting of heritage assets during construction of the committed development is anticipated. The setting of heritage assets will also be impacted during the construction of the committed development as a result of an increase in noise, dust and traffic movement. Following the implementation of the planning conditions for the committed development, it is anticipated that there will be no inter-project cumulative visual amenity impact during the construction phase.</p> <p>Water Resources and Flood Risk:</p> <p>The committed development is located within Flood Zone 1 and an FRA was produced to ensure no increase in flood risk to the wider catchment. Following the implementation of the planning conditions for the committed development, it is anticipated that there will be no inter-project impacts during construction.</p> <p>Land and Ground Conditions:</p> <p>During construction, there is the potential for pollution to groundwater as a result of the committed development and the Scheme. Provided that the best practice measures are implemented throughout construction, no inter-project impacts for Land and Ground Conditions are anticipated.</p> <p>Socioeconomics and Human Health:</p> <p>The committed development is likely to generate temporary small-scale employment during the construction phase, similar to the Scheme. As such, it is anticipated that there will be no inter-project cumulative impacts on the local economy during construction.</p> <p>Agricultural Land and Soils:</p>

Committed Development	Inter-Project Cumulative Impacts
	<p>The committed development is located on agricultural land which will be lost during the construction phase and reinstated during operation as grazing land (Enso Energy, 2021b). As a result of the construction activities affecting agricultural land during the construction of the committed development and the Scheme, inter-project cumulative impacts are anticipated.</p>
8	<p>Landscape and Visual:</p> <p>The committed development is located within the footprint of the former High Marnham Power Station, and within the vicinity of the existing High Marnham substation and associated infrastructure. As such, the existing landscape in the immediate area is industrial in nature and the committed development will be of a similar land use within a related industry to the former High Marnham Power Station. It is understood that a CEMP is not proposed for the committed development. Following the use of best practice measures, no inter-project landscape impacts are anticipated. From a visual amenity perspective, the committed development is screened from sensitive residential receptors by intervening topography and the existing substation. Should the construction phases of each scheme coincide, there is the potential for an increase in noise and air quality levels, although this will be temporary in nature. During construction, is anticipated that there will be an inter-project cumulative visual amenity impact, but this will be temporary in nature and managed by best practice measures for both schemes.</p> <p>Cultural Heritage and Archaeology:</p> <p>The Officer's Report (BDC, 2024) notes that the Heritage Impact Assessment (not available on the Bassetlaw public planning portal) concluded that there would be no impact to the setting of heritage assets as a result of the committed development. As such, it is anticipated that there will be no inter-project impacts during construction.</p> <p>Water Resources and Flood Risk:</p> <p>The committed development is located within Flood Zone 1, and an FRA and a Drainage Strategy were produced to ensure no increase in flood risk to the wider catchment. As such, it is anticipated that there will be no inter-project impacts during construction.</p> <p>Land and Ground Conditions:</p> <p>During construction, there is the potential for pollution to groundwater as a result of the committed development and the Scheme. Provided that the best practice measures are implemented throughout construction, no inter-project impacts for Land and Ground Conditions are anticipated.</p> <p>Socioeconomics and Human Health:</p> <p>The committed development is likely to generate temporary small-scale employment during the construction phase, similar to the Scheme. As such, it is anticipated that there will be no inter-project cumulative impacts on the local economy during construction.</p>

Committed Development	Inter-Project Cumulative Impacts
	<p>Following the implementation of a CEMP for each of the committed development and the Scheme, it is anticipated that there will be no inter-project cumulative impacts during construction.</p> <p>Agricultural Land and Soils:</p> <p>The committed development is located on previously developed land and will not lead to the loss of agricultural land. As a result, no inter-project cumulative impacts are anticipated.</p>
9	<p>According to the Environmental Statement for the committed development (Frampton Town Planning, 2023), following the implementation of mitigation measures (including a CEMP, DMP, CTMP, Construction Waste Management Plan and Construction Noise Control Plan), no residual impacts are anticipated. As such, no inter-project impact is anticipated during the construction phase.</p>
10	<p>Due to the small scale of the committed development, the continuation of the existing land use, and the intervening topography between the Scheme and the committed development, it is deemed unlikely that there will be any inter-project cumulative impacts during the construction.</p>
11	<p>Part of the committed development overlaps spatially with part of the Scheme. The remainder of the committed development is located in the surrounding area.</p> <p>Landscape and Visual:</p> <p>The committed development is a large-scale scheme that would be a dominant feature in the wider landscape. The landscape character impact of the committed development during the construction phase is anticipated to be major (One Earth Solar Farm, 2025). Following the implementation of CEMPs and best practice measures for each scheme, an inter-project impact on landscape during construction is anticipated. This is as a result of increased construction activity, workers compounds and partially completed structures throughout construction. Sensitive receptors, including residential properties and PRoW users, are anticipated to experience a moderate to major visual amenity impact during the construction of the committed development (One Earth Solar Farm, 2025). As such, it is anticipated that there will be an inter-project cumulative visual amenity impact during the construction phase.</p> <p>Cultural Heritage and Archaeology:</p> <p>An impact to the visual setting of heritage assets during construction of the committed development is anticipated. The setting of heritage assets will also be impacted during the construction of the committed development as a result of an increase in noise, dust and traffic movement. Following the implementation of the CEMP, it is anticipated that there will be an inter-project cumulative visual amenity impact during the construction phase. Marnham Hall (LB1) is anticipated to have a minor impact from the committed development construction phase as a result of visual effects and increase in noise and dust (One Earth Solar Farm, 2025). Following the implementation of the CEMPs, including mitigation measures for dust and noise, there is anticipated to be an inter-project impact to Marnham Hall (LB1) during construction.</p>

Committed Development	Inter-Project Cumulative Impacts
	<p>Water Resources and Flood Risk:</p> <p>Flooding associated with the committed development is considered to be negligible, following the implementation of a CEMP (One Earth Solar Farm, 2025). As such, with the implementation of a CEMP for both schemes and a drainage strategy for the committed development, it is anticipated that there will be no inter-project cumulative impact for Water Resources and Flood Risk during the construction phase.</p> <p>Land and Ground Conditions:</p> <p>The committed development has the potential for a minor impact to groundwater as a result of construction activities. This is proposed to be mitigated through the implementation of a CEMP (One Earth Solar Farm, 2025). Provided that the CEMP is appropriately implemented for both schemes, no inter-project cumulative impacts for Land and Ground Conditions are anticipated.</p> <p>Socioeconomics and Human Health:</p> <p>The committed development is likely to generate temporary employment during construction. As such, it is anticipated to have a moderate to major beneficial impact to the local economy (One Earth Solar Farm, 2025). An inter-project cumulative socioeconomic impact is anticipated.</p> <p>Agricultural Land and Soils:</p> <p>The committed development will lead to the temporary and permanent loss of agricultural land during the construction phase (One Earth Solar Farm, 2025). As a result of the construction activities affecting agricultural land during the construction of the committed development and the Scheme, inter-project cumulative impacts are anticipated.</p>
12	<p>Landscape and Visual:</p> <p>The committed development and the Scheme would both be located within the same local landscape character area which has a history of industrial and agricultural land use. Given the proximity of the committed development and the Scheme, it is anticipated that there could be an inter-project cumulative impact on the local landscape character as a result of the committed development and the Scheme. This would be mitigated through the implementation of a CEMP and best practice measures throughout construction. An inter-project cumulative visual amenity impact is anticipated for residential receptors and PRowWs during the construction phase of the committed development and the Scheme, however, this will be temporary and limited to the construction phase.</p> <p>Cultural Heritage and Archaeology:</p> <p>The committed development has the potential to have an impact to the setting of heritage assets in the surrounding area. It is assumed that this impact can be appropriately managed through the implementation of a CEMP and industry best practice. As such, following the mitigation measures set out in this EAR and the CEMP, it is anticipated that there will be no inter-project impacts during construction.</p>

Committed Development	Inter-Project Cumulative Impacts
	<p>Water Resources and Flood Risk:</p> <p>Should the construction programme for the committed development and the Scheme overlap, there is the potential for pollution from construction activities to affect groundwater and surface water receptors. With the implementation of a CEMP for both schemes and a drainage strategy for the committed development, this is expected to cause no inter-project cumulative impact.</p> <p>Land and Ground Conditions:</p> <p>During construction, there is the potential for pollution to groundwater as a result of the committed development and the Scheme. Provided that a CEMP is appropriately implemented for each scheme, it is anticipated that there will be no inter-project cumulative impact during the construction phase.</p> <p>Socioeconomics and Human Health:</p> <p>The committed development is likely to generate temporary employment during construction. As such, it is anticipated to have a moderate to major beneficial impact to the local economy. As such, no inter-project cumulative socioeconomic impact is anticipated.</p> <p>Agricultural Land and Soils:</p> <p>The committed development is likely to cause temporary and permanent loss of BMV land during construction (National Grid, 2025). As a result of the construction activities affecting agricultural land during the construction of the committed development and the Scheme, inter-project cumulative impacts are anticipated.</p>
13	<p>Part of the committed development overlaps spatially with part of the Scheme. The remainder of the committed development is located west of the Scheme.</p> <p>Landscape and Visual:</p> <p>The committed development and the Scheme would both be located within the same local landscape character area which has a history of industrial and agricultural land use. Given the proximity of the committed development and the Scheme, it is anticipated that there could be an inter-project cumulative impact on the local landscape character as a result of the committed development and the Scheme. This would be mitigated through the implementation of a CEMP for both schemes and best practice measures throughout construction. An inter-project cumulative visual amenity impact is anticipated for residential receptors and PRoWs during the construction phase of the committed development and the Scheme, however, this will be temporary and limited to the construction phase.</p> <p>Cultural Heritage and Archaeology:</p> <p>The committed development has the potential to have an impact to the setting of heritage assets in the surrounding area. It is assumed that this impact can be appropriately managed through the implementation of a CEMP and industry best</p>

Committed Development	Inter-Project Cumulative Impacts
	<p>practice. As such, following the mitigation measures set out in this EAR and the CEMP, it is anticipated that there will be no inter-project impacts during construction.</p> <p>Water Resources and Flood Risk:</p> <p>Should the construction programme for the committed development and the Scheme overlap, there is the potential for pollution from construction activities to affect groundwater and surface water receptors. With the implementation of a CEMP for both schemes and a drainage strategy for the committed development, this is expected to cause no inter-project cumulative impact.</p> <p>Land and Ground Conditions:</p> <p>During construction, there is the potential for pollution to groundwater as a result of the committed development and the Scheme. Provided that a CEMP is appropriately implemented for each scheme, it is anticipated that there will be no inter-project cumulative impact during the construction phase.</p> <p>Socioeconomics and Human Health:</p> <p>Impacts to human receptors during construction will be managed through a CEMP and CTMP. As such, no inter-project cumulative socioeconomic impact is anticipated.</p> <p>Agricultural Land and Soils:</p> <p>The committed development is likely to cause temporary loss of agricultural land during construction. As a result of the construction activities affecting agricultural land during the construction of the committed development and the Scheme, inter-project cumulative impacts are anticipated.</p>
14	The committed development overlaps spatially with the Scheme although it will largely be below ground. Due to this overlap, it is assumed that the schemes could not be constructed simultaneously, and therefore that the construction periods would not coincide. As a result, no construction phase inter-project cumulative impacts are anticipated.
15	The committed development would overlap spatially with the Scheme. Based on the construction programme set out in the EIA Scoping Report (Cadent, 2026), the construction phases would not coincide and therefore it is considered unlikely that there will be inter-project cumulative impacts during construction.
16	<p>The committed development is located west of the Scheme.</p> <p>Landscape and Visual:</p> <p>In consideration of the distance between the Scheme and the majority of the committed development, no inter-project cumulative impacts are anticipated during construction.</p> <p>Cultural Heritage and Archaeology:</p>

Committed Development	Inter-Project Cumulative Impacts
	<p>The committed development has the potential to have an impact to the setting of heritage assets in the surrounding area. It is assumed that this impact can be appropriately managed through the implementation of a CEMP and industry best practice. As such, following the mitigation measures set out in this EAR and the CEMP, it is anticipated that there will be no inter-project impacts during construction.</p> <p>Water Resources and Flood Risk:</p> <p>Should the construction programme for the committed development and the Scheme overlap, there is the potential for pollution from construction activities to affect groundwater and surface water receptors. With the implementation of a CEMP for both schemes and a drainage strategy for the committed development, no inter-project cumulative impact is anticipated.</p> <p>Land and Ground Conditions:</p> <p>During construction, there is the potential for pollution to groundwater as a result of the committed development and the Scheme. Provided that a CEMP is appropriately implemented for each scheme, it is anticipated that there will be no inter-project cumulative impact during the construction phase.</p> <p>Socioeconomics and Human Health:</p> <p>Impacts to human receptors during construction will be managed through a CEMP and CTMP. As such, no inter-project cumulative socioeconomic impact is anticipated.</p> <p>Agricultural Land and Soils:</p> <p>During construction, there will be temporary loss of agricultural land. There will be no loss of BMV agricultural land as a result of the committed development, but there will be an inter-project cumulative impact during construction.</p>
17	<p>The committed development overlaps with the Scheme.</p> <p>Landscape and Visual:</p> <p>The committed development is centred within the Scheme, and within the vicinity of the existing High Marnham substation and associated infrastructure. As such, the existing landscape in the immediate area is industrial in nature and the committed development will be of a similar land use. Following the implementation of CEMPs, it is anticipated that there will be an inter-project landscape impact during construction, but this will be temporary and limited to the construction phase.</p> <p>Regarding visual amenity, it is anticipated that there will be a visual amenity inter-project cumulative impact during the construction phase.</p> <p>Cultural Heritage and Archaeology:</p>

Committed Development	Inter-Project Cumulative Impacts
	<p>Following the mitigation measures set out in this EAR and the CEMP, it is anticipated that there will be no inter-project cumulative impacts during construction.</p> <p>Water Resources and Flood Risk:</p> <p>The construction programme for the committed development and the Scheme will overlap and there is the potential for pollution from construction activities to affect groundwater and surface water receptors. With the implementation of a CEMP for both of the schemes and a drainage strategy for the committed development, this is expected to cause no inter-project cumulative impacts.</p> <p>Land and Ground Conditions:</p> <p>During construction, there is the potential for pollution to groundwater as a result of the committed development and the Scheme. Provided that the CEMP is appropriately implemented for both schemes, no inter-project cumulative impacts for land and ground conditions are anticipated.</p> <p>Socioeconomics and Human Health:</p> <p>The committed development is likely to generate temporary small-scale employment during the construction phase, similar to the Scheme. As such, it is anticipated that there will be no inter-project cumulative impacts on the local economy during construction. Following the implementation of a CEMP for each of the committed development and the Scheme, it is anticipated that there will be no inter-project cumulative impacts during construction.</p> <p>Agricultural Land and Soils:</p> <p>As a result of the construction activities affecting agricultural land during the construction of the committed development and the Scheme, inter-project cumulative impacts are anticipated.</p>
Operation	
1	<p>The spatially overlapping component of the committed development and the Scheme is in relation to the existing access track from Fledborough Road. The remainder of the committed development lies outside the Scheme, within the footprint of the former High Marnham Power Station.</p> <p>Landscape and Visual:</p> <p>The Landscape and Visual Impact Assessment (Aspect Landscape Planning Ltd, 2023) noted that the committed development would have no moderate or major impacts on landscape character or landscape setting within the immediate, localised or wider landscape. This was due to the highly contained and localised nature of the committed development, as well as the past and present industrial influences in the immediate surrounding area. As such, no inter-project cumulative impacts to landscape are anticipated.</p>

Committed Development	Inter-Project Cumulative Impacts
	<p>In terms of the visual environment, it was also concluded that the committed development would have no moderate or major impacts. This was due to the previous land use, the size and scale of the proposals, and the nature of the committed development. As such, no inter-project cumulative impacts to visual amenity are anticipated.</p> <p>Cultural Heritage:</p> <p>The Heritage Impact Assessment (HCUK Group, 2023a) identified that there would be no impact on the setting of heritage assets within a 1.5km radius of the committed development. Additionally, the Archaeological Impact Assessment (HCUK Group, 2023b) concluded that there would be no impact to archaeology for the committed development.</p> <p>Due to the highly localised nature of the committed development, and that no heritage or archaeological impacts are anticipated, it is expected that there will be no inter-project impacts during the operational phase.</p> <p>Water Resources and Flood Risk:</p> <p>A FRA and Drainage Strategy was produced (BE Design, 2023) which identified that there was a low risk of flooding within the committed development and that there would be no increase in flood risk to the wider catchment. As such, following the implementation of the drainage design and the planning conditions for the committed development, no inter-project cumulative impacts are anticipated during operation.</p> <p>Land and Ground Conditions:</p> <p>During operation, it is deemed unlikely that there are any aspects of the committed development that would lead to inter-project cumulative impacts.</p> <p>Socioeconomics and Human Health:</p> <p>During operation, there would be a small number of staff present for the committed development, which would have a limited impact on the local economy. As such, no inter-project cumulative impacts are anticipated during operation.</p> <p>It is understood that no PRoWs will be affected by the committed development. As such, no inter-project cumulative impacts are anticipated during operation.</p>
2	<p>The spatially overlapping component of the committed development and the Scheme is in relation to the existing access track from Fledborough Road. The remainder of the committed development lies outside the Scheme, within the footprint of the former High Marnham Power Station.</p> <p>Landscape and Visual:</p> <p>The committed development is located within the footprint of the former High Marnham Power Station, and within the vicinity of the existing High Marnham substation and associated infrastructure. As such, the existing landscape in the</p>

Committed Development	Inter-Project Cumulative Impacts
	<p>immediate area is industrial in nature and the committed development will be of a similar land use within a related industry to the former High Marnham Power Station. No inter-project cumulative landscape impacts are anticipated. From a visual amenity perspective, the committed development is screened from sensitive residential receptors by intervening topography and the existing substation. No inter-project cumulative visual impacts are anticipated.</p> <p>Cultural Heritage:</p> <p>The committed development is located within the footprint of the former High Marnham Power Station, and within the vicinity of the existing High Marnham substation and associated infrastructure. As such, the existing landscape in the immediate area is industrial in nature and the committed development will be of a similar land use within a related industry to the former High Marnham Power Station. No inter-project cumulative landscape impacts are anticipated</p> <p>Water and Flood Risk:</p> <p>There is the potential that the committed development may increase flood risk in the surrounding catchment area. Following the implementation of the FRA and drainage strategy for the committed development, no inter-project cumulative impacts are anticipated during operation.</p> <p>Land and Ground Conditions:</p> <p>During operation, it is deemed unlikely that there are any aspects of the committed development that would lead to inter-project cumulative impacts.</p> <p>Socioeconomics and Human Health:</p> <p>The exact number of staff required during the operational phase of the committed development is unknown at the time of writing, but given the nature of the committed development, it is assumed to be relatively small. As such, no inter-project cumulative impacts are anticipated.</p>
3	<p>Landscape and Visual:</p> <p>The committed development is located within the footprint of the former High Marnham Power Station, and within the vicinity of the existing High Marnham substation and associated infrastructure. As such, the existing landscape in the immediate area is industrial in nature and the committed development will be of a similar land use within a related industry to the former High Marnham Power Station. The Landscape and Visual Appraisal (Landscape Planning and Design Limited, 2022) concluded that the committed development would have a moderate impact to the local landscape character during operation. An inter-project cumulative landscape impact is anticipated during the operational phase. Regarding visual amenity, the committed development has a good degree of visual screening, and it was concluded by the Landscape and Visual Appraisal (Landscape Planning and Design Limited, 2022) that there would be a minor to moderate visual amenity impact, notably to users of the Sustrans trail and nearby residents in High Marnham and South</p>

Committed Development	Inter-Project Cumulative Impacts
	<p>Clifton. As a result, it is anticipated that there will be a visual amenity inter-project cumulative impact during the operational phase.</p> <p>Cultural Heritage:</p> <p>During operation, the Heritage Impact Assessment (HCUK Group, 2022) concluded that the visual impact of the committed development on heritage assets was negligible to minor. As such, following the mitigation measures set out in this EAR, it is anticipated that there will be no inter-project cumulative impacts during the operational phase.</p> <p>Water and Flood Risk:</p> <p>The FRA and Drainage Strategy (Betts Hydro Consulting Engineers, 2023) concluded that the committed development was at low risk of flooding and was not anticipated to increase flood risk elsewhere. Following the implementation of the drainage strategy for the committed development, no inter-project cumulative impacts during the operational phase are anticipated.</p> <p>Land and Ground Conditions:</p> <p>During operation, it is deemed unlikely that there are any aspects of the committed development that would lead to inter-project cumulative impacts.</p> <p>Socioeconomics and Human Health:</p> <p>During operation, there would be a small number of staff present for the committed development, which would have a limited impact on the local economy. As such, no inter-project cumulative impacts are anticipated during operation.</p> <p>It is understood that no PRowS will be affected by the committed development. As such, no inter-project cumulative impacts are anticipated during operation.</p>
4	This committed development would involve the construction of solar panels within the location of the entire Scheme. If the Scheme is developed, this committed development would not be viable in its current location and would not be developed. As such, although this is a committed development, it has been de-scoped from this assessment.
5	Due to the scale of the committed development, and the intervening topography between the Scheme and the committed development, it is deemed unlikely that there will be any inter-project cumulative impacts during the operation.
6	<p>Landscape and Visual:</p> <p>According to the Landscape and Visual Impact Assessment (Enso Energy, 2021a), the committed development is anticipated to have a moderate impact to landscape. Given the distance between the committed development and the Scheme, the intervening topography, and following the implementation of landscape designs, no inter-project cumulative impacts are anticipated during the operational phase.</p>

Committed Development	Inter-Project Cumulative Impacts
	<p>Cultural Heritage: During operation, the committed development is deemed to be a sufficient distance from the Scheme, with intervening topography and vegetation, such that no inter-project cumulative impacts to the setting of heritage assets are anticipated.</p> <p>Water and Flood Risk: The committed development is located within Flood Zone 1, and an FRA and a Drainage Strategy were produced to ensure no increase in flood risk to the wider catchment. As such, it is anticipated that there will be no inter-project impacts during operation.</p> <p>Land and Ground Conditions: During operation, it is deemed unlikely that there are any aspects of the committed development that would lead to inter-project cumulative impacts.</p> <p>Socioeconomics and Human Health: Due to the small number of staff present during the operational phase, no inter-project cumulative impacts are anticipated during the operational phase.</p> <p>It is understood that no PRowS will be affected by the committed development. As such, no inter-project cumulative impacts are anticipated during operation.</p>
7	<p>The majority of the committed development is located approximately 1.84km to the west of the Scheme. Part of the committed development includes an underground cable route which extends beyond the footprint of the solar farm, along local roads before ending at the location of the existing substation.</p> <p>Landscape and Visual: During operation, the above ground elements of the committed development are deemed to be a sufficient distance from the Scheme, with intervening topography and vegetation, such that no inter-project cumulative impacts to landscape and visual amenity are anticipated.</p> <p>Cultural Heritage: During operation, the above ground elements of the committed development are deemed to be a sufficient distance from the Scheme, with intervening topography and vegetation, such that no inter-project cumulative impacts to the setting of heritage assets are anticipated.</p> <p>Water and Flood Risk: The committed development is located within Flood Zone 1 and an FRA was produced to ensure no increase in flood risk to the wider catchment. Following the implementation of the planning conditions for the committed development, it is anticipated that there will be no inter-project impacts during the operational phase.</p>

Committed Development	Inter-Project Cumulative Impacts
	<p>Land and Ground Conditions: During operation, it is deemed unlikely that there are any aspects of the committed development that would lead to inter-project cumulative impacts.</p> <p>Socioeconomics and Human Health: At the time of writing, operational staff numbers are unknown, but given the nature of the committed development, these are assumed to be small. As such, no inter-project cumulative impacts are anticipated.</p>
8	<p>Landscape and Visual: The committed development is located within the footprint of the former High Marnham Power Station, and within the vicinity of the existing High Marnham substation and associated infrastructure. As such, the existing landscape in the immediate area is industrial in nature and the committed development will be of a similar land use within a related industry to the former High Marnham Power Station. No inter-project landscape impacts are anticipated.</p> <p>From a visual amenity perspective, the committed development is screened from sensitive residential receptors by intervening topography and the existing substation. No inter-project visual amenity cumulative impacts are anticipated.</p> <p>Cultural Heritage: The Officer's Report (BDC, 2024) notes that the Heritage Impact Assessment (not available on the Bassetlaw public planning portal) concluded that there would be no impact to the setting of heritage assets as a result of the committed development. As such, it is anticipated that there will be no inter-project cumulative impacts during the operational phase.</p> <p>Water and Flood Risk: The committed development is located within Flood Zone 1, and an FRA and a Drainage Strategy were produced evidencing no increase in flood risk to the wider catchment. As such, it is anticipated that there will be no inter-project cumulative impacts during operation.</p> <p>Land and Ground Conditions: During operation, it is deemed unlikely that there are any aspects of the committed development that would lead to inter-project cumulative impacts.</p> <p>Socioeconomics and Human Health: During operation, there would be a small number of staff present for the committed development, which would have a limited impact on the local economy. As such, no inter-project cumulative impacts are anticipated during operation.</p> <p>It is understood that no PRow's will be affected by the committed development. As such, no inter-project cumulative impacts are anticipated during operation.</p>

Committed Development	Inter-Project Cumulative Impacts
9	<p>According to the Environmental Statement for the committed development (Frampton Town Planning, 2023), following the implementation of mitigation measures (including a Landscape and Biodiversity Enhancement and Management Plan, and Lighting Strategy), no residual impacts are anticipated. As such, no inter-project impact is anticipated during the operational phase.</p>
10	<p>Due to the small scale of the committed development, the continuation of the existing land use, and the intervening topography between the Scheme and the committed development, it is deemed unlikely that there will be any inter-project cumulative impacts during the operational phase.</p>
11	<p>Part of the committed development overlaps spatially with part of the Scheme. The remainder of the committed development is located in the surrounding area. Landscape and Visual:</p> <p>During operation, the committed development would result in an evident change of land use, notably during Year 1 (One Earth Solar Farm, 2025). By Year 15, the effects of the committed development are anticipated to be similar to those in Year 1, except new trees and hedgerows would have established and matured, better integrating the committed development into the landscape (One Earth Solar Farm, 2025). It is anticipated that there will be an inter-project cumulative impact on landscape and visual amenity during operation.</p> <p>Cultural Heritage:</p> <p>The Environmental Statement (One Earth Solar Farm, 2025) concludes that there are no likely significant adverse impacts to heritage assets, including Marnham Hall (LB1), during the operation of the committed development. As such, no inter-project cumulative impacts during operation are anticipated.</p> <p>Water and Flood Risk:</p> <p>A negligible to minor impact to flood risk and watercourses is anticipated during the operational phase of the committed development (One Earth Solar Farm, 2025). As such, no inter-project cumulative impacts during operation are anticipated.</p> <p>Land and Ground Conditions:</p> <p>The committed development is anticipated to have a moderate impact to soils during operation (One Earth Solar Farm, 2025). Due to the localised nature of this impact, no inter-project cumulative impacts to soils are anticipated during operation.</p> <p>Additionally, the committed development is anticipated to have a minor impact to groundwater. This is proposed to be mitigated through design and/or planning conditions. Following the implementation of the design/conditions for the committed development, no inter-project cumulative impacts to groundwater are anticipated.</p> <p>Socioeconomics and Human Health:</p>

Committed Development	Inter-Project Cumulative Impacts
	During operation, negligible socioeconomic impacts are anticipated as a result of the committed development.
12	<p>Landscape and Visual: The committed development and the Scheme would both be located within the same local landscape character area which has a history of industrial and agricultural land use. Given the proximity of the committed development and the Scheme, it is anticipated that there could be an inter-project cumulative impact on the local landscape character during operation.</p> <p>An inter-project cumulative visual amenity impact is anticipated for residential receptors and PRowS during the operational phase.</p> <p>Cultural Heritage: The committed development has the potential to have an impact to the setting of heritage assets in the surrounding area. It is assumed that the heritage impact of the committed development during operation will be considered as part of the developing design or as a planning condition. As such, no inter-project cumulative impact is anticipated during operation.</p> <p>Water and Flood Risk: There is the potential for the committed development to increase flood risk in the surrounding area. It is assumed that the flood risk impact of the committed development during operation will be considered as part of the developing design or as a planning condition. As such, no inter-project cumulative impact is anticipated during operation.</p> <p>Land and Ground Conditions: During operation, it is deemed unlikely that there are any aspects of the committed development that would lead to interproject cumulative impacts.</p> <p>Socioeconomics and Human Health: At the time of writing, operational staff numbers are unknown, but given the nature of the committed development, these are assumed to be small. As such, no inter-project cumulative impacts are anticipated.</p>
13	<p>Landscape and Visual: During operation, the committed development would introduce additional built energy infrastructure into the area, alongside the Scheme, although impacts would be localised and largely confined to within and immediately around the site (Planning Committee Report, BDC, 04 March 2026). The development is time-limited (40 years) and will be decommissioned, with landscape planting retained thereafter. Any adverse impacts are therefore largely reversible and reduce progressively over the life of the committed development (Planning Committee Report, BDC, 04 March 2026). It is</p>

Committed Development	Inter-Project Cumulative Impacts
	<p>therefore anticipated that there will be no inter-project cumulative impact on landscape and visual amenity during operation.</p> <p>Cultural Heritage and Archaeology:</p> <p>The Planning Committee Report (BDC, 04 March 2026) notes that the committed development does not form part of the immediate or intimate setting of any designated or non-designated heritage assets and that the distances involved, combined with the limited intervisibility between the proposal and surrounding historic buildings, mean that the committed development is unlikely to impose any significant effects on their setting. As such, it is anticipated that there will be no inter-project impacts during operation.</p> <p>Water Resources and Flood Risk:</p> <p>The committed development will manage flood risk through detailed design and will not increase flood risk on or off site. Drainage will be via an attenuation basin designed to the 1 in 100 year (+40% climate change) event allowance. Therefore, no inter-project related cumulative impacts during operation are anticipated.</p> <p>Land and Ground Conditions:</p> <p>Groundwater flood risk is considered low based on underlying geology, with further investigation to confirm final design which has been secured via a condition. Following the implementation of the design/conditions for the committed development, no inter-project cumulative impacts to groundwater are anticipated.</p> <p>Socioeconomics and Human Health:</p> <p>It is understood that no PRowS will be affected by the committed development. As such, no inter-project cumulative impacts are anticipated during operation.</p>
14	<p>The committed development overlaps with the Scheme although all permanent infrastructure will be placed below ground. Given that there will be no above ground infrastructure, and therefore no impacts during operation (Planning Officer Report, BDC 15 May 2026), no operational phase inter-project cumulative impacts are anticipated.</p>
15	<p>The committed development would overlap spatially with the Scheme. It is assumed that the committed development would be below ground where it coincides with the Scheme and would avoid electricity transmission infrastructure. There is not currently enough publicly available information to determine the nature and scale of potential inter-project cumulative impacts.</p>
16	<p>Landscape and Visual:</p> <p>The location of the committed development, the proposed Landscape Mitigation and Enhancement Plan and intervening vegetation are such that no operational inter-project cumulative impacts are anticipated.</p> <p>Cultural Heritage and Archaeology:</p>

Committed Development	Inter-Project Cumulative Impacts
	<p>The committed development will not harm heritage significance of any designated or non-designated assets. No operational phase inter-project cumulative impacts are anticipated.</p> <p>Water Resources and Flood Risk:</p> <p>The committed development will manage flood risk and will not increase flood risk on or off site. Therefore, no inter-project related cumulative impacts during operation are anticipated.</p> <p>Land and Ground Conditions:</p> <p>During operation, it is deemed unlikely that there are any aspects of the committed development that would lead to inter-project cumulative impacts.</p> <p>Socioeconomics and Human Health:</p> <p>PRoW diversion will be implemented to ensure no impacts from the committed development. The proposed Landscape Mitigation and Enhancement Plan and planning conditions will manage impacts to residential amenity from the committed development. As such, no inter-project cumulative impacts are anticipated during operation.</p>
17	<p>The committed development overlaps with the Scheme.</p> <p>Landscape and Visual:</p> <p>The committed development is centred within the Scheme, and within the vicinity of the existing High Marnham substation and associated infrastructure. As such, the existing landscape in the immediate area is industrial in nature and the committed development will be of a similar land use. An inter-project cumulative landscape impact is anticipated during the operational phase.</p> <p>It is anticipated that there will be a visual amenity inter-project cumulative impact during the operational phase.</p> <p>Cultural Heritage:</p> <p>Following the mitigation measures set out in this EAR, it is anticipated that there will be no inter-project cumulative impacts during the operational phase.</p> <p>Water and Flood Risk:</p> <p>Following the implementation of the drainage strategy for the committed development, no inter-project cumulative impacts during the operational phase are anticipated.</p> <p>Land and Ground Conditions:</p> <p>During operation, it is deemed unlikely that there are any aspects of the committed development that would lead to inter-project cumulative impacts.</p> <p>Socioeconomics and Human Health:</p>

Committed Development	Inter-Project Cumulative Impacts
	<p>During operation, there would be a small number of staff present for the committed development, which would have a limited impact on the local economy. As such, no inter-project cumulative impacts are anticipated during operation.</p> <p>It is understood that no PRowS will be affected by the committed development. As such, no inter-project cumulative impacts are anticipated during operation.</p>

4. Summary of Impacts and Measures

4.1 Construction Control Measures and Impacts

4.1.1 Table 4.1.1 summarises the key control, enhancement and monitoring measures, and residual impacts identified for the construction phase for each discipline as part of this EAR.

Table 4.1.1 Summary of construction control measures and impacts

Discipline	Control, Enhancement and Monitoring Measures	Level of Residual Impact
Ecology	Construction will be managed by a CEMP. The CEMP will include controls around lighting, screening, vegetation retention and removal, PRow management and reinstatement.	No residual impacts.
Landscape and Visual	Construction will be managed by a CEMP. The CEMP will include controls around lighting, screening, vegetation retention and removal, PRow management and reinstatement.	There will be temporary adverse impacts on landscape and visual amenity during the construction phase.
Cultural Heritage and Archaeology	Construction will be managed by a CEMP. Traffic management measures will be managed through CTMP.	There will be temporary adverse impacts on designated and non-designated heritage assets during the construction phase.
Air Quality	Implementation of measures included in this EAR and Appendix G Construction Dust Assessment and Methodology via a Dust Management Plan.	No residual impacts.
Water Resources and Flood Risk	Construction will be managed by a CEMP including method statements and controls to protect water environment receptors, manage surface water runoff, and promote water use efficiency.	There would be a low to negligible temporary impact to water environment resources.
Land and Ground Conditions	Construction will be managed by a CEMP and a Construction Phase (Health and Safety) Plan.	There will be a negligible to neutral impact during the construction phase.
Noise and Vibration	The residual impacts of construction noise and vibration have been scoped out of this EAR on the basis that this will be mitigated through the	Construction noise has been scoped out of this

Discipline	Control, Enhancement and Monitoring Measures	Level of Residual Impact
	implementation of a CEMP and due to the temporary nature of the construction impact.	EAR and has not been assessed.
Traffic and Transport	Construction traffic will be managed by a CTMP, covering but not limited to site access control, segregation of routes, HGV booking, traffic marshalling, delivery logistics, road condition surveys, management of abnormal load deliveries, wheel washing and a staff travel plan.	There will be short-term, temporary and negligible impact during construction.
Agriculture and Soils	Implementation of an SMP and CEMP.	No residual impacts.
Socioeconomics and Human Health	Construction will be managed by a CEMP and associated management plans for dust, traffic, and health and safety.	There will be temporary negligible adverse and beneficial impacts during the construction phase.
Cumulative Impacts	Construction will be managed by a CEMP and associated management plans, including a CTMP. No intra-project cumulative impacts are anticipated.	<p>An intra-project impact on human receptors is anticipated.</p> <p>The following inter project cumulative impacts are anticipated: Landscape and Visual (committed development 2, 3, 8, 11, 12, 13 and 17); Cultural Heritage (committed development 11); Socioeconomics and Human Health (committed development 11); and Agricultural Land and Soils (committed development 6, 7, 11, 12, 13, 16 and 17).</p>

4.2 Operation Control Measures and Impacts

- 4.2.1 Table 4.1.1 summarises the key control, enhancement and monitoring measures, and residual impacts identified for the operation phase for each discipline as part of this EAR.

Table 4.2.1 Summary of operation control measures and impacts

Discipline	Control, Enhancement and Monitoring Measures	Level of Residual Impact
Ecology	Maintenance will be managed by an Environmental Management Plan (EMP). The EMP will include controls around maintenance activities, vegetation retention and management, PRow management and reinstatement.	No residual impacts.
Landscape and Visual	Maintenance will be managed by an Environmental Management Plan (EMP). The EMP will include controls around maintenance activities, vegetation retention and management, PRow management and reinstatement.	There will be residual minor to neutral, minor, moderate to minor, moderate, and major to moderate beneficial impacts on landscape and visual amenity.
Cultural Heritage and Archaeology	None identified	No residual impacts
Air Quality	None identified	No residual impacts
Water Resources and Flood Risk	None identified	No residual impacts
Land and Ground Conditions	Implementation of the recommendations from the Jacobs 2024 GIR (foundations / concrete protection). Given the limited footprint of the infrastructure and no planned SuDS, no operational control measures are considered necessary.	No residual impacts
Noise and Vibration	None identified.	No residual impacts.
Traffic and Transport	None identified.	No residual impacts.
Agriculture and Soils	Implementation of an SMP as part of the management of maintenance works.	No residual impacts.
Socio-economics and Human Health	None identified.	No residual impacts.
Cumulative Impacts	Retention and protection of existing screening vegetation.	No intra-project cumulative impacts are anticipated.

Discipline	Control, Enhancement and Monitoring Measures	Level of Residual Impact
		The following inter-project cumulative impacts are anticipated: Landscape and Visual (committed development 3, 11, 12 and 17).

5. Planning and Policy

5.1 Introduction

- 5.1.1 This chapter of the EAR provides an overview of the legislation and planning policies applicable to the Scheme.

The Electricity Act 1989

- 5.1.2 Section 9(2) of the Electricity Act 1989 places general duties on National Grid as a licence holder:

‘to develop and maintain an efficient, co-ordinated and economical system of electricity transmission...’

- 5.1.3 The Electricity Act 1989 sets out that, with certain exceptions, consent must be obtained for installing and maintaining any electric lines above ground (i.e. overhead lines). However, Section 37 includes thresholds for electrical line installation which are considered minor works, including those less than 2km in length, less than 132kV nominal capacity and that are replacing an existing line that meets certain tests. For such minor works, an application for consent is submitted to the Secretary of State under Section 37 of the Electricity Act 1989.

- 5.1.4 In addition, 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:

‘(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

(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.’

- 5.1.5 National Grid’s Stakeholder, Community and Amenity Policy, published November 2025, sets out how the company will meet the Schedule 9 duty placed upon it by the legislation.

The Electricity Works (Environmental Impact Assessment) (England and Wales) Regulations 2017

- 5.1.6 The EIA process for development requiring consent under Section 37 of The Electricity Act 1989 is stipulated within the Electricity Works (Environmental Impact Assessment) Regulations.

The Town and Country Planning Act 1990

- 5.1.7 The Town and Country Planning Act 1990 is a key piece of planning legislation which consolidates various planning laws in England and Wales. It regulates the development of land and designates local councils as the primary authorities responsible for planning decisions. Under this Act, most types of new development will require permission from the Local Planning Authority, who make decisions based on policy compliance and the potential impacts relevant development may have on the environment and community.
- 5.1.8 Works requiring Section 37 consent may be subject to requests for deemed planning permission from the Secretary of State (not the LPA) under s.90(2A) of the 1990 Act.

5.2 National Planning Policy

National Planning Policy Framework

- 5.2.1 The National Planning Policy Framework (NPPF), 2026 (amended on 17 February 2026) sets out the Government's planning policies for England and how these should be applied. It establishes a national framework for plan-making and decision-making, with the purpose of contributing to the achievement of sustainable development. Importantly, the NPPF is a material consideration in determining planning applications and must be taken into account alongside the statutory development plan. The NPPF guides how the proposal should be assessed in relation to key national policy themes, such as meeting infrastructure needs, protecting the natural and historic environment, ensuring good design, climate change mitigation and adaptation, sustainable transport, and supporting a resilient energy and water system. The decision maker must weigh the development's contribution to sustainable development against any environmental or community impacts, having regard to the relevant national decision-making policies of the NPPF and using the framework as a national benchmark for what constitutes acceptable and well planned development.

National Policy Statements

- 5.2.2 National Policy Statements (NPSs) set out national policy for Nationally Significant Infrastructure Projects. The Scheme is not a Nationally Significant Infrastructure Project, however the following NPSs contain content which remains relevant because the Scheme seeks to deliver energy transmission infrastructure.

Overarching National Policy Statement for Energy (EN-1)

- 5.2.3 NPS EN-1 references the role of the NPS and its purpose to set out the Government's policy for delivery of major energy infrastructure. NPS EN-1, in conjunction with any relevant technology specific NPS, is the primary policy for Secretary of State decision making on associated development. NPS EN-1 outlines Government policy on energy and energy infrastructure development. It acknowledges that, 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, and further outlines the Government's commitment to reach Net Zero and meet objectives for sustainable development.

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

- 5.2.4 NPS EN-5 defines how the UK plans, assesses and consents major electricity network infrastructure needed for Net Zero. It strengthens strategic planning, simplifies need assessments, sets clear environmental and design expectations, and provides detailed guidance for both onshore and offshore transmission projects.

5.3 Local Planning Policy

- 5.3.1 The following local planning policy documents are relevant to the Scheme:

- Bassetlaw Local Plan 2020-2038 (Adopted 2024);
- Bassetlaw Local Plan Policies Map;
- Nottinghamshire Minerals Local Plan (Adopted 2021); and
- Nottinghamshire Waste Local Plan (Adopted 2025).

Bassetlaw Local Plan 2020-2038 (Adopted 2024)

- 5.3.2 The Bassetlaw Local Plan (BLP) was adopted by BDC on 29 May 2024.
- 5.3.3 The BLP sets out BDC's development strategy, planning policies and proposals, including site allocations, to guide land use and planning decisions in the district up to 2038. It forms part of the Development Plan for Bassetlaw, alongside the Bassetlaw Local Plan Policies Map (BLPPM) and Nottinghamshire Minerals and Waste Local Plans, and replaces the Bassetlaw Core Strategy and Development Management Policies Development Plan Document (2011).
- 5.3.4 Nottinghamshire County Council holds the Minerals and Waste Local Plans for the district.
- 5.3.5 Strategic Objective 11 of the BLP states that BDC places emphasis on transitioning to a Net Zero carbon district. The Strategic Objective notes that increasing resilience to climate change will require maximising opportunities to generate and use a vibrant mix of renewable energy, zero carbon and other alternative technologies.
- 5.3.6 The BLP policies of most relevance to the Scheme are:
- ST1: Bassetlaw's Spatial Strategy;
 - ST9: Large Rural Brownfield Sites;
 - ST33: Design Quality;
 - ST35: Landscape Character;
 - ST37: Green and Blue Infrastructure;
 - ST38: Biodiversity and Geodiversity;
 - ST39: Trees, woodlands and hedgerows;

- ST40: The Historic Environment;
- POLICY 41: Designated and Non Designated Heritage Assets;
- ST42: Promoting Healthy, Active Lifestyles;
- POLICY 46: Protecting Amenity;
- POLICY 47: Contaminated and Unstable Land;
- ST48: Reducing Carbon Emissions, Climate Change Mitigation and Adaptation;
- ST49: Renewable Energy Generation;
- ST50: Flood Risk and Drainage;
- ST51: Protecting Water Quality and Management; and
- ST56: Provision and Delivery of Infrastructure.

Bassetlaw Local Plan Policies Map

- 5.3.7 The land required to construct the Scheme is located outside defined settlement boundaries and is not subject to any designations within the BLPPM.

Nottinghamshire Minerals Local Plan (Adopted 2021)

- 5.3.8 The Nottinghamshire Minerals Local Plan was adopted on 25 March 2021 and covers the period to 2036. It sets out the minerals requirements for the county, site specific allocations to meet identified demand and a range of planning policies against which future minerals development will be assessed.

- 5.3.9 The Minerals Local Plan policies which relate to the Scheme are:

- SP7: Minerals Safeguarding, Consultation Areas and Associated Minerals Infrastructure

Nottinghamshire Waste Local Plan (Adopted 2025)

- 5.3.10 The new Nottinghamshire Waste Local Plan was adopted in September 2025. It replaces saved policies from the 2002 Waste Local Plan and the 2013 Waste Core Strategy.

- 5.3.11 The new Waste Local Plan provides the future planning strategy for waste management in Nottinghamshire and Nottingham until 2038 and aims to provide sufficient capacity to meet future needs.

- 5.3.12 Those relevant planning policies in the Nottinghamshire Waste Local Plan are:

- SP1: Waste prevention and re-use

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Appendix A High Marnham New Overhead Lines Glossary and Abbreviations

Appendix A

High Marnham New Overhead Lines Glossary and Abbreviations

Term	Definitions
AADT	Annual Average Daily Traffic
AAR	Average annual rainfall
AAWT	Annual Average Weekday Traffic
ALC	Agricultural Land Classification
AOD	Above Ordnance Datum
AQMA	Air Quality Management Area
AQS	Air Quality Strategy
AT0	Accumulated temperature
ATC	Automatic Traffic Count
BAP	Biodiversity Action Plan
BDC	Bassetlaw District Council
bgl	Below ground level
BGS	British Geological Survey
BMV	Best and Most Versatile
CA	Conservation area
CCTV	Closed-circuit television
CE	Common Era
CEMP	Construction Environmental Management Plan
CRoW	Countryside and Rights of Way
CTMP	Construction Traffic Management Plan
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DMMO	Definitive Map Modification Order
DMP	Dust Management Plan
DMRB	Design Manual for Roads and Bridges
DWS	Drinking Water Standard
EAR	Environmental Appraisal Report

Term	Definitions
eDNA	Environmental DNA
EIA	Environmental Impact Assessment
EMF	Electric and magnetic field
EPS	European Protected Species
EPSM	European Protected Species Mitigation
FCD	Field Capacity Days
FRA	Flood Risk Assessment
GB	Great Britain
GI	Ground Investigation
GIR	Ground Investigation Report
HDV	Heavy Duty Vehicle
HER	Historic Environment Record
HGV	Heavy Goods Vehicle
HoCC	Habitat of Conservation Concern
HPI	Habitats of Principal Importance
HPIE	Habitats of Principal Importance in England
HSI	Habitat Suitability Index
IAQM	Institute of Air Quality Management
IEMA	Institute of Environmental Management and Assessment
IMD	Indices of Multiple Deprivation
INNS	Invasive Non-Native Species
LAQM	Local Air Quality Management
LB	Listed building
LBAP	Local Biodiversity Action Plan
LCT	Landscape Character Type
LDV	Light Duty Vehicle
LGV	Light Goods Vehicle
LHA	Local Highway Authority
LLFA	Lead Local Flood Authority
LPA	Local Planning Authority
LWS	Local Wildlife Site
NBW	Night-time Bat Walk

Term	Definitions
NCA	National Character Area
NO ₂	Nitrogen dioxide
OS	Ordnance Survey
PM	Particulate Matter
PM ₁₀	Particulate Matter less than 10 microns in diameter
PPE	Personal Protective Equipment
PRF	Potential Roost Feature
PRoW	Public Right of Way
PV	Photovoltaic
RNAG	Reasons for Not Achieving Good
RPA	Root protection area
RPE	Respiratory Protective Equipment
SAC	Special Area of Conservation
SGT	Super grid transformer
SMP	Soil Management Plan
SPA	Special Protection Area
SRN	Strategic Road Network
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage Systems
TCPA	Town and Country Planning Act 1990
TEMPro	Trip End Model Presentation Program
UPVC	Unplasticized polyvinyl chloride
UXO	Unexploded Ordnance
WCA	Wildlife and Countryside Act 1981
WFD	Water Framework Directive
ZoI	Zone of Influence

Appendix B

Methodology

The Great Grid Upgrade

Chesterfield to High Marnham

Chesterfield to High Marnham

Environmental Appraisal Report – Appendix B: Methodology

October 2026

nationalgrid

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1. Ecology Methodology

1.1 Legislation, Policy and Guidance

1.1.1 This appraisal has been undertaken in accordance with current national legislation, and national, regional and local plans and policies relating to ecology in the context of the Scheme. A summary of the relevant legislation, policies and guidance, the requirements of these policies and the Scheme response is provided below.

Legislation

1.1.2 The following key legislation is of direct relevance to the appraisal of the Scheme.

Table 1.1 Legislation

Legislation	Details
The Conservation of Habitats and Species Regulations 2017 (as amended) ('the Habitats Regulations')	The Habitats Regulations require authorities on behalf of the Secretary of State to maintain a list of sites which are important for either habitats or species (Special Areas of Conservation (SACs) and Special Protection Areas (SPAs)) and to provide protection for these sites through designation, planning, and other controls. The Habitats Regulations make it an offence (subject to exceptions) to deliberately kill, injure, disturb, capture, or trade in the animals listed in Schedule 2, or pick, collect, cut, uproot, destroy, or trade in the plants listed in Schedule 4. However, these actions can be made lawful through the granting of licences by the appropriate authorities (Natural England in England). Licences may be granted for several purposes (such as science and education, conservation, preserving public health and safety), but only after the appropriate authority is satisfied that there are no satisfactory alternatives and that such actions will have no detrimental effect on the favourable conservation status of the species concerned.
Wildlife and Countryside Act 1981, as amended (WCA)	The WCA is the main mechanism for legislative protection of wildlife in England. It gives protection to native species (particularly threatened species), making it an offence to kill, injure, take, sell, or possess them, or to damage or destroy their resting places and places of shelter (with exceptions). The WCA gives protection to certain species of wild plants and safeguards important habitats by making it an offence to damage or destroy certain designated habitats, such as Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs). The WCA also prohibits the spread and release of certain non-native species into the wild.
Protection of Badgers Act 1992	Badger (<i>Meles meles</i>) and their setts are protected under the Protection of Badgers Act 1992. This protects badgers and their setts by making it an offence to:

Legislation	Details
	<ul style="list-style-type: none"> • wilfully kill, injure, or take a badger; • destroy a badger sett or damage any part of it; • obstruct access to, or any entrance of, a badger sett; and • disturb a badger when it is occupying a badger sett. <p>A licence from Natural England is required for any activity that would result in obstruction, disturbance, or closure (temporarily or permanently) of an active sett. If a main sett requires closure, mitigation must be provided by the construction of an artificial sett along with proof of uptake by badgers.</p>
Countryside and Rights of Way Act 2000	The Countryside and Rights of Way Act 2000 places a duty on government departments to have regard to the conservation of biodiversity and maintain lists of species and habitats for which conservation steps should be taken or promoted, in accordance with the Convention on Biological Diversity (this duty was strengthened in the Natural Environment and Rural Communities (NERC) Act 2006. It also strengthens legal protection for species considered to be threatened under the WCA and increases powers for the protection and management of SSSIs.
Natural Environment and Rural Communities (NERC) Act 2006	The NERC Act places a duty upon public bodies to maintain Section 41 (S41) lists of flora, fauna and habitats, and to consider these ecological features as a material consideration in planning. It also requires decision-makers to have regard to the conservation of biodiversity in England, when carrying out their normal functions.
The Invasive Alien Species (Enforcement and Permitting) Order 2019 (the Invasive Species Order')	This order strengthens the legislation in relation to widely spread species of European Union concern; requiring effective management measures to be put in place to minimise their impacts. A person who plants or otherwise causes to grow in the wild any specimen which is of a species of plant which is included in Part 2 of Schedule 2 is guilty of an offence.
Environment Act 2021	In line with 'A Green Future: Our 25 Year Plan to Improve the Environment' (HM Government, 2018), new development should identify and pursue opportunities for securing measurable net gains for biodiversity and for the wider environment. Environment Act 2021 introduces a mandatory requirement for 10% biodiversity net gain for new developments to ensure that they enhance biodiversity and create new green spaces for local communities to enjoy. Integrating biodiversity net gain into the planning system will provide a step change in how planning and development is delivered. There is also a strong focus on delivering environmental net gain. This would preferably be achieved on-site, however there are options to deliver these gains off-site and this would be demonstrated via the Statutory Biodiversity Metric calculation tool.

Policy

- 1.1.3 The following key planning policies are of relevance to the appraisal of the Scheme for Ecology.

National policy

- 1.1.4 The National Planning Policy Framework (NPPF) (MHCLG, 17 August 2026) sets out the Government's planning policies for England and how these are expected to be applied by Local Authorities within their Local Development Frameworks (LDF). Section 19 (Conserving and Enhancing the Natural Environment) seeks to safeguard and enhance biodiversity, geodiversity, landscapes and natural capital, support nature recovery, strengthen ecological networks and protect designated sites and irreplaceable habitats. The NPPF requires development proposals to minimise adverse effects on biodiversity and secure biodiversity net gain where applicable. It states the following:

- If significant harm to biodiversity resulting from a development cannot be avoided, adequately mitigated or as a last resort compensated for then planning permission should be refused.
- Developments affecting habitat sites, SSSI and other designated sites of importance for biodiversity must be assessed in accordance with relevant national policy safeguards.
- Development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland, and ancient or veteran trees) should normally be refused unless there are wholly exceptional reasons and a suitable compensation strategy exists.
- Developments whose primary objective is to conserve or enhance biodiversity, strengthen ecological networks and contribute to nature recovery should be incorporated into development proposals wherever possible. Opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure net gains for biodiversity.

Local policy

- 1.1.5 The following policies within the Bassetlaw Local Plan 2020 to 2038 (Bassetlaw District Council, 2024) relate to biodiversity and nature conservation:
- Policy ST36 Green Gaps:
 - To retain Green Gaps and preserve their integrity.
 - Policy ST37 Green and Blue Infrastructure:
 - To retain major and minor green corridors and their buffers and maintain and enhance their integrity.
 - Policy ST38 Biodiversity and Geology:
 - All new developments to secure 10% biodiversity net gain (BNG)
 - Any proposal having an adverse impact upon a SSSI, NNR, ancient woodland or their buffer zone is delivering the required mitigation.
 - Policy ST39 Trees, Woodlands and Hedgerows:

- The Council will protect existing trees, woodland and hedgerows and secure additional planting that increases canopy cover in the interest of biodiversity, amenity and climate change adaptation.

Other Relevant Policy

- 1.1.6 The Nottinghamshire Local Biodiversity Action Plan (LBAP) is a document that provides a framework for work on nature and conservation at a local level. It is part of a national approach to biodiversity and identifies important species and habitats in Nottinghamshire, giving each one an action plan to aid in their conservation.
- 1.1.7 The Birds of Conservation Concern 5 (BoCC5) defines rare and threatened bird species on two lists (Red and Amber) describing the varying levels of conservation concern for each species (Stanbury A. J., 2021; Stanbury A. J., 2024).

Guidance

- 1.1.8 The Chartered Institute of Ecology and Environmental Management (CIEEM) is the leading professional membership body representing and supporting ecologists and environmental managers in the UK. CIEEM's competency framework specifies the skills and levels of competence expected of their members working in the profession (CIEEM, 2021). All surveys and assessments have been undertaken by suitably qualified and experienced ecologists as per CIEEMs competency framework. CIEEM has developed guidelines to promote good practice in Ecological Impact Assessment (EclA) (CIEEM, 2018). EclA can be used for the appraisal of projects of any scale, including the ecological component of EIA. All surveys and assessments have been made in line with CIEEMs guidelines for EclA.
- 1.1.9 All surveys were conducted following the appropriate guidelines, as follows:
 - Habitat Surveys:
 - Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017); and
 - UK Habitat Classification Documents V2.0 (UKHab Ltd, 2023).
 - Amphibian (Great Crested Newt *Triturus cristatus*):
 - Great Crested Newt Habitat Suitability Index (Amphibian and Reptile Groups of the United Kingdom, 2010);
 - Analytical and methodological development for improved surveillance of Great Crested Newt (Biggs et al., 2014); and
 - Great crested newt licence method statement 'age of survey data' guidelines (Natural England, 2025).
 - Otter:
 - Monitoring the Otter *Lutra lutra* (Chanin, 2003).
 - The Otter Field Survey and Monitoring Handbook (2026)
 - Water vole:
 - The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series) (Dean et al., 2016).

- Breeding Birds:
 - Breeding Bird Survey Methodology (British Trust for Ornithology (BTO), 2019); and
 - Breeding Evidence Methodology (BTO, 2024).
- Roosting Bats:
 - Bat Conservation Trust (BCT) ‘Best Practice Guidelines’ 3rd edition (Collins, 2016);
 - Bat Conservation Trust (BCT) ‘Best Practice Guidelines’ 4th edition (Collins, 2023); and
 - Arboriculture Association Safety Guides (Arboriculture Association, 2021).
- Foraging and Commuting Bats:
 - Bat Conservation Trust (BCT) ‘Best Practice Guidelines’ 3rd edition (Collins, 2016);
 - Bat Conservation Trust (BCT) ‘Best Practice Guidelines’ 4th edition (Collins, 2023).
- Badger:
 - Surveying Badgers (Harris, Cresswell, & Jefferies, 1989).

1.1.10 Planning Practice Guidance (PPG) for Biodiversity Net Gain (MHCLG, 2024b) was first published on 14 February 2024 and was last updated on 1 31 July 2026. As confirmed in the PPG Biodiversity Net Gain has not been commenced for planning permissions granted through a Deemed Planning Permission and so therefore any request for Deemed Planning Permission in support of the application for Section 37 consent will not be subject to the mandatory 10% BNG condition that does attach to the TCPAs.

1.2 Study Area

1.2.1 Table 1.2 summarises the search areas used for ecological receptors with regards to the appraisal of this Scheme.

Table 1.2 Ecological receptors search area

Designation	Search Area from the Scheme
International or European statutory designated sites	Land required to construct the Scheme plus 10km
National statutory designated sites	Land required to construct the Scheme plus 2km
Other statutory designated sites	Land required to construct the Scheme plus 2km
Non-statutory designated sites	
Protected and notable species	
Invasive, non-native species	

Designation	Search Area from the Scheme
Granted European Protected Species Mitigation (EPSM) licences	
Protected and notable habitat (including ancient woodland)	Land required to construct the Scheme plus 2km

1.3 Surveys

Desk Study

- 1.3.1 A desktop study was initially undertaken by Arcadis in February and April 2023, May 2024 and updated in May and June 2026. Existing ecological information relating to the Scheme and their surroundings was obtained as part of the assessment.
- 1.3.2 The baseline conditions were informed by a review of existing available information including:
- MAGIC (Multi-Agency Geographical Information for the Countryside) website (MAGIC, 2026). The MAGIC website was used to search for any statutory designated sites of nature conservation importance within a specific radius of the land required to construct Scheme, (radius based upon the maximum likely predicted zone of influence) as outlined in Table 1.2;
 - Ordnance Survey (OS) mapping and aerial photography were studied to place habitats within the study area in the wider context; identify potential ecological features that may not be evident on the ground during the field survey; and identify potential barriers to animal movements (such as road networks, built development and major watercourses) (Google, 2026); and
 - The Nottinghamshire Biological & Geological Records Centre was approached to provide ecological records of protected and notable species, habitats and non-statutory designated sites within 2km of the Scheme. Protected species records from this local records centre includes Environment Agency data.

Surveys

Habitat Survey

- 1.3.3 An Extended Phase 1 survey was conducted in April to September 2023 of a wider and since superseded survey boundary provided for overhead line works. An updated walkover was conducted in May and June 2026, to ensure the baseline conditions of the Scheme had not changed and to close any data gaps within the land required to construct the Scheme. The surveys followed methodology in line with the Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017). These surveys included searches of the Scheme for field signs of protected and species of principal importance (HMSO, 2006).
- 1.3.4 A UK Habitat Classification (UKHab) survey was undertaken at the same time as the Extended Phase 1 survey, in compliance with the UKHab guidance documents (UKHab Ltd, 2023). Primary habitats on land required to construct the Scheme were classified using Level 3 and Level 4 of the UKHab hierarchy.

Invasive Non-native Species

- 1.3.5 The INNS surveys involved surveyors walking across all areas of the land required to construct the Scheme and recording any evidence of INNS presence listed on Schedule 9 of Wildlife and Countryside Act 1981 (HMSO, 1981) and/or Invasive Alien Species Order 2019 (HMSO, 2019). This survey was conducted in April to September 2023 and updated on in May and June 2026. Surveyors used GIS to record species, presence, location and extent of INNS.

Amphibians

- 1.3.6 The aim of the surveys was to assess waterbodies within 250m of the Scheme to determine their suitability to support great crested newt and to undertake, where appropriate, additional surveys to determine the presence/absence of great crested newt in order to inform mitigation relating to the proposed works.
- 1.3.7 Initially five ponds were scoped into the assessment during a review of OS Mapping (OpenStreetMap, 2026) and aerial imagery (Google, 2026) of these, 2 ponds were later scoped out due to ponds found to be dry/filled in following surveys in 2026. A Habitat Suitability Index (HSI) (Amphibian and Reptile Groups of the United Kingdom, 2010) assessment was taken of ponds scoped in. These surveys were completed by suitably qualified Arcadis ecologists in May 2026.

Otter and Water Vole

- 1.3.8 One otter and water vole walkover survey was carried out along waterbody edges in May and June 2026 using the relevant guidelines, Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series) (2016), Monitoring the Otter *Lutra lutra* (2003) and The Otter Field Survey and Monitoring Handbook (2026). The surveys were conducted to search for, record and map signs of otter and water vole (namely droppings/latrines, feeding remains, footprints, paths/runs, burrows, holts, direct sightings). A team of two surveyors walked the length of each watercourse within the land required to construct the Scheme recording any otter or water vole activity field signs present. Additionally, surveyors assessed the watercourse and surrounding habitats' wider suitability for both species.

Breeding Birds

- 1.3.9 Breeding bird surveys were conducted for the proposed new 400kV iHigh Marnham substation based on the guidelines in the British Trust for Ornithology (BTO) Breeding Bird Survey methodology and involves walking along pre-determined transect routes around the site, with surveys starting just after dawn and finishing before 11am. All encountered bird species that are afforded protection under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), and those that are red and amber listed Birds of Conservation Concern are recorded and plotted on a map/plan.
- 1.3.10 Surveys were undertaken and lead by suitably qualified ecologists/ornithologists on the following dates:
- 4 April 2024
 - 28 May 2024
 - 12 June 2024
 - 26 June 2024
 - 10 July 2024

- 1.3.11 Data analysis was undertaken and breeding status was assessed using the BTO breeding evidence methodology. For the report, ‘probable’ and ‘confirmed’ breeding have been combined as ‘breeding’, as during these surveys no intensive checks within vegetation were undertaken to identify any nests.

Roosting Bats

- 1.3.12 An initial Ground Level Tree Assessment (GLTA) and Preliminary Roost Assessment (PRA) was undertaken to assess the suitability of trees to support bat roosts in 2023. An updated survey was carried out in May and June 2026. Trees and structures were visually inspected from the ground initially for evidence of roosting bats including droppings, urine staining, feeding remains, with a focus on recording potential roost features (PRFs).
- 1.3.13 To note the initial GLTA undertaken in 2023 were under the Bat Conservation Trust (BCT) ‘Best Practice Guidelines’ 3rd edition (Collins, 2016), as these were the most up to date guidelines at the time of the survey.
- 1.3.14 An updated GLTA and PRA survey was undertaken in 2026 using updated guidance (Collins, 2023), to categorise PRFs.

Badger

- 1.3.15 Evidence of badger within, and immediately adjacent to, the Scheme were surveyed for concurrently with the original Extended Phase 1 survey, and updated in May and June 2026. The identification of badger field signs followed standard methodology detailed in “Surveying Badgers” (Harris, Cresswell, & Jefferies, 1989). This included surveying for badger setts, latrine/dung pits, foraging marks, feeding signs and pathways.

1.4 Appraisal Approach

Method of Assessment

- 1.4.1 The EcIA method has followed the current applicable guidance, including the CIEEM Guidelines for EcIA (CIEEM, 2018).
- 1.4.2 The current guidance on EcIAs (CIEEM, 2018) recommends that all ecological factors that occur within a ‘zone of influence’ (Zol) for a proposed development are investigated. The Zol is variable depending on the ecological receptors affected and is commonly decided using experience and professional judgement.
- 1.4.3 The following assessment process, which will cover all phases of the Scheme, involves:
- determining the importance of ecological features affected, through survey and/or research and with reference to available contextual information;
 - assess impacts potentially affecting important features;
 - characterise the impacts, e.g. extent, magnitude, duration, reversibility, timing and frequency; and
 - identify cumulative impacts.

- 1.4.4 The assessment of impacts should take into account the baseline conditions to allow a description of how the baseline conditions will change as a result of the Scheme and associated activities and the identification of cumulative impacts arising from the proposal and other relevant developments.
- 1.4.5 There are a large number of sites, habitats and species that provide the key focus for biodiversity conservation in the UK and Ireland, supported by policy and legislation. These provide an objective starting point for identifying the important ecological features that need to be considered. The factors which will be taken into consideration in evaluating ecological features for both habitats and species are devised following CIEEM guidelines. The following geographic frame of reference have been used to determine the importance of ecological features: International; National; Regional; County; Local and Site as set out in the CIEEM guidelines. The categories of valuation are presented in Table 1.3.

Table 1.3 Categories of valuation

Level of Importance	Example
International	<p>Habitats</p> <p>An internationally designated site or candidate site (SPA, provisional SPA, SAC, candidate SAC, Ramsar Site, Biogenetic/Biosphere Reserve) or an area that would meet the published selection criteria for designation. A viable area of habitat type listed in Annex I of the Habitats Directive, or smaller areas of such habitat, which are essential to maintain the viability of a larger whole.</p> <p>Species</p> <p>Species populations of habitat areas (such as those listed in Annex I, II or IV of the Habitats Directive or Annex I of the Birds Directive) of international importance due to relative size, rarity or quality of the feature.</p>
National	<p>Habitats</p> <p>A nationally designated site, Site of Special Scientific Interest (SSSI), National Nature Reserve (NNR), Marine Nature Reserve (MNR) or a discrete area, which would meet the published selection criteria for national designation (e.g. SSSI selection guidelines). A viable area of a habitat of principal importance (e.g. ancient woodland), or of smaller areas of such habitat essential to maintain wider viability.</p> <p>Species</p> <p>Species populations or habitat areas of national importance (including legally protected or NERC Act S41 species or habitats) due to relative size, rarity or quality of the feature.</p>
Regional	<p>Habitats</p> <p>Sites that exceed the County-level designations but fall short of SSSI selection criteria. Viable areas of key habitat identified in the Regional Biodiversity Action Plan (BAP) or smaller areas of habitat essential to maintain wider viability.</p>

Level of Importance	Example
	<p>Species</p> <p>Any regularly occurring, locally significant population of a species listed as being nationally scarce, which occurs in 16 of 100 10km² squares in the UK or in a Regional BAP. A regularly occurring, locally significant population/number of a regionally important species. Sites maintaining populations of internationally/nationally important species that are not threatened or rare in the region or county.</p>
County	<p>Habitats</p> <p>Sites recognised by local authorities, e.g. Local Nature Reserves. Non-statutory designations attributed by the Local Planning Authority such as Sites of Importance for Nature Conservation (SINCs). A viable area of habitat identified in County BAP. A diverse and/or ecologically valuable hedgerow network.</p> <p>Species</p> <p>Any regularly occurring, locally significant population of a species listed in a County BAP due to regional rarity or localisation. A regularly occurring, locally significant population of a County important species. Sites supporting populations of internationally/nationally/regionally important species that are not threatened or rare in the region or county, and not integral to maintaining those populations. Sites/features scarce in the County or that appreciably enrich the County habitat.</p>
Local	<p>Habitats</p> <p>Areas of habitat that appreciably enrich the local habitat resource (e.g. species-rich hedgerows, ponds etc). Sites that retain other elements that due to their size, quality or the wide distribution within the local area are not considered for the above classifications.</p> <p>Species</p> <p>Populations/assemblages of species that appreciably enrich the biodiversity resource within the local context. Sites supporting populations of County important species that are not threatened or rare in the County and are not integral to maintaining those populations.</p>
Site	<p>Habitats</p> <p>Habitats that are only of value at the Site scale.</p> <p>Species</p> <p>Species that are only of value at the Site scale.</p>

1.5 Limitations and Assumptions

- 1.5.1 The following assumptions and limitations are relevant to the appraisal of ecology. Any specific limitations to the survey effort are noted within the relevant technical appendices.
- A precautionary approach has been taken in the prediction of impacts. Where there is any doubt, a species will be assumed present, and an impact will be given the higher level of significance;
 - Field surveys are limited by a variety of factors which affect the presence of flora and fauna (i.e., climatic variation, season and species behaviour). A lack of evidence of a protected species during a survey does not mean that the species is absent; hence the survey also records and assesses the ability of habitats to support such species. The time frame in which the survey is implemented provides a snapshot of activity within the survey area and cannot necessarily detect all evidence of use by a species;
 - It should be noted that whilst every effort has been made to provide a comprehensive description of the Scheme, no investigation can ensure the complete characterisation of the natural environment. The field survey does not constitute a full botanical survey. Plant species may have been under-recorded, unidentifiable or not visible due to the time of year the survey was carried out;
 - The findings presented in the targeted species report represent those at the time of survey and reporting, and data collected from available sources. Ecological surveys are limited by factors which affect the presence of species, such as weather conditions, movement patterns and behaviour;
 - The breeding bird surveys and bat activity surveys were only conducted within the land required for the proposed new 400kV High Marnham substation and not the land required to construct the Scheme; and
 - Parts of the Scheme could not be assessed in updated 2026 surveys due to land access limitations. Some of these areas were previously assessed in 2023 and therefore have some data, and some small sections have a complete lack of data. Where this is the case, the appraisal takes a precautionary approach.

2. Landscape and Visual Methodology

2.1 Legislation, Policy and Guidance

- 2.1.1 This appraisal has been undertaken in accordance with current national legislation, and national, regional and local plans and policies relating to Landscape and Visual Impact in the context of the Scheme. A summary of the relevant legislation, policies and guidance, the requirements of these policies and the Scheme response is provided below.

Legislation

International

- 2.1.2 The UK is a signatory to the European Landscape Convention (ELC) (Council of Europe, 2000) which was ratified in 2006 and became binding in the UK from 1 March 2007. The Convention is not an EU Directive; rather, countries that ratify the Convention make a commitment to upholding the principles it contains within the context of their own domestic legal and policy frameworks.
- 2.1.3 There is no UK legislation specifically covering Landscape or Visual Amenity, but the spirit of the ELC is carried through in planning policy. Landscape is defined in the ELC as:
- ‘an area, as perceived by people, whose character is the result of the action and interaction of natural and / or human factors.’*
- 2.1.4 Furthermore, it recognises that all landscapes are potentially important, irrespective of location or condition – signatories acknowledge:
- ‘... that the landscape is an important part of the quality of life for people everywhere: in urban areas and in the countryside, in degraded areas as well as in areas of high quality, in areas recognised as being of outstanding beauty as well as everyday areas’.*

National

- 2.1.5 The Environment Act 2021 includes the following sections that deal specifically with Landscape and Visual matters:
- Paragraphs 13–16 (in Part 6, Schedule 14, under ‘Condition of planning permission relating to biodiversity gain’).
- 2.1.6 These paragraphs lay out the mandatory biodiversity gain plan requirements and approval mechanisms including, the need to submit and have approved a landscape and habitat enhancement plan before development begins. However, biodiversity net gain has not been commenced for planning permissions granted through Deemed Planning Permission and therefore any request for Deemed Planning Permission in support of the application for Section 37 consent will not be subject to the mandatory 10% BNG condition that does attach to the TCPAs.

Policy

National

- 2.1.7 The NPPF (MHCLG, 2026) attaches importance to the character of the built environment, emphasising that developments should add to the overall quality of the area, respond to local character and history and reflect the identity of local surroundings and materials. The policies that are most relevant to landscape and views are as follows.
- 2.1.8 Section 14: Achieving well-designed places
- Policy DP3 states that development proposals should respond to their context, including the character and features of the site and its setting, so that they integrate with and enhance their surroundings. Development proposals should also create visually attractive, distinctive and characterful development and maintain a strong sense of place.
- 2.1.9 Section 19: Conserving and Enhancing the Natural Environment
- Policy N1 states that development plans should safeguard and enhance the natural environment, including landscapes, habitats and ecological networks, and steer development towards land of least environmental value where consistent with other policies in the NPPF;
 - Policy N2 states that development proposals should consider the environmental qualities of land proposed for development, including landscape character and the natural beauty of the countryside, and identify opportunities for those qualities to be conserved or enhanced; and
 - Policy N4 states that development proposals within Protected Landscapes should be limited in scale and extent and sensitively located and designed to avoid harm to their statutory purposes and special qualities. Development proposals within the setting of Protected Landscapes should also be sensitively located and designed to avoid or minimise adverse impacts

Local

- 2.1.10 The study area lies within the administrative boundary of Bassetlaw District Council.

Bassetlaw Local Plan 2020-2028

- 2.1.11 The Bassetlaw Local Plan 2020-2028 (adopted May 2024) (Bassetlaw District Council, 2024), sets out the Council's policies and proposals to plan and manage growth and development, and to achieve the Plan's vision for Bassetlaw.
- 2.1.12 Relevant policies within the Local Plan include:
- POLICY ST5: Provision of Land for Employment Development
- 'To deliver the Council's strategy for economic prosperity and inward investment and to support job growth and upskilling of residents, sustainable economic growth will be directed to the General and Larger Unit Employment Sites and a Strategic Employment Site in this plan period.'*

- POLICY ST33: Design Quality, 8.3 Landscape Character – this policy, along with ST36 seeks to maintain and enhance the assets that make a fundamental contribution to the quality of the landscape character in Bassetlaw.

‘Development can make a positive contribution towards conserving, reinforcing, restoring and creating landscape, by being influenced by local context, demonstrating an understanding of how the existing landscape character has evolved and using that understanding to positively and sensitively influence the design of new development.’

- POLICY ST35: Landscape Character

‘1. Proposals that contribute to the nature and quality of Bassetlaw’s landscapes will be supported where it can be demonstrated that:

a) it protects and where possible enhances the distinctive qualities of the relevant landscape character policy zone, as identified in the Bassetlaw Landscape Character Assessment 2009 by conserving, restoring, reinforcing or creating relevant landscape forms and features; and

b) in the case of the Local Plan site allocations, also promotes the development opportunities identified within the Site Allocations: Landscape Study 2019 and the Landscape Assessment Addendums 2020, 2021 and 2022.

2. Proposals in an edge of settlement location will be expected to create a positive interface between the urban and rural environments. This should be demonstrated through compliance with Part 1 of this Policy, and by considering layout, density, scale, massing and form of development in accordance with Policy ST33.’

- POLICY ST37: Green and Blue Infrastructure

‘The connectivity, quality, multifunctionality, biodiversity and amenity value of the green and blue infrastructure network will be enhanced, extended and managed through:

a) protecting and enhancing the landscape character and the distinctiveness of Green Gaps, Registered Parks and Gardens and ornamental parklands, registered Common Lands and Village Greens, and Local Green Spaces;

b) protecting, enhancing and restoring watercourses, ponds, lakes and water dependent habitats where appropriate; 143 Bassetlaw Local Plan 2020-2038;

c) providing for biodiversity net gain, including reconnecting vulnerable and priority habitats (see policy ST38);

d) protecting and enhancing ancient and mature woodland and hedgerows, and providing for tree planting to secure recreational benefits and/or to aid climate change mitigation;

e) making appropriate provision for new green/blue infrastructure in new development including open space, allotments, playing fields and outdoor sports facilities, and natural and semi natural greenspace and bluespace; and/or incorporating and where practicable facilitating the improvement of existing provision through the design of development;

f) applying climate change mitigation and adaptation measures through new development, including flood risk and watercourse management; and

g) linking walking and cycling routes, bridleways and public rights of way to and through development, where appropriate.’

- POLICY ST39: Trees, Woodlands and Hedgerows

'1. The Council will protect existing trees, woodland and hedgerows and secure additional planting that increases canopy cover in the interests of biodiversity, amenity and climate change adaptation by:

a) retaining, protecting and improving woodland and trees subject to Tree Preservation Orders (TPOs), trees within conservation areas, and 'important' hedgerows as defined by the Hedgerows Regulations 1997;

b) making Tree Preservation Orders;

c) giving consideration to trees and hedgerows both on individual merit as well as their contribution to amenity and interaction as part of a group within the broader landscape setting;

d) resisting the loss or deterioration of ancient woodland and ancient or veteran trees unless there are wholly exceptional reasons and a suitable compensation strategy exists;

e) seeking from major development, provision for new trees or an equivalent financial contribution to help mitigate the impacts of climate change in accordance with Policy ST48.

2. Where development would adversely affect trees or hedgerows the application must be accompanied by:

a) an accurate tree survey and arboriculture assessment, undertaken by an experienced arboriculturist, of all existing trees and hedgerows on site in accordance with BS: 5837 (Trees in relation to design, demolition and construction – Recommendations) 2012;

b) details of protective measures to be put in place during the development to ensure the health and safety of each specimen and hedgerow to be retained;

c) an avoidance and mitigation strategy to include replacement planting for specimens of at least equal amenity and ecological value of a local provenance; and

d) a detailed management plan providing details of maintenance arrangements for 10 years.'

- POLICY ST40: The Historic Environment

1. The historic environment will be conserved and enhanced, sensitively managed, enjoyed and celebrated for its contribution to sustainable communities. Proposals will be supported where they:

a) give great weight to the conservation and re-use of designated heritage assets and their settings, including for appropriate temporary use, based on their significance in accordance with national policy;

b) make a positive contribution to the character and local distinctiveness of the historic environment, including through the use of innovative design;

c) positively conserve or enhance a historic designed landscape;

d) maintain, conserve, sustain or return to beneficial use designated or non-designated assets;

e) capitalise in an appropriate and sensitive manner the regeneration, tourism and energy efficiency potential of heritage assets;

- f) positively secure the conservation and re-use of 'at risk' heritage assets;
- g) improve access and enjoyment of the historic environment where appropriate, particularly where they retain, create or facilitate public access to heritage assets to increase understanding of their significance.

2. Applicants will be required to submit evidence in line with best practice and relevant national guidance, examining the significance of any heritage assets affected through a Heritage Statement, including any contribution made by their setting. The level of detail should be proportionate to the asset's significance, and the results submitted to the Nottinghamshire Historic Environment Record. In some circumstances, further survey, analysis and/or recording will be made a condition of consent.

Newark and Sherwood Local Development Framework Core Strategy and Allocations – Amended Core Strategy, adopted in March 2019 (Newark and Sherwood District Council, 2019)

2.1.13 Relevant Core Strategy policies include the following.

- CORE POLICY 12 Biodiversity and Green Infrastructure:

'The District Council will seek to conserve and enhance the biodiversity and geological diversity of the district by working with partners to implement the aims and proposals of the Nottinghamshire Local Biodiversity Action Plan, the Green Infrastructure Strategy and the Nature Conservation Strategy. The District Council will therefore:

- *Expect proposals to take into account the need for continued protection of the district's ecological, biological and geological assets. With particular regard to sites of international, national and local significance, Ancient Woodlands and species and habitats of principal importance identified in Section 41 of the Natural Environment and Rural Communities Act 2006 and in the Nottinghamshire Local Biodiversity Action Plan.*
- *Seek to secure development that maximises the opportunities to conserve, enhance and restore biodiversity and geological diversity and to increase provision of, and access to, green infrastructure within the District.*
- *Promote the appropriate management of features of major importance for wild flora and fauna.*
- *Provide for Suitable Alternative Natural Green Space to reduce visitor pressure on the district's ecological, biological and geological assets, particularly in the Newark area and for 5kms around the Birklands and Bilhaugh Special Area of Conservation.*
- *Support the development of a Green Infrastructure Network, as illustrated in the Green Infrastructure Diagram, linking together Key Strategic Routes throughout the District and providing for, in appropriate locations, visitor infrastructure that improves accessibility. The District Council will, in particular, promote improved green infrastructure linkages between:*
 - *Newark and Southwell; and*
 - *Southwell and the north-west of the District*

- *Development proposals crossing or adjacent to the network should make provision for its implementation and/or enhancement.*
- *Positively view proposals that seek to enhance the District's Green Infrastructure resource in support of tourism development. Proposals in the Bilsthorpe, Edwinstowe and Ollerton & Boughton areas, in connection with the Sherwood Forest Regional Park, will be supported. In Newark, new Green Infrastructure schemes that maximise the potential of the Trent Riverside area will be supported.*
- *Support the implementation of area-based Strategic Green Infrastructure interventions. Work with partners to develop a strategic approach to managing Air Quality in the Sherwood Area, including through the development of a Supplementary Planning Document.'*

- **CORE POLICY 13: Landscape Character:**

'Based on the comprehensive assessment of the district's landscape character, provided by the Landscape Character Assessment Supplementary Planning Document, the District Council will work with partners and developers to secure:

- *New development which positively addresses the implications of relevant landscape Policy Zone(s) that is consistent with the landscape conservation and enhancement aims for the area(s) ensuring that landscapes, including valued landscapes, have been protected and enhanced.'*

Planning Practice Guidance (PPG)

- 2.1.14 Planning Practice Guidance (PPG) is published alongside the NPPF and adds further context in specific areas of planning policy. It is intended that the NPPF and PPG are read together.
- 2.1.15 The following PPG documents are considered to be of relevance to Landscape and Visual matters.
- 2.1.16 Natural Environment (MHCLG, updated 2025):
- Landscape Character: The PPG advises that local plans should include policies that protect and enhance the intrinsic character and beauty of the countryside. Landscape character assessments (LCAs) and sensitivity studies should inform planning decisions to ensure that developments are sensitive to the landscape setting; and
 - Valued Landscapes: The PPG highlights that valued landscapes, particularly those with statutory designations (such as National Parks and National Landscapes), should be given strong protection, in line with the NPPF's requirements.
- 2.1.17 Design: Process and Tools (Department of Levelling Up, Housing and Communities)
- Paragraph 001 (Reference ID: 26-001-20191001)
- "As set out in paragraph 134 of the National Planning Policy Framework, development that is not well designed should be refused, especially where it fails to reflect local design policies and government guidance on design, taking into account any local design guidance and supplementary planning documents such as design guides and codes. Conversely, significant weight should be given to: a) development*

which reflects local design policies and government guidance on design, taking into account any local design guidance and supplementary planning documents such as design guides and codes; and/or b) outstanding or innovative designs which promote high levels of sustainability, or help raise the standard of design more generally in an area, so long as they fit in with the overall form and layout of their surroundings.

Good design is set out in the National Design Guide under the following 10 characteristics: context, identity, built form, movement, nature, public spaces, uses, homes and buildings, resources, lifespan.”

- Paragraph 002 (Reference ID: 26-002-20191001)

“Planning policies can set out the design outcomes that development should pursue as well as the tools and processes that are expected to be used to embed good design.”

- Paragraph 016 (Reference ID: 26-016-20191001)

“There are a range of tools available to guide the design of developments to ensure that the final product is of good quality. As set out in paragraph 133 of the Framework, these tools and processes are of most benefit when applied early in the evolution of schemes to prompt discussions and refine options. They can be used to involve relevant stakeholders, including built environment and non-built environment professionals, decision makers and the local community. Available tools include (but are not limited to): Guide, Code, Local design guides and codes, Design review and Assessment frameworks.”

Bassetlaw Core Strategy and Development Management Policies DPD (Bassetlaw District Council, 2011)

- 2.1.18 Adopted in 2011, this Development Plan Document (DPD) sets out a spatial strategy for the future development of Bassetlaw, including the amount of new development to be provided by 2029.
- 2.1.19 It also provides policies for the determination of planning applications, including those relating to the protection and enhancement of the natural and built environment. It does not contain site allocations.
- POLICY DM3: General Development in the Countryside;
 - POLICY DM4: Design & Character; and
 - POLICY DM9: Green Infrastructure; Biodiversity & Geodiversity.

Bassetlaw Green Infrastructure Study, May 2010 (Bassetlaw District Council, 2010)

- 2.1.20 The overall purpose of this study is:
- ‘to provide a long-term vision for green infrastructure within Bassetlaw to ensure that the strategic growth of the district is fully integrated with and informed by its green infrastructure and to ensure that no net loss of green infrastructure value or provision occurs. The vision will also address the improvement of green infrastructure within the rural areas of the district and the maintenance and improvement of connectivity between the district’s urban and rural areas’.*

- 2.1.21 The study sets out the overarching vision for green infrastructure which states that:
‘in 2026, green infrastructure will be an integral part of the development process, ensuring that people and places in Bassetlaw benefit from a strong network of multifunctional greenspaces’.
- 2.1.22 The study identifies the area, within which the Scheme is located, lies to the east of Retford and to the west of the Trent Washlands/River Trent corridor and it stands out as the most prominent area of deficit within Bassetlaw’s existing green infrastructure network.

Guidance

- 2.1.23 The following guidance has been used during the writing of the Appraisal:

Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (GLVIA3) (Landscape Institute (LI) and Institute of Environmental Management and Assessment (IEMA), 2013)

- 2.1.24 The LI is the governing body for the profession of landscape architects. It published the third edition of the Guidelines for Landscape and Visual Impact Assessment (GLVIA3) (LI, 2013) which sets out the principles for assessing the landscape and visual effects of developments and their significance and provides guidance upon establishing methodologies for undertaking such appraisals. This guidance document forms the basis of the Landscape and Visual Appraisal’s (LVA) methodology.
- 2.1.25 Accompanying GLVIA3, the LI prepared a ‘Statement of Clarification 1/13 10-06-13’ (LI, 2013) and guidance upon the ‘Visual Representation of Development Proposals 06/19’ (LI, 2019).
- 2.1.26 The LI have provided guidance on ‘valued landscapes’ outside national landscape designations: ‘Assessing Landscape Value Outside National Designations – Landscape Institute Technical Guidance Note 02/21’ (LI, 2021). Within this document, landscape value is defined as:
‘the relative value or importance attached to different landscapes by society on account of their landscape qualities.’

The Horlock Rules - Substations and the Environment: Guidelines on Siting and Design (The National Grid Company PLC, 1989)

- 2.1.27 Section 3 contains guidelines of relevance to Landscape and Visual matters:
‘10: In open landscape especially, high voltage line entries should be kept, as far as possible, visually separate from low voltage lines and other overhead lines so as to avoid a confusing appearance.
11: The inter-relationship between towers and substation structures and background and foreground features should be studied to reduce the prominence of structures from main viewpoints. Where practicable the exposure of terminal towers on prominent ridges should be minimised by siting towers against a background of trees rather than open skylines.’
- 2.1.28 Appendix A of the guidance stipulates the requirement for the production of an Environmental Report and goes on to define the recommended content of the report. The aspects that relate to Landscape and Visual matters include:

- Flora and fauna;
- Landscape and topography;
- Watercourses and land drainage generally;
- Local recreational uses; and
- Visual effects.

The Holford Rules - Guidelines for the routeing of new high voltage overhead transmission lines (The National Grid Company PLC, 1959)

2.1.29 Rules 4 and 5 contain the following wording of direct relevance to Landscape and Visual matters:

'Where possible avoiding cutting extensive swathes through woodland blocks and consider opportunities for skirting edges of copses and woods.'

'Protecting existing vegetation, including woodland and hedgerows, and safeguard visual and ecological links with the surrounding landscape.'

2.2 Study Area

2.2.1 The study area for Landscape and Visual matters comprises a 2km offset from the land required to construct the Scheme (the Site). This has been established through analysis of the Zone of Theoretical Visibility (ZTV) plan and the subsequent fieldwork undertaken.

2.3 Surveys

2.3.1 A desk-based review of all potential Landscape and Visual receptors was undertaken in April 2026. A field survey of publicly accessible areas (Public Rights of Way (PRoWs), public highways and public open space, etc.) within the study area was undertaken in December 2023.

2.3.2 The location of Representative Viewpoints (RVs), from publicly accessible land, that are representative of these receptors are shown on Appendix D, High Marnham New Overhead Lines Drawings; Figure 3.3.5 Representative Viewpoint Locations of the EAR.

2.4 Appraisal Approach

Overview

2.4.1 This section outlines the methodology for assessing the likely effects upon landscape character and visual amenity receptors during the construction and operation phases of the Scheme.

2.4.2 The methodology for the LVA has been prepared in accordance with GLVIA3. The guidance contained within GLVIA3 is not prescriptive but instead seeks to establish certain principles that would help achieve a degree of consistency with regard to the production of such assessments / appraisals. The key steps of the methodology are set out below.

- 2.4.3 In line with paragraph 1.15 of GLVIA3 this LVA distinguishes between ‘impact’ (defined as the action being taken), and ‘effect’ (defined as the change resulting from that impact upon the sensitivity of a receptor). The process is referred to as ‘impact assessment’ but any changes identified as likely to arise from the Scheme are referred to as ‘effects’.
- 2.4.4 The appraisal includes a combination of objective and subjective judgements. To avoid making assumptions regarding people’s expected responses, subjective judgements are avoided where possible, focussing instead upon what objectively will be experienced. Given the nature of landscape character and people’s differing connections with it, plus the differences between people’s expectations with regard to visual amenity, reasoned professional experience is required where subjective judgements are necessary.

Establishing Baseline Conditions

- 2.4.5 The establishment of the appraisal’s baseline conditions has entailed:
- The gathering and understanding of published information on the landscape character, nature and value of the land required to construct the Scheme and its surrounds;
 - Determination of an initial LVA study area within which the Scheme may be visible from, through the preparation of the ZTV;
 - Identification of different groups of people who may experience views of the Scheme (the visual receptors) and the nature of their existing views, visual experience and their visual amenity;
 - Identification of landscape receptors (areas of identifiable character), and their characteristics from a combination of analysis of published sources, research and field work;
 - Visits to the land required to construct the Scheme and across the study area to publicly accessible areas nearest to the identified receptors; and
 - Input into the planning of the Scheme as part of an iterative design process to ensure likely adverse effects are identified and where possible avoided, reduced, abated and/or compensated for, with mitigation measures that are embedded into the Scheme.

Landscape Character Baseline Study Methodology

- 2.4.6 The baseline study identified the existing character of the landscape, its constituent elements, features and its geographical and historical context. It assessed the condition of the landscape, the way it is experienced, the value attached to it and its susceptibility to change. The appraisal of susceptibility to change examined whether the landscape receptor could accommodate the Scheme without significant changes to local character.
- 2.4.7 The identification of character areas was informed by published character assessments: The National Character Area (NCA) profiles published by Natural England provided the wider landscape context of the Scheme and published local landscape character assessments (LLCA) provided a more regional and local context. The findings of the desk study were reviewed in conjunction with the site survey to identify local and concentrated landscape character areas, which can be defined as broadly homogenous units of distinct features and elements.

- 2.4.8 The appraisal considers:
- The physical influences on the landscape resource – geology, soils, landform, drainage and water bodies;
 - The influence of human activity – land use, land management, the character of settlement and buildings, the pattern and type of fields and enclosure; and
 - The aesthetic and perceptual aspects of the landscape – scale, complexity, openness, tranquillity and wildness.

Landscape Resource/Receptors

- 2.4.9 The landscape resource describes the physical and perceptible nature of areas and places and the inherent features which give them their distinctive character. Visual amenity is a linked but separate resource which considers the views experienced by people within the landscape resource.
- 2.4.10 The appraisal considers the effects upon identified areas of distinct landscape character within the study area, and in particular upon their key landscape components, characteristics, and perceptual and aesthetic qualities.

Landscape receptor susceptibility

- 2.4.11 'Susceptibility' is defined in GLVIA3 (paragraph 5.40) as:
'the ability of the landscape receptor (whether it be the overall character or quality/condition of a particular type or area, or an individual element and/or feature, or a particular aesthetic and perceptual aspect) to accommodate the Project without undue consequences of the baseline situation....'
- 2.4.12 Reasoned professional judgements on the 'susceptibility' of landscape receptors are recorded as 'high', 'moderate' or 'low'. The descriptions of these are shown in Table 2.1.

Table 2.1 Susceptibility of landscape receptors

Susceptibility	Description
High	The landscape receptor is less able to accommodate the type of change that the Scheme may bring about without undue negative consequences to the baseline situation. Attributes that make up the character of the landscape offer limited opportunities for accommodating the change without its key characteristics being fundamentally altered, leading to a different landscape character.
Moderate	The landscape receptor is partly able to accommodate the type of change that the Scheme may bring about without undue negative consequences to the baseline situation. Attributes that make up the character of the landscape offer some opportunities for accommodating the change without its key characteristics being fundamentally altered.
Low	The landscape receptor is more able to accommodate the type of change that the Scheme may bring about without undue negative consequences to the baseline situation. Attributes that make up the character of the landscape are resilient to being changed by the Scheme.

- 2.4.13 The susceptibility that is determined is not absolute and relates to the type of change that is proposed. As a particular landscape receptor may exhibit differing levels of susceptibility, a narrative commentary is provided to describe and justify the indicative grading levels ascribed to that or the intermediate grading between them. Where intermediate ratings are given e.g. Low/Moderate, this indicates a grading that is both less than Moderate and more than Low, rather than one which varies across the range.
- 2.4.14 The use of intermediate ratings in this way applies to all other similar categorisations across the rest of the methodology.

Landscape receptor value

- 2.4.15 In contrast to ‘susceptibility’, the categorisation of landscape ‘value’ of a landscape receptor relates purely to its existing baseline, and as such is independent of any development proposal.
- 2.4.16 Value is defined in the GLVIA3 (paragraph 5.19) as:
‘...that relative value that is attached to different landscapes by society, bearing in mind that a landscape may be valued by different stakeholders for a variety of reasons...’.
- 2.4.17 GLVIA3 goes on to state that:
‘a review of existing landscape designations is usually a starting point in understanding landscape value, but the value attached to undesignated landscapes also needs to be carefully considered and individual elements of the landscape – such as trees, buildings or hedgerows may also have value. All need to be considered where relevant’.
- 2.4.18 Paragraph 5.20 of GLVIA3 indicates the information set out below might contribute to landscape value:
- Information about areas recognised by statute such as National Parks, Areas of Outstanding Natural Beauty;
 - Local planning documents for local landscape designations;
 - Information on features such as Conservation Areas, Listed Buildings, Tree Preservation Orders, important hedgerows, historic or cultural sites;
 - Art and literature, identifying value attached to particular areas or views;
 - Material on landscapes of local or community interest, such as local green spaces, village greens or allotments; and
 - Any evidence that indicates whether the landscape has particular value to people that would suggest that it is of greater than community value.
- 2.4.19 This matter is further expanded upon in the LI 2021 document: *Assessing Landscape Value Outside National Designations – Landscape Institute Technical Guidance Note 02/21* (LI, 2021).
- 2.4.20 Taking these into account, the relative value of each landscape receptor has been determined using the eight criteria identified within paragraph Box 5.1 of GLVIA3. The value of each criterion has been graded as ‘High’, ‘Moderate’ or ‘Low’. The criteria and value grades are described in Table 2.2 below.

Table 2.2 Landscape receptor value

Criterion (<i>Italic text taken from GLVIA3, Box 5.1</i>)	Grade	Description
Landscape Quality/Condition <i>‘A measure of the physical state of the landscape. It may include the extent to which typical character is represented in individual areas, the intactness of the landscape and the condition of individual elements.’</i>	High	Landscape in good condition with intact elements that are well-managed.
	Moderate	Landscape is in fair condition with some intact elements and limited signs of management.
	Low	Landscape is in poor condition with few intact elements and limited signs of management.
Scenic Quality <i>‘The term used to describe landscapes that appeal primarily to the senses (primarily, but not wholly the visual senses).’</i>	High	Landscape is of high scenic quality, usually recognised in some form of landscape designation (local or national).
	Moderate	Landscape is of moderate scenic quality.
	Low	Landscape is of low scenic quality.
Rarity <i>‘The presence of rare elements or features in the landscape or the presence of rare characteristics.’</i>	High	Landscape has several rare elements or characteristics.
	Moderate	Landscape has few rare elements or characteristics.
	Low	Landscape has no rare elements or characteristics.
Representativeness <i>‘Whether the landscape contains a particular character and/or features or elements which are considered particularly important examples.’</i>	High	The area displays most of the characteristics of the corresponding identified area of distinct landscape character.
	Moderate	The area displays some of the characteristics of the corresponding identified area of distinct landscape character.
	Low	The area displays few or none of the characteristics of the corresponding identified area of distinct landscape character.
Conservation Interest <i>‘The presence of features of wildlife, earth science or archaeological or historical interest can add to the</i>	High	Landscape has several different conservation interests, often of national or international importance.
	Moderate	Landscape has some conservation interests, often regional or local importance.

Criterion (<i>Italic text taken from GLVIA3, Box 5.1</i>)	Grade	Description
<i>value of the landscape as well as having value in their own right.'</i>	Low	Landscape has few or no conservation interests.
Recreation Value <i>'Evidence that the landscape is valued for recreational activity where experience of the landscape is important.'</i>	High	Landscape is highly valued for recreation, likely to have many PRoWs and potentially including some national trails or national cycle routes and/or a well-used destination public open space.
	Moderate	Landscape is locally valued for recreation, likely to have PRoWs and cycle routes, and local/neighbourhood public open spaces.
	Low	Landscape is not greatly valued for recreation and is likely to be lacking in PRoWs or public open space.
Perceptual Aspects <i>'A landscape may be valued for its perceptual qualities, notably wilderness and/or tranquillity.'</i>	High	Landscape has an overwhelming sense of aesthetic quality, low levels of human influence, and/or high sense of tranquillity/remoteness.
	Moderate	Landscape has a moderate sense of aesthetic quality, moderate levels of human influence, and/or moderately tranquil/remote.
	Low	Landscape has a low degree of aesthetic quality; human influence is readily apparent and/or is not considered particularly tranquil or remote.
Cultural Associations <i>'Some landscapes are associated with particular people, such as artists or writers, or events in history that contribute to perceptions of the natural beauty of the area.'</i>	High	Landscape has strong associations with people, literature or historic events that link directly with the characteristics and landscape elements/features of the area.
	Moderate	Landscape has associations with people, literature or historic events that link with the characteristics and elements of the area but do not necessarily rely solely on them.
	Low	Landscape has no associations that link with the characteristics and landscape elements/features of the area.

2.4.21 Based upon the considerations of each criterion set out in Table 2.2 a reasoned professional judgement is made as to what the relative overall 'value' of each landscape receptor is using the grading of 'High', 'Moderate' or 'Low' or where

necessary, intermediate grades between these. As a particular landscape receptor may exhibit differing levels of value, a narrative commentary is provided to describe and justify the indicative grading level ascribed to that.

Landscape Receptor Sensitivity

- 2.4.22 GLVIA3 (paragraph 3.26) states that the sensitivity of the landscape receptors identified should be determined by consideration of the susceptibility of the receptor with the receptor's relative value, i.e.: Landscape Sensitivity = Landscape Susceptibility + Landscape Value.
- 2.4.23 The values for 'susceptibility' and 'value' are considered, by use of reasoned professional judgement to derive an overall 'sensitivity' for each receptor – graded as per the criteria set out in Table 2.3 below.
- 2.4.24 The sensitivity that is determined is not absolute and relates to the type of change that is proposed. As a particular landscape receptor may exhibit differing levels of sensitivity a narrative commentary is provided, to describe and justify the indicative grading levels ascribed to that or the intermediate grading between them.

Table 2.3 Sensitivity of landscape receptors

		Value of the Landscape Receptor (Indicative)		
		High	Moderate	Low
Susceptibility to Change	High	High	Moderate/High	Moderate
	Moderate	Moderate/High	Moderate	Moderate/Low
	Low	Moderate	Moderate/Low	Low

Visual Receptors

- 2.4.25 This part of the appraisal is concerned with potential effects upon the visual amenity of specific groups of people (the visual receptors) within the study area as a result of the Scheme. This includes groups such as residents, those in their place of work, those travelling through the study area, and recreational users of publicly accessible areas etc.
- 2.4.26 The appraisal of effects on settlements focuses on the visual amenity of users of public spaces and streets, though views from dwellings will also be noted in the descriptions.

Visual receptor susceptibility

- 2.4.27 As described in GLVIA3, the susceptibility of visual receptors to changes in visual amenity is a function of the 'occupation or activity of people experiencing the view' and '*the extent to which their attention is focussed on the views and visual amenity they experience at particular locations*'. Drawn from the guidance within GLVIA3 this is recorded as 'high', 'moderate' or 'low' according to Table 2.4 or, where necessary, intermediate grades between these. As a particular visual receptor may exhibit differing levels of susceptibility, a narrative commentary is provided to describe the reasoned professional judgement used to justify the indicative grading level ascribed.

Table 2.4 Susceptibility of visual receptors

Susceptibility	Description
High	Residents at home; visitors to major landscape or heritage resources and other attractions; users of long-distance recreational trails such as national trails and mountain access routes; visitors to landscape and heritage resources and other attractions where views of the surroundings are an important contributor to appreciation / experience / enjoyment.
Moderate	Users of roads; users of public open space and local public rights of way; visitors to landscape and heritage resources and other attractions where views of the surroundings are a contributor to appreciation / experience / enjoyment.
Low	People at their place of work; shoppers; people engaged in recreational activities where the view of the surroundings is secondary to the enjoyment of the activity.

Visual Receptor Value

- 2.4.28 GLVIA3 (paragraph 6.37) suggests that when considering the visual receptor ‘value’, that account should be taken of recognition of the:
- ‘value attached to particular views, for example in relation to heritage assets, or through planning designations’; and
 - ‘indicators of the value attached to views by visitors, for example through appearances in guidebooks or on tourist maps, provision for their enjoyment (such as parking places, sign boards and interpretative material) and references to them in literature or art...’.
- 2.4.29 Drawn from the guidance within GLVIA3 value is recorded as high, medium or low according to Table 2.5 below. The value that is determined is not absolute and relates to the type of change that is proposed. As a particular visual receptor may exhibit differing levels of value a narrative commentary is provided, to describe the professional judgement used to justify the indicative grading levels ascribed to that or the immediate grading between them.

Table 2.5 Value of visual receptors

Value (Indicative)	Description
High	Views experienced by receptors are widely known, well frequented and/or promoted as a beauty spot/visitor destination. The cultural associations of the visual experience are recognised in art, literature or other media. The view relates to the experience of other features, for example heritage assets.
Moderate	Views experienced by receptors, whilst they may be valued locally, are not widely known. The views experienced have no strong cultural association.
Low	Views experienced by receptors have little/no recognised value. The public are unlikely to visit to experience the views available.

Visual receptor sensitivity

Nature of visual receptors (sensitivity)

- 2.4.30 GLVIA3 states that the nature of visual amenity receptors, commonly referred to as their sensitivity, should be assessed in terms of the combination of the susceptibility of the receptor (to the type of change proposed) with the value attached to the receptor. i.e.: Visual Amenity Sensitivity = Visual Amenity Susceptibility + Visual Amenity Value.

Overall visual receptors sensitivity

- 2.4.31 The values for 'susceptibility' and 'value' are then considered together, by use of reasoned professional judgement, to derive an overall 'sensitivity' for each receptor – graded as per the criteria set out in Table 2.6 below.
- 2.4.32 The 'sensitivity' that is determined is not absolute and relates to the type of change that is proposed. As a particular visual receptor may exhibit differing levels of 'sensitivity' a narrative commentary is provided, to describe and justify the indicative grading levels ascribed to that or the intermediate grading between them.

Table 2.6 Sensitivity of receptors

		Value of the Visual Receptor (Indicative)		
		High	Moderate	Low
Susceptibility to Change	High	High	Medium/High	Medium
	Moderate	Medium/High	Medium	Medium/Low
	Low	Medium	Medium/Low	Low

Determining Magnitude of Change

- 2.4.33 The magnitude of landscape and visual change depends upon a combination of factors including the size, scale and nature of change in relation to the context; the geographical extent of the area influenced; and its duration and reversibility, as summarised in Table 2.7 below.

Table 2.7 Magnitude of landscape and visual change

Value	Size, Scale and Nature	Geographic Extent	Duration and Reversibility
High	Occupies much of the view or obstructs a significant portion. Forms a large or very noticeable or discordant element. Considerable change to key features or many existing elements of the	Ranging from notable change over extensive area to intensive change over a more limited area.	Long-term; permanent/non-reversible or partially reversible.

Value	Size, Scale and Nature	Geographic Extent	Duration and Reversibility
	landscape. Introduces elements considered totally uncharacteristic to the existing landscape. Very noticeable.		
Medium	Occupies a noticeable portion of the view or obstructs a noticeable portion. Forms a noticeable discordant element. Some considerable change to existing landscape elements and /or landscape character; discernibly changes the surroundings of a receptor, such that its baseline is partly altered. Readily noticeable.	Moderate changes in a localised area.	Medium-term; semi-permanent or partially reversible.
Low	Occupies a small portion of the view; small change to existing landscape elements and/or landscape character; Slight, but detectable impacts that do not alter the baseline of the receptor materially. Not readily noticeable.	Minor changes in a localised area.	Short-term/temporary; partially reversible or reversible.

Level of effect criteria

- 2.4.34 The level of Landscape and Visual effect is assessed based on the sensitivity of the affected receptor, and the magnitude of change resulting from the Scheme, as set out for each above. The combined sensitivity and magnitude used to determine the level of effect is summarised in Table 2.8 below. Note that effects can be either 'beneficial' or 'adverse' and in some cases 'neutral' (neither beneficial nor adverse).

Table 2.8 Level of Landscape and Visual Effect

Magnitude	Sensitivity		
	High	Medium	Low
High	Major	Major to Moderate	Moderate to Minor
Medium	Major to Moderate	Moderate	Minor

Magnitude	Sensitivity		
	High	Medium	Low
Low	Moderate to Minor	Minor	Minor to Negligible
Negligible	Minor	Negligible	Negligible
No Change	Neutral	Neutral	Neutral

- 2.4.35 It should be noted that this matrix is intended as a framework only and that the level of effect will vary depending on the circumstances, the type and scale of development proposed, the baseline context and other factors.
- 2.4.36 The gradations of magnitude of change and level of effect used in the Appraisal represent a continuum; the appraiser uses professional judgement when gauging the level of effect.

2.5 Limitations and Assumptions

- 2.5.1 The following limitations and assumptions have been identified for Landscape and Visual matters.

Limitations

Extents of the study area

- 2.5.2 It is considered that the Scheme would not result in any notable effects upon receptors outside the visual envelope of the Scheme and beyond 2km. Accordingly, landscape and visual receptors beyond this have been scoped out of the appraisal.

Assumptions

Professional judgement

- 2.5.3 To avoid making assumptions regarding other people's expected responses to changes in landscape character and visual amenity matters, subjective judgements are avoided where possible in this appraisal. The focus instead is predominantly upon what objectively will be experienced as a result of the Scheme. Given the nature of landscape character and people's differing connections with it, plus the differences between people's expectations with regard to visual amenity, reasoned professional experience is required where subjective judgements are necessary.

Distances

- 2.5.4 Approximate distances are given in the appraisal (rounded to the nearest 10m) between the nearest part of the land required to construct the Scheme and the nearest part of the receptor in question, unless explicitly stated otherwise.

3. Cultural Heritage and Archaeology Methodology

3.1 Legislation, Policy and Guidance

- 3.1.1 This appraisal has been undertaken in accordance with current national legislation, and national, regional and local plans and policies relating to Cultural Heritage and Archaeology in the context of the Scheme. A summary of the relevant legislation, policies and guidance, the requirements of these policies and the Scheme response is provided below.

Policy

National

- 3.1.2 The NPPF (17 August 2026) sets out Government planning policies for England and how these are expected to be applied. Section 20 of the NPPF 'Conserving and Enhancing the Historic Environment' contains the government's policies relating to the historic environment. It states that:

'Heritage assets are an irreplaceable resource, and range from sites and buildings of local historic value to those of the highest significance, such as World Heritage Sites which are internationally recognised to be of Outstanding Universal Value. These assets are an irreplaceable resource, and should be conserved in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of existing and future generations.'

- 3.1.3 HE5 states that:

'Development proposals affecting heritage assets should be accompanied by an assessment of the significance of the assets affected (including any contribution made by their setting) and of the potential effect of the proposal on their significance. The level of detail should be proportionate to the assets' importance and no more than is necessary to understand the potential effect of the proposal on their significance. The relevant historic environment record should be referred to in making this assessment, and appropriate expertise employed where necessary..'

- 3.1.4 HE4 states that:

'...development proposals which would affect the significance of heritage assets, including any contribution made by their setting should:

a. Maintain or secure a use consistent with their conservation, taking into account the importance of maintaining the assets, the positive contribution they can make to sustainable communities including local economies, and the positive contribution they can make to local character and distinctiveness; and

b. Avoid (or if that is not possible, minimise) harm to the significance of heritage assets, and instead conserve this significance.'

3.1.5 HE6 states that:

‘When considering the potential effect of a development proposal on the significance of a designated heritage asset, substantial weight should be given to the asset’s conservation (and the more important the asset, the greater the weight should be). This is irrespective of whether any potential effect amounts to a positive effect, harm, substantial harm, or total loss of its significance.’

3.1.6 HE4 further states that:

‘Any harm to, or loss of, the significance of a designated heritage asset (including from development within its setting) should have a clear and convincing justification in accordance with the policies in [Section 20 of the NPPF].’

3.1.7 HE7 states that:

‘1. Development proposals which would have a positive effect on a non-designated heritage asset should be supported.

2. Where a development proposal would harm the significance of a non-designated heritage asset, this should be weighed against the benefits of the proposal and a balanced judgement made, having regard to the scale of any harm or loss and the significance of the non-designated heritage asset.

3. Where a development proposal would cause substantial harm to, or the total loss of, the significance of a non-designated heritage asset, it should only be supported where the harm or loss is outweighed by the benefits of the proposal, having regard to the scale of the harm or loss and the significance of the non-designated heritage asset.’

3.1.8 HE10 states that:

‘The applicant should record and advance understanding of the significance of the asset to be lost in a manner proportionate to its importance and the potential impact upon it; and should make this evidence (and any archive generated) publicly accessible by depositing it in the relevant Historic Environment Record, and any archives with a local museum or other public depository. The ability to record evidence of our past should not be a decisive factor in deciding whether such loss should be approved.’

Local

Adopted Bassetlaw Local Plan 2020-2038 (Bassetlaw District Council, 2024)

‘Policy ST40: The Historic Environment

1. The historic environment will be conserved and enhanced, sensitively managed, enjoyed and celebrated for its contribution to sustainable communities. Proposals will be supported where they:

- a. give great weight to the conservation and re-use of designated heritage assets and their settings, including for appropriate temporary use, based on their significance in accordance with national policy;*
- b. make a positive contribution to the character and local distinctiveness of the historic environment, including through the use of innovative design;*
- c. positively conserve or enhance a historic designed landscape;*

- d. maintain, conserve, sustain or return to beneficial use designated or non-designated assets;*
- e. capitalise in an appropriate and sensitive manner the regeneration, tourism and energy efficiency potential of heritage assets;*
- f. positively secure the conservation and re-use of 'at risk' heritage assets;*
- g. improve access and enjoyment of the historic environment where appropriate, particularly where they retain, create or facilitate public access to heritage assets to increase understanding of their significance.*

2. Applicants will be required to submit evidence in line with best practice and relevant national guidance, examining the significance of any heritage assets affected through a Heritage Statement, including any contribution made by their setting. The level of detail should be proportionate to the asset's significance, and the results submitted to the Nottinghamshire Historic Environment Record. In some circumstances, further survey, analysis and/or recording will be made a condition of consent.

Policy 41: Designated and Non-Designated Heritage Assets

Designated Heritage Assets

- 1. Proposals for development, including change of use, that involve a designated heritage asset, or the setting of a designated heritage asset will be expected to:*
 - a. conserve, enhance or better reveal those elements which contribute to the heritage significance and/or its setting;*
 - b. respect any features of special architectural or historic interest, including where relevant the historic curtilage or context, its value within a group and/or its setting, such as the importance of a street frontage, traditional roofscape, or traditional shopfronts;*
 - c. be sympathetic in terms of its siting, size, scale, height, alignment, proportions, design and form, building technique(s), materials and detailing, boundary treatments and surfacing, or are of a high quality contemporary or innovative nature which complements the local vernacular, in order to retain the special interest that justifies its designation;*
 - d. ensure significant views away from, through, towards and associated with the heritage asset(s) are conserved or enhanced;*
 - e. in the case of a Conservation Area, to have regard to the established urban grain and ensure that spaces between and around buildings, such as paddocks, greens, gardens and other gaps, are preserved where they contribute to the Conservation Area's character and appearance.*
- 2. Proposals that will lead to substantial harm or total loss of significance will be refused unless the substantial harm or loss is necessary to achieve substantial public benefits that outweigh that harm or loss, and it can be demonstrated that:*
 - a. the nature of the heritage asset prevents all reasonable uses of the site;*
 - b. no viable use of the heritage asset can be found in the medium term through appropriate marketing that will enable its conservation;*

- c. *conservation by grant-funding or some form of not for profit, charitable or public ownership is demonstrably not possible;*
- d. *the harm or loss is outweighed by the benefit of bringing the site back into use.*

3. Proposals that would result in less than substantial harm to the significance of a designated heritage asset will only be supported where it can be demonstrated that the public benefits will outweigh any harm identified.

Non-Designated Heritage Assets

4. Proposals for development, including change of use, that involve a non-designated heritage asset, or the setting of a non-designated heritage asset will be expected to:

- a. *have regard to the significance of the asset and its relationship with its setting; and*
- b. *be sympathetic to the local vernacular in terms of siting, size, scale, height, alignment, design and form; proportions, materials.*

5. Proposals that will lead to harm to or loss of significance of a non-designated heritage asset will only be supported where it can be demonstrated that:

- a. *the asset's architectural or historic significance is proven to be minimal; or*
- b. *through an up-to-date structural report produced by a suitably qualified person, the asset is not capable of viable repair; or*
- c. *through appropriate marketing, the asset has no viable use; or*
- d. *the public benefits of the scheme outweigh the loss of significance.*

Archaeological sites

6. Where evidence suggests that significant archaeological remains exist on site, proposals should be supported by an appropriate archaeological evaluation that provides an assessment of the significance of the remains and considers how the remains would be affected by the proposed development.

7. Where the 'in situ' preservation of archaeological remains is not possible or desirable, suitable provision shall be made by the developer for the excavation, recording, analysis, storage, relocation of assets and archiving, in accordance with a Written Scheme of Investigation that has been approved by the Local Planning Authority.'

Guidance

3.1.9 Guidance produced by the Chartered Institute for Archaeologists and Historic England has been taken into account as far as practicable and where relevant to this assessment as follows:

- Chartered Institute for Archaeologists:
 - Code of Conduct (2022);
 - Regulations for Professional Conduct (2021);
 - Standards and Guidance for Historic Environment Desk-based Assessment (2020a); and
 - Standard and Guidance for Commissioning Work or Providing Consultancy Advice on Archaeology and the Historic Environment (2020b).

- Historic England:
 - Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment (2008);
 - Historic Environment Good Practice Advice in Planning Note 2 (GPA 2) – Managing Significance in Decision-Taking (2015);
 - Historic Environment Good Practice Advice in Planning Note 3 (2nd edition) (GPA 3) – The Setting of Heritage Assets (2017);
 - Statements of Significance: Analysing Significance in Heritage Assets, Historic England Advice Note 12 (2019); and
 - Local Heritage Listing – Identifying and Conserving Local Heritage Advice Note 7 (Second Edition) (2021).
- Planning Practice Guidance (PPG):
 - Historic Environment (2019).

3.2 Study Area

- 3.2.1 The study area for Cultural Heritage and Archaeology comprises the land required to construct the Scheme (the Site) and a 500m buffer. This is considered an appropriate study area based on professional judgement by relevant guidance, best practice and technical knowledge of similar schemes, and the nature of the Scheme construction and operational activities. The study area has also been defined proportionately to the scale and nature of the Scheme, with a 500m radius applied to capture assets potentially affected by changes to setting.

3.3 Surveys

- 3.3.1 A desk-based assessment was undertaken for the land required to construct the Scheme in 2023. This included a walkover survey. The assessment utilised walkover surveys and HER data that included land required to construct the Scheme. No further walkover survey has been undertaken.

3.4 Appraisal Approach

- 3.4.1 In order to identify the environmental impacts of the Scheme, a comparison of the current environmental conditions immediately before the Scheme is implemented (baseline) was compared to a prediction of how the environmental conditions are likely to change once the construction and operation of the Scheme have been undertaken. An iterative process was followed during appraisal to develop appropriate control measures to avoid or reduce potential environmental impacts.
- 3.4.2 Historic England's guidance and assessment methodologies have been utilised to assess and articulate the significance of heritage assets (including the contribution made by their setting) as defined by the NPPF (MHCLG, 2026), and the potential effects of the Scheme on that significance. The significance of heritage assets is weighed by consideration of the potential for the asset to demonstrate the following value criteria:

- Evidential value – derives from the potential of a place to yield evidence about past human activity;
- Historical value – derives from the ways in which past people, events and aspects of life can be connected through a place to the present. It tends to be illustrative or associative;
- Aesthetic value – derives from the ways in which people draw sensory and intellectual stimulation from a place; and
- Communal value – derives from the meanings of a place for the people who relate to it, or for whom it figures in their collective experience or memory. Communal values are closely bound up with historical (particularly associative) and aesthetic values but tend to have additional and specific aspects.

- 3.4.3 There is also recent guidance from the Chartered Institute for Archaeologists (CIfA), set out in the “Principles of Cultural Heritage Impact Assessment in the UK” (2021), which states that:
- 3.4.4 The magnitude of the impact on cultural significance needs to be assessed. A distinction needs to be drawn as to whether the change will result in only a ‘small’ impact on, say just one component of cultural significance or whether the change would have a greater impact on the totality of cultural significance. The terms ‘large’ ‘medium’ or ‘small’ are acceptable or any other simple scale that offers a form of gradation easily articulated in a written report (CIFA).
- 3.4.5 The appraisal approach has assessed the scale, extent, duration and frequency of change arising from construction and operation of the Scheme. The magnitude of impact has been assessed from negligible to high depending on the degree to which the significance of the heritage asset is affected.
- 3.4.6 The appraisal approach has been utilised to assess the potential for construction activities and the operation of the Scheme to impact the significance of heritage assets. This impact can typically involve direct and indirect effects to the heritage assets.
- 3.4.7 Following an assessment of the magnitude of impact, mitigation measures may be proposed. The significance of effect is expressed as a result of the value of the heritage asset and the magnitude of impact it would experience as a result of the Scheme in the Table 3.1 below. The significance will be expressed as major, moderate, minor, negligible or neutral and can be adverse or beneficial. The matrix for reporting of significance of effect is outlined below, adapted from ‘Heritage Impact Assessments for Cultural World Heritage Properties’ (ICOMOS, 2011).

Table 3.1 Significance of effects matrix

		Value of the Heritage Asset				
		Very High	High	Medium	Low	Negligible
Magnitude of Impact	High	Major	Major	Major to moderate	Major to moderate	Moderate to Minor
	Medium	Major to Moderate	Major to Moderate	Moderate	Moderate	Minor

		Value of the Heritage Asset				
		Very High	High	Medium	Low	Negligible
	Low	Major to Moderate	Moderate to Minor	Minor	Minor	Negligible
	Negligible	Minor	Minor	Negligible	Negligible	Negligible
	No Change	Neutral	Neutral	Neutral	Neutral	Neutral

- 3.4.8 This has considered the proximity of receptors to construction activities and the likelihood of receptors being physically disturbed or indirectly impacted through changes to their setting. Appropriate control measures have been identified to avoid or reduce these impacts.

3.5 Limitations and Assumptions

- 3.5.1 The report is based on information available at the time. Data from Historic Environment Records (HER) and other datasets consists of secondary information derived from varied sources, only some of which were directly examined during the compilation of this report. Furthermore, due to the nature of archaeological remains, their precise location is often uncertain as the majority of such sites have never been subject to archaeological investigation to modern standards. As such, assessment of the value of such sites is often reliant on informed extrapolation from limited data, comparison with similar receptors in similar contexts, and on professional judgement.

4. Air Quality Methodology

4.1 Legislation, Policy and Guidance

- 4.1.1 This appraisal has been undertaken in accordance with current national legislation, and national, regional and local plans and policies relating to Air Quality Assessment in the context of the land required to construct the Scheme (the Site). A summary of the relevant legislation, policies and guidance, the requirements of these policies and the Scheme response is provided below.

Legislation

- 4.1.2 A summary of the key legislation considered is outlined in Table 4.1 below.

Table 4.1 Key legislation applicable to the Scheme

Legislation	Legislative Context
Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe	This sets legally binding limits for concentrations of specific air pollutants. It merges, consolidates and replaces the majority of previous EU air quality legislation, and incorporates the Fourth Daughter Directive. While the UK has now left the EU, the Air Quality Standards Regulations 2010 (as amended) which implement the Directive still apply in UK legislation as 'retained EU law'.
The Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019	These regulations amend the Air Quality Standards Regulations 2010 to reflect the UK's departure from the EU.
The Air Quality (England) Regulations 2000	The Air Quality (England) Regulations 2000 set national air quality objective levels for local authorities to meet in England.
The Air Quality (England) (Amendment) Regulations 2002	The Air Quality (England) Regulations 2002 set national air quality objective levels for local authorities to meet in England.
Part IV of Environment Act 1995	Environment Act 1995 contains provisions for protecting air quality in the UK and for local air quality management. It requires the UK Government to produce a national Air Quality Strategy (AQS) which contains standards, objectives and measures for improving ambient air quality, and defines Local Air Quality Management (LAQM). It introduced an obligation on local authorities to issue, where the air quality standards are not being met, an order designating an Air Quality Management Area (AQMA).
Environmental Protection Act (EPA) 1990	Part III of the EPA 1990 provides legislation around statutory nuisance, which applies to dust.

Legislation	Legislative Context
The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020	Regulation 2 of the Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 updated the Air Quality Standards Regulations 2010 to include a Limit Value of 20µg/m ³ for PM _{2.5} from 2020. The Limit Values for NO ₂ and PM ₁₀ remained the same concentration levels as the relevant AQS objectives.
Environment Act 2021	Creates the legislative framework by which statutory air quality targets are set by reference to plans such as the Environmental Improvement Plan 2023.
The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023	The legislation sets out targets to reduce concentrations of PM _{2.5} to be equal to or less than 10µg/m ³ by 2040. It also states that reduction in population exposure to PM _{2.5} must be reduced by at least 35% by 2040, compared to a baseline year of 2018.

- 4.1.3 The ambient air quality standards and objectives are given statutory backing in England through the Air Quality (England) Regulations 2000 and the Air Quality (England) (Amendment) Regulations 2002. The Limit Values were given statutory backing through The Air Quality Standards Regulations 2010. The AQS objectives for the protection of human health and applicable to this assessment are presented in Table 4.2.
- 4.1.4 There are no existing AQS objectives for PM_{2.5}, however there is a legally binding Limit Value under The Air Quality Standards Regulations 2010, an Interim PM_{2.5} target under the Environmental Improvement Plan (EIP) 2025 and a Statutory long-term target under the Environment Act 2021 and Environmental Targets (Fine Particulate Matter) (England) Regulations 2023.

Table 4.2 Air quality objectives and limit values for NO₂, PM₁₀ and PM_{2.5}

Pollutant	Air Quality Objectives			Limit Values		
	Concentration	Averaging Period	Compliance Date	Concentration	Averaging Period	Compliance Date
NO ₂	200µg/m ³	1-hour mean (not to be exceeded more than 18 times per year)	31 December 2005	200µg/m ³ (18 exceedances)	1-hour mean (not to be exceeded more than 18 times per year)	1 January 2010
	40µg/m ³	Annual mean	31 December 2005	40µg/m ³	Annual mean	1 January 2010

Pollutant	Air Quality Objectives			Limit Values		
	Concentration	Averaging Period	Compliance Date	Concentration	Averaging Period	Compliance Date
PM ₁₀	50µg/m ³	24-hour mean (not to be exceeded more than 35 times per year)	31 December 2010	50µg/m ³ (35 exceedances)	24-hour mean (not to be exceeded more than 35 times per year)	1 January 2005
	40µg/m ³	annual mean	31 December 2004	40µg/m ³	Annual mean	1 January 2005
PM _{2.5}	No existing AQS objective for PM _{2.5}			20µg/m ³ (Limit Value)	Annual mean	1 January 2020
				10µg/m ³ (Interim PM _{2.5} Target)	Annual Mean	December 2030
				10µg/m ³ (Statutory long-term target)	Annual Mean	2040

Policy

- 4.1.5 A summary of relevant national planning policy considered is outlined in Table 4.3 below.

Table 4.3 The relevant national planning policies applicable to the Scheme

Policy Document	Policy Context
NPPF (MHCLG, 2026) P3	The NPPF states that development proposals should sustain and contribute towards compliance with relevant limit values or national objectives and targets for air pollutants including PM _{2.5} and take account of AQMAs and Clean Air Zones as well as cumulative impacts. Mitigation should be identified.
Planning Practice Guidance - Air Quality (MHCLG, 2019)	Provides guidance on the relevant principles of air quality assessment; including the regulatory framework, the role of plan making, available air quality information, when assessment is required, what potential air quality issues require consideration, the level of detail required, and mitigation.
Environmental Improvement Plan 2023 (DEFRA, 2023), Goal 2 - Clean Air	Details government actions to reduce air pollution over next 25 years to achieve 'clean air' as a means of complying with concentration and emissions reduction targets, such as those facilitated by the Environment Act 2021. The delivery plan

Policy Document	Policy Context
	focusses on reducing domestic emissions, empowering local authorities to deliver clean air, maintaining and improving the regulatory framework for industrial emissions, reducing agricultural ammonia emissions and reducing emissions from transport.

- 4.1.6 A summary of relevant local planning policy considered is outlined in Table 4.4 below.

Table 4.4 The relevant local policy applicable to the Scheme

Policy Document	Policy Context
Bassetlaw Local Plan 2020-2038 (adopted May 2024) (Bassetlaw District Council, 2024)	<p>The plan sets out the Council's policies and proposals to plan and manage growth and development, and to achieve the Plan's vision for Bassetlaw.</p> <p>Relevant policies within the Local Plan include:</p> <ul style="list-style-type: none"> • Policy ST42.g – Ensuring that the current air quality in the District is maintained and, where possible improved; • Policy 46.1b – Proposals will be expected to not generate a level of activity, noise, light, air quality, odour, vibration or other pollution which cannot be mitigated to an appropriate standard; and • Policy ST48.1a – ensuring no unacceptable adverse impact on local air quality.

Guidance

- 4.1.7 The following relevant guidance, specific to the appraisal of Air Quality, has informed this EAR.

Ministry of Housing, Communities and Local Government Planning Practice Guidance (PPG)

- 4.1.8 The Government has revised and updated planning practice guidance to support the NPPF in order to make it more accessible. The guidance includes advice relating to: planning and air quality; the role of Local Plans with regard to air quality; when air quality is likely to be relevant to a planning decision; what should be included within an air quality assessment; and how impacts on air quality can be mitigated.

Institute of Air Quality Management (IAQM) (2024) Guidance on the assessment of dust from demolition and construction

- 4.1.9 This provides a mechanism for the assessments to consider both the magnitude of emissions and sensitivity of an area to define the level of risk of dust soiling and human health impacts during the construction phase. Defining the construction dust risk levels allows proportionate mitigation measures to be adopted. This guidance is referred to hereafter as the 'IAQM construction dust guidance'.

IAQM (2017) Land-Use Planning & Development Control: Planning For Air Quality

- 4.1.10 This is applicable in assessing the effect of changes in exposure of members of the public resulting from developments. It provides guidance on how to decide whether an air quality assessment is required, how to undertake a suitable assessment of air quality impacts and whether these are to be considered significant or not, and how to identify whether additional mitigation is required. This guidance would be used to inform the assessment methodology for construction and operational phase vehicle emissions. This guidance is referred to hereafter as the 'IAQM Development Control guidance'.

IAQM (2020) A guide to the assessment of air quality impacts on designated nature conservation sites

- 4.1.11 This document has been produced by the IAQM to assist its members in the assessment of the air quality impacts of development on designated nature conservation sites. It may also be useful for ecologists, who use the results of air quality assessments (AQAs) to evaluate the effects of air pollution on habitats and species, by increasing their understanding of the information provided by air quality specialists. This document focuses on air quality assessments in support of HRA, but its principles can be used as the basis for assessing the air quality impact on national or local designated nature conservation sites.

Local Air Quality Management Technical Guidance (LAQM.TG22) (DEFRA, 2022)

- 4.1.12 This provides best practice principles for the technical assessment of local air quality including the use of monitoring data, selection of receptors and verification procedure. LAQM.TG22 also provides guidance for the application of DEFRA tools and resources used for the technical assessment of air quality.

4.2 Study Area

Construction Dust Risk Assessment

- 4.2.1 A construction risk dust assessment has been undertaken to establish the level of mitigation required in order to minimise and control dust emissions during construction. The IAQM construction dust guidance provides the relevant assessment methodology for undertaking the dust risk assessment.
- 4.2.2 In accordance with the IAQM construction dust guidance, the study area comprises:
- Up to 250m from the locations of demolition, construction and earthworks activities for human receptors and up to 50m for ecological receptors; and
 - Up to 50m from the route(s) used by construction vehicles on the public highway, up to 250m from the Schemes entrance(s).
- 4.2.3 The area within 250m of the land required to construct the Scheme and within 50m of the construction routes is largely comprised of rural uninhabited fields. The nearest sensitive human receptors are residential properties located approximately 50m south east of the land required to construct the Scheme.
- 4.2.4 There are no ecological receptors located within the construction dust study area.

Construction and Operational Phase Vehicle Emissions: Human Receptors

- 4.2.5 The Air Quality study area for vehicle emissions is defined as the area within 200m of any roads that exceed the traffic change criteria detailed in the IAQM Development Control guidance (IAQM, 2017). The screening criteria for vehicle emissions assessment is as follows:
- A change in Light Duty Vehicle (LDV) flows of >100 Annual Average Daily Traffic (AADT) within or adjacent to an Air Quality Management Area (AQMA), or >500 AADT elsewhere; and
 - A change in Heavy Duty Vehicle (HDV) flows of >25 AADT within or adjacent to an AQMA, or >100 AADT elsewhere.
- 4.2.6 During the construction phase, the screening criteria are not exceeded at any point. Therefore, a construction phase air quality assessment of vehicle emissions is scoped out.
- 4.2.7 During the operational phase of the Scheme, it is understood that the only traffic generated would be associated with infrequent repair, routine maintenance and inspection activities (assumption of 10 vehicles per year). This number of vehicle movements is well below screening thresholds, therefore an operational phase air quality assessment of vehicle emissions is scoped out.

4.3 Surveys

- 4.3.1 No Air Quality monitoring surveys were undertaken to support the appraisal of the Scheme. This is because the land required to construct the Scheme is rural in nature and the anticipated traffic increases in both the construction and operational phases were expected to screen out against the guidance Land-Use Planning & Development Control: Planning For Air Quality IAQM Development Control guidance (IAQM, 2017).

4.4 Appraisal Approach

Construction Dust Risk Assessment

- 4.4.1 There is the potential for fugitive dust emissions to occur as a result of construction phase activities. These have been assessed in accordance with the methodology outlined in the IAQM (2024) construction dust guidance. The methodology is summarised in the following paragraphs.
- 4.4.2 It should be noted that the purpose of the IAQM construction dust guidance is to define the level of mitigation that is required to effectively control construction dust. It therefore requires the assessor to determine the unmitigated risk of dust impacts on soiling and human health. This then allows the categorisation of risk of impacts from the various aspects of construction which in turn defines the level and nature of mitigation measures.
- 4.4.3 The risk of dust emissions from construction/demolition activities causing an adverse effect on human receptors depends on:

- The type of construction activities being undertaken, and the duration of these activities;
- The size of the construction site;
- The meteorological conditions (such as wind speed, wind direction and rainfall);
- The proximity of the receptors to the construction activities;
- The effectiveness of the dust deposition mitigation measures; and
- Receptor sensitivity to dust.

- 4.4.4 Construction activities for the Scheme are divided into four types to reflect their different potential impacts. These are demolition, earthworks, construction, and trackout (the vehicle-borne transfer of mud and debris onto the highway).
- 4.4.5 The potential for dust emissions was assessed for each activity that is likely to take place and considers two separate dust effects including annoyance due to dust soiling and the risk of health effects due to an increase in exposure to PM₁₀.
- 4.4.6 Table 4.5 summarises how the dust risk is calculated based on the dust emissions magnitude and the sensitivity of area for each of three impact pathways (dust soiling and human health).

Table 4.5 Dust risk for the Scheme is calculated based on the sensitivity of the Scheme and the dust emission magnitudes from associated construction activities

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
Demolition			
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible
Earthworks			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Construction Activities			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Trackout			
High	High Risk	Medium Risk	Low Risk

Sensitivity of Area	Dust Emission Magnitude		
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

- 4.4.7 The IAQM construction dust guidance seeks to categorise the unmitigated risk of dust impacts on human health and amenity as a means of identifying proportional dust emissions mitigation required to ensure that residual impacts are no greater than negligible. A higher dust impact risk rating means that more stringent mitigation measures are required in order to avoid a residual significant risk of effects. These measures are then to be integrated into an Outline Construction Environment Management Plan (OCEMP).

4.5 Limitations and Assumptions

- 4.5.1 The following limitations and assumptions have been identified for air quality:
- There is limited detail available for Non-Road Mobile Machinery (NRMM) during the construction and maintenance phases and regarding the potential use of diesel generators at this stage. It is assumed that emissions would be temporary and transient in nature and therefore negligible in terms of air quality impacts.
 - The construction dust assessment assumes that earthworks and construction may take place on the land required to construct the Scheme. This is a conservative approach that has been adopted to ensure that potential impacts at receptors within 250m of the land required to construct the Scheme have been considered.
 - It is assumed that exhaust emissions from plant will be minimised with the application of the mitigation measures detailed in Chapter 3.5 Air Quality of the main EAR, Table 3.5.4.

5. Water Resources and Flood Risk Methodology

5.1 Legislation, Policy and Guidance

- 5.1.1 This appraisal has been undertaken in accordance with current national legislation, and national, regional and local plans and policies relating to Water Resources and Flood Risk in the context of the land required to construct the Scheme (the Site). A summary of the relevant legislation, policies and guidance, the requirements of these policies and the Scheme response is provided below.

Legislation

- 5.1.2 The following key legislation is of direct relevance to the appraisal of impacts of the Scheme.
- 5.1.3 The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (as amended by The Floods and Water (Amendment etc.) (EU Exit) Regulations 2019) implemented the Water Framework Directive (WFD) in England and Wales. The 2019 regulations, specifically Regulation 20, specify that the substance of the WFD regime that applied pre-EU Exit will continue to apply, with only relatively minor amendments. The assessment identifies WFD waterbodies within the study area and appraises the potential for the Scheme to cause deterioration of these waterbodies.
- 5.1.4 The Land Drainage Act 1991 together with the Water Resources Act 1991 provide for the Environment Agency to prevent the obstruction of any main river through the construction of flow control structures, culverts, or any other structure within a main river. Where culverting or other works have a potential to affect the flow regime of ordinary watercourses, consent is required from the Lead Local Flood Authority under the Flood and Water Management Act 2010 which provides for more comprehensive management of flood risk for people, homes, and businesses. The Environmental Permitting (England and Wales) Regulations 2016 also impose certain controls in relation to the placing of structures and the carrying out of works affecting main rivers and other watercourses.
- 5.1.5 The Flood Risk Assessment (FRA) has been prepared to assess the impacts of the Scheme on the flood regimes and floodplains of watercourses within the study area. Secondary consents for all relevant qualifying works will be secured from the Environment Agency and Lead Local Flood Authority under relevant legislation.

Policy

- 5.1.6 The NPPF (MHCLG, 2026) sets out Government policy on development and flood risk. Its objectives are to minimise risks to development arising from all sources of flooding and coastal change, taking into account the impacts of climate change, by steering development away from areas of risk, ensuring that development will be safe for its lifetime without increasing flood risk elsewhere, and incorporating sustainable drainage systems where appropriate.

Guidance

- 5.1.7 Several key sources have guided the Water Resources and Flood Risk appraisal.
- Design Manual for Roads and Bridges LA 113 Road Drainage and the Water Environment (Highways England, 2020) provides guidance on the assessment of the effects on linear infrastructure schemes on water environment receptors, including flood risk.
 - Flood Risk and Coastal Change Planning Practice Guidance (PPG) (MHCLG, 2022) provides advice regarding the potential impacts of climate change on rainstorm intensity and river flows, and how these should be factored into a site-specific FRA.
 - Various Construction Industry Research and Information Association (CIRIA) publications, for example, C532: Control of water pollution from construction sites (CIRIA, 2001), provide construction good practice for preventing pollution of the water environment.
 - The Nottinghamshire County Council Preliminary Flood Risk Assessment (PFRA), as the Lead Local Flood Authority for High Marnham (Nottinghamshire County Council, 2023), and Bassetlaw District Council Strategic Flood Risk Assessment (SFRA) (Bassetlaw District Council, 2019): the PFRA and SFRA include information on local sources of flood risk, including past flood events and future flood risks, and informs the Local Flood Risk Management Strategy for Nottinghamshire.

5.2 Study Area

- 5.2.1 The study area, defined in Appendix D, High Marnham New Overhead Lines Drawings; Figure 3.6.1 of the EAR, has been defined to include all surface water and groundwater receptors within 250m of the land required to construct the Scheme. This is considered an appropriate study area based on professional judgement and technical knowledge of similar schemes, and the nature of the Scheme construction and operational activities.

5.3 Surveys

- 5.3.1 No surveys were required in support of the appraisal for Water Resources and Flood Risk.

5.4 Appraisal Approach

- 5.4.1 In order to identify the environmental impacts of the land required to construct the Scheme, a comparison of the current environmental conditions immediately before the Scheme is implemented (baseline) was compared to a prediction of how the environmental conditions are likely to change once the construction and operation of the Scheme has been undertaken. An iterative process was followed during appraisal to develop appropriate control measures to avoid or reduce potential environmental impacts.
- 5.4.2 Receptors have been identified, and their existing qualities characterised, using a range of desk study data sources. The potential for construction activities and the

operation of the Scheme to impact these receptors has been identified by applying the source-pathway-receptor principle. The proximity of receptors to construction works activities and the likelihood of them being physically disturbed or receiving discharges from the Scheme have been considered in assessing potential impacts and measures to avoid or reduce impacts have been identified.

Sources of Baseline Data

5.4.3 Baseline information on the water environment and flood risk from a range of sources within this area has been sourced from the following datasets:

- Flood Map for Planning - Flood Zones (Environment Agency, 2025);
- Risk of Flooding from Rivers and Sea (Environment Agency, 2025);
- Risk of Flooding from Surface Water (Environment Agency, 2025);
- Reservoir Flood Extents (Environment Agency, 2025);
- Groundwater Source Protection Zones and aquifers (DEFRA, 2017);
- EA Catchment Data Explorer (Environment Agency, 2025);
- British Geology Viewer (British Geological Survey (BGS), 2025);
- Requested local abstraction and discharge data received June 2025 (Environment Agency EIR2025/03516);
- Surface Water Abstractions England (14th March 2024) (DEFRA, 2024);
- Environment Agency Statutory Main Rivers (Environment Agency, 2020); and
- Ordnance Survey (OS) Open Rivers (Ordnance Survey, 2025).

5.5 Limitations and Assumptions

5.5.1 No limitations and assumptions have been identified for the appraisal of water resource and flood risk.

6. Land and Ground Conditions Methodology

6.1 Legislation, Policy and Guidance

- 6.1.1 This appraisal has been undertaken in accordance with current national legislation, and national, regional and local plans and policies relating to Land and Ground Conditions in the context of the land required to construct the Scheme. A summary of the relevant legislation, policies and guidance, the requirements of these policies and the Scheme response is provided below.

Legislation

- 6.1.2 The Environmental Protection Act (EPA) 1990 defines, within England, Wales and Scotland, the structure and authority for waste management and control of emissions into the environment. The Act was intended to strengthen pollution controls and support enforcement with heavier penalties. Before the Act there had been separate environmental regulation of air, water and land pollution and the Act brought in an integrated scheme that would seek the 'best practicable environmental option'.
- 6.1.3 Part 2A of the EPA 1990 (which was inserted into that Act by section 57 of the Environment Act 1995) contains a regulatory regime for the identification and remediation of contaminated land. In addition to the requirements contained in the primary legislation, operation of the regime is subject to regulations and statutory guidance. The main objective underlying the introduction of the Part 2A contaminated land regime was to provide an improved system for the identification and remediation of land where contamination is causing unacceptable risks to human health or the wider environment, assessed in the context of the current use and circumstances of the land. The identification of contaminated land, as defined in Part 2A comprises a risk-based approach. For harm to the non-aquatic environment or pollution of controlled waters to occur, there must be a 'pollutant linkage'. This linkage is based on the following being present:
- A source of contamination (hazard);
 - A pathway for the contaminant that links the source to receptor; and
 - A receptor (target), which is affected by the contaminant. This includes humans, ecosystems, controlled waters, physical systems and built structures, which could be affected by the hazard.

Policy

- 6.1.4 The planning policy relevant to Ground Conditions and Contaminated Land and how this policy has been taken into account is provided in Table 6.1.

Table 6.1 Planning Policy

Policy Document	Policy/Reference	Description in Relation to Ground Conditions and Pollution	Scheme Response
National Planning Policy Framework (NPPF) (MHCLG, 2026)	P2	Requirement to ensure that a site should be suitable for its proposed use taking consideration of any risks from land contamination and land instability with appropriate assessment and mitigation, including land remediation. Statement on responsibility of developer and/or landowner to ensure the site development is 'safe' with respect to land contamination and stability.	The assessment considers the ground conditions and risks arising from land instability and contamination, including from natural hazards (including mining) and former activities.
Bassetlaw Local Plan 2020 – 2038 (Bassetlaw District Council, 2024)	Policy 47: Contaminated and Unstable Land	Appropriate risk assessments are required where land is considered contaminated/unstable. Investigation and suitable mitigation will be required where contaminants/instability avoiding unacceptable risk to health, water receptors and the built and natural environment, on site or nearby.	The assessment considers risk from contamination to receptors onsite and nearby.
Bassetlaw Local Plan 2020 – 2038 (Bassetlaw District Council, 2024)	Policy 51: Protecting Water Quality and Management	In line with the objectives of the Water Framework Directive (2017), the quantity and quality of surface and groundwater bodies will be protected and where possible enhanced.	The assessment considers the groundwater and surface water conditions and potential risks to water receptor contamination.

Guidance

6.1.5 The following guidance has informed the Land and Ground Conditions appraisal:

- The Design Manual for Roads and Bridges (DMRB) LA 109 Geology and Soils (Highways England, 2019) informed the approach to assigning sensitivity of receptors and magnitude of impacts with respect to ground conditions;
- The Land Contamination Risk Management 2020 guidance informed the evaluation of land contamination risks, following the source-pathway-receptor approach; and
- Construction Industry Research and Information Association (CIRIA) Report 552 (C552) informed the evaluation of significance of effect where applicable.

6.2 Study Area

- 6.2.1 The study area for the appraisal of Land and Ground Conditions, as seen in Appendix D, High Marnham New Overhead Lines Drawings, Figure 3.7.1 of the EAR, comprises the land required to construct the Scheme plus a 250m buffer on all sides, which reflects the surrounding geological environment and considers the distance over which significant effects can reasonably be thought to have the potential to occur. For contamination, the study area is considered appropriate as this is the distance which potentially contaminative sites could cause more significant impact on the Scheme e.g., migration of gases from a landfill site, migration of contamination in the air, within groundwater, or surface water.

6.3 Surveys

- 6.3.1 The study area, incorporating the land required to construct the Scheme with a 250m buffer, has previously been subject to a Phase 1 Ground Conditions and Contaminated Land Desk Study Report with the findings of which have been utilised within this appraisal to present the baseline conditions.
- 6.3.2 A site walkover survey was also undertaken during April 2024.

6.4 Sources of Baseline Data

- 6.4.1 The baseline review has been informed by the following publicly available resources and information provided by NGET:
- A review of the British Geological Survey (BGS) published geological sheet map (sheets 113 for Ollerton) and the BGS GeoIndex Viewer, including relevant archive borehole records;
 - High Marnham, Phase 1 Ground Conditions and Contaminated Land Assessment Desk Study Report, Arcadis, Ref. EDEU-ARC-ENV-REP-0012;
 - Groundsure Geo Insight Report with Ordnance Survey Maps (Groundsure reference: GSIP-2024-14632-17543 dated: 01/03/2024);
 - Groundsure Enviro Insight Report (Groundsure reference: GS-Q7D-QJT-VM5-B39: 29/05/2026)
 - Groundsure Geo Insight Report (Groundsure reference: GS-E3J-PJ4-Y91-TOV dated: 29/05/2026)
 - Zetica website and Zetica Unexploded Ordnance (UXO) Pre-Desk Study Assessment;
 - DEFRA Magic Map Database;
 - Ref. 302382-R03(00), Phase 1 Desk study Report, New Buildings and Gatehouse, Former High Marnham Power Station, Newark, dated April 2022, RSK;
 - Ref. 302382-R04(00), Phase 1 Desk study Report, Solar Farm, Former High Marnham Power Station, Newark, dated April 2022, RSK;
 - Ref. 302382-R04(00), Phase 1 Desk Desk-Based Assessment Addendum, Hydrogen Production units, High Marnham, Newark, dated May 2023, RSK;

- Ref. 302535-R02(00), Phase 2 Geo-environmental Assessment, Solar Farm, Hydrogen Production units, High Marnham, dated July 2023, RSK; and
- Nottinghamshire Minerals Local Plan 2019-2036.

6.5 Appraisal Approach

- 6.5.1 In order to identify the environmental impacts of the Scheme, a comparison of the current environmental conditions immediately before the Scheme is implemented (baseline) was compared to a prediction of how the environmental conditions are likely to change once the construction of the Scheme has been undertaken. An iterative process was followed during appraisal to develop appropriate control measures to avoid or reduce potential environmental impacts.
- 6.5.2 Operational phase contamination risks are scoped out. It is expected that any significant adverse effects from historical (pre-existing) ground and groundwater contamination that require mitigation will be either reduced to acceptable levels by the time the Scheme is operational or mitigated through design. Sensitive geological features and mineral resources will be considered as part of the appraisal in relation to the operation phase.
- 6.5.3 The Scheme will operate in accordance with standard operating procedures and legislative controls and wider standard operating procedures to prevent it being a potential source of contamination, so this aspect has also been scoped out.
- 6.5.4 A review of the baseline conditions and primarily the conceptual site model and preliminary risk assessment as is laid out in the desk study, and summarised above, have been utilised to identify potential receptors, with viable source-pathway-receptor linkages which have potential to impact the construction and operational phases of development. The preparations of the Phase 1 Desk Study for the Scheme have been undertaken in general accordance with the guidance provided in: BS 5930 Code of Practice for Ground Investigation (British Standards Institution (BSI), 2020); BS 10175 Investigation of potentially contaminated sites – Code of Practice (BSI, 2017) and EA (2020) Land contamination risk management (LCRM) guidance (Environment Agency, 2021). Appropriate control measures are then presented in Chapter 3.7 Land and Ground Conditions, to reduce or avoid any potential impacts that may occur in construction and operation phases of the Scheme.

Significance Criteria

- 6.5.5 The adopted assessment methodology comprises a number of stages and has drawn from DMRB LA 109 (Highways England, 2019). The values of the identified receptors/resources have been assessed against the criteria shown in Table 6.2 below.

Table 6.2 Criteria for determining value/sensitivity of receptors/resources

Receptor Value (Sensitivity)	Description
Very high	Contamination: Human Health: Very high sensitivity land use such as residential with gardens or allotments.

Receptor Value (Sensitivity)	Description
	<p>Surface Water: Watercourse having a Water Framework Directive (WFD) classification shown in a River Basin Management Plan (RBMP) and flow of $Q95 \geq 1.0\text{m}^3/\text{s}$; Site protected/ designated under European Commission (EC) or UK legislation (SAC, SPA, SSSI, Ramsar site, salmonid water)/ Species protected by EC legislation LA 108 (Highways England, 2020).</p> <p>Groundwater: Principal Aquifer providing a regionally important resource and/ or supporting a site protected under EC and UK legislation LA 108; Groundwater locally supports Groundwater Dependent Terrestrial Ecosystems (GWDTE); Groundwater Source Protection Zone (SPZ) 1.</p> <p>Geology:</p> <p>Very rare and of international importance with no potential for replacement (e.g. UNESCO World Heritage Sites, UNESCO Global Geoparks, SSSIs and Geological Conservation Review sites where citations indicate features of international importance). Geology meeting international designation citation criteria which is not designated as such.</p>
High	<p>Contamination:</p> <p>Human Health: High sensitivity land use such as public open space.</p> <p>Surface water: Watercourse having a WFD classification shown in an RBMP and $Q95 < 1.0\text{m}^3/\text{s}$; Species protected under EC or UK legislation LA 108 (Highways England, 2020).</p> <p>Groundwater: Principal Aquifer providing locally important resource or supporting a river ecosystem; Groundwater supports a GWDTE; Groundwater SPZ 2 (Outer).</p> <p>Geology:</p> <p>Rare and of national importance with little potential for replacement (e.g. geological SSSI, National Nature Reserves). Geology meeting national designation citation criteria which is not designated as such.</p>
Medium	<p>Contamination:</p> <p>Human Health: Medium sensitivity land use such as commercial or industrial.</p> <p>Surface Water: Watercourses not having a WFD classification shown in an RBMP and $Q95 > 0.001\text{m}^3/\text{s}$.</p> <p>Groundwater: Aquifer providing water for agricultural or industrial use with limited connection to surface water; Groundwater SPZ 3.</p> <p>Geology:</p> <p>Of regional importance with limited potential for replacement (e.g. Regionally Important Geological Site). Geology meeting regional designation citation criteria which is not designated as such.</p>
Low	<p>Contamination:</p> <p>Human Health: Low sensitivity land use such as highways and rail.</p> <p>Surface Water: Watercourses not having a WFD classification shown in an RBMP and $Q95 \leq 0.001\text{m}^3/\text{s}$.</p> <p>Groundwater: Unproductive Strata.</p>

Receptor Value (Sensitivity)	Description
	Geology: Of local importance/interest with potential for replacement (e.g. non-designated geological exposures, former quarries/mining sites).
Negligible	Contamination: Human Health: Undeveloped surplus land/ no sensitive land use proposed. Geology: No geological exposures, little/no local interest.

- 6.5.6 In consideration of human health, the duration and frequency of exposure to contamination and number of pathways of exposure to contamination increases from commercial/industrial (minimum) to residential with private garden (maximum) land uses, when considering land uses with a regular human presence. Therefore, future users of industrial sites are considered to be of low sensitivity as they would have minimal contact with underlying soil, whilst residential end users are likely to be in contact with underlying soil on a more regular basis and are therefore attributed very high sensitivity/value.
- 6.5.7 The magnitude of impacts has been determined using the criteria outlined in Table 6.3 below.

Table 6.3 Criteria for determining the scale of impact

Magnitude of Impact	Definition
Major Adverse	<p>Geology – The Scheme is very damaging to the geological environment/soil resource of the study area; may result in loss of or damage to areas designated as being of regional or national geodiversity value; and the effects cannot be mitigated.</p> <p>Human Health – Significant harm to a designated receptor (e.g. human health) is likely to arise from an identified hazard at the Site without appropriate remedial action.</p> <p>Hydrogeology – Loss of, or extensive change to an aquifer used for potable supply, potential high risk of pollution of groundwater.</p> <p>Hydrology – Major decrease in water quality; loss or extensive change to a fishery, loss or extensive change to a designated Nature Conservation Site.</p> <p>Buildings and Infrastructure – Catastrophic damage to buildings, structures or the environment.</p>
Moderate Adverse	<p>Geology – The Scheme may result in the loss of or damage to areas designated as being of national and/or regional geodiversity value within the study area. Some mitigation may be possible but would not prevent damage to the geological environment, as some features of interest would be lost or partly destroyed.</p> <p>Human Health – It is possible that without appropriate remedial action, significant harm to a designated receptor (e.g. human health) could arise but it is relatively</p>

Magnitude of Impact	Definition
	<p>unlikely that any such harm would be severe and if any harm were to occur, it is likely that such harm would be relatively mild.</p> <p>Hydrogeology – Partial loss or change to an aquifer, potential medium risk of groundwater pollution. Partial loss of the integrity of groundwater supported designated wetlands.</p> <p>Hydrology – Moderate decrease in water quality; partial loss in productivity of a fishery.</p> <p>Buildings – Significant damage to buildings, structures or the environment</p>
Minor Adverse	<p>Geology – The Scheme would not affect areas with regional or national geodiversity value but may result in the loss of or damage to areas of local geodiversity value. The effects cannot be completely mitigated but opportunities exist for local enhancement of geodiversity value.</p> <p>Human Health – It is possible that harm could arise to a designated receptor (e.g. human health) from an identified hazard but it is likely that at worst this harm if realised would normally be mild.</p> <p>Hydrogeology – No significant change to an aquifer, potential low risk of pollution to groundwater. Minor effects on groundwater supported wetlands.</p> <p>Hydrology – Slight decrease in water quality.</p> <p>Buildings – Minor damage to sensitive buildings, structures services or the environment.</p>
Negligible Adverse	<p>Geology – The Scheme would result in very minor loss of geodiversity value of local areas of geological interest/soils resource such that mitigation is not considered practical.</p> <p>Human Health – There is a low possibility that harm could arise to a designated receptor. In the event of such harm being realised, it is likely to be mild or minor.</p> <p>Hydrogeology – The Scheme is unlikely to affect the integrity of the water environment.</p> <p>Hydrology – Negligible decrease in water quality.</p> <p>Buildings – Easily repairable effects of damage to buildings or structures.</p>
No Change	No observable effect either adversely or beneficially.
Negligible Beneficial	<p>Geology – The Scheme would be of minor benefit to geodiversity value by potentially providing greater exposure and or protection. The Development may resolve minor impact from existing land or water contamination.</p> <p>Contaminated Land – The Scheme may resolve slight impact from existing land or water contamination.</p>
Minor Beneficial	<p>Geology – The Scheme may result in the exposure of geological formations that may become of significant local interest.</p> <p>Contaminated Land – The Scheme may resolve minor impact from existing land or water contamination.</p>
Moderate Beneficial	Geology – There is benefit to the geodiversity value of the geological/soil resource of the area as a result of the Scheme. The Scheme may result in the exposure of geological formations that may become of significant regional

Magnitude of Impact	Definition
	<p>interest. The Scheme may resolve moderate impact arising from existing land or water contamination.</p> <p>Contaminated Land – The Scheme may resolve moderate impact arising from existing land or water contamination.</p>
Major Beneficial	<p>Geology – The Scheme is very beneficial to the geodiversity value of the geological/soil resource of the area. The Scheme may result in the exposure of geological formations that may become of significant regional and or national interest. The Scheme may resolve major impact arising from existing land or water contamination. Note: although very few projects are likely to meet these criteria, enhancement of the SSSI presents such an opportunity.</p> <p>Contaminated Land – The Scheme may resolve major impact arising from existing land or water contamination.</p>

6.5.8 The determination of level of the effect is a factor of the value/sensitivity of the feature/resource (receptor) and the magnitude of the impact (change) as described above. Table 6.4 shows how the level of effect is derived.

Table 6.4 Determination of the level of effects

Magnitude of Impact (Change)	Value/Sensitivity of Receptor/Resource				
	Very High	High	Medium	Low	Negligible
Major	Very Large	Large/ Very Large	Moderate/ Large	Moderate	Slight
Moderate	Large/ Very Large	Moderate/ Large	Moderate	Slight	Neutral
Minor	Moderate/ Large	Moderate	Slight	Neutral	Neutral
Negligible	Slight	Slight	Neutral	Neutral	Neutral
No Change	Neutral	Neutral	Neutral	Neutral	Neutral

6.6 Limitations and Assumptions

6.6.1 The appraisal has been based on available information referenced within this Chapter. Further ground investigation may be required to inform detailed design.

7. Noise and Vibration Methodology

7.1 Legislation, Policy and Guidance

- 7.1.1 This appraisal has been undertaken in accordance with current national legislation, and national, regional and local plans and policies relating to Noise and Vibration in the context of the Scheme. A summary of the relevant legislation, policies and guidance, the requirements of these policies and the Scheme response is provided below.

Policy

- 7.1.2 The following planning policies are of relevance to the appraisal of Noise and Vibration for the Scheme:

- The NPPF (MHCLG, 2026); and
- Noise Policy Statement for England (NPSE) (DEFRA, 2010).

- 7.1.3 A summary of the relevant information with respect to Noise and Vibration contained within the planning documentation listed above is presented below.

National Planning Policy Framework

- 7.1.4 The NPPF sets out the Government's planning policies for England and how these should be applied. The NPPF does not contain assessment design targets, instead providing a series of policies, giving local authorities the flexibility in meeting the needs of local communities. The NPPF states at P3 that:

"Development proposals should be appropriate for their location, taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, whether these effects are on or off-site; and whether this is as a result of the development itself or the product of preexisting conditions in its vicinity. In assessing the potential effects of pollution, consideration should be given to the potential sensitivity of the site, and its intended occupiers and users, as well as that of the environment and population in the surrounding area (including where certain groups could be particularly vulnerable to its effects, such as children and older people)."

- 7.1.5 Within this context development proposals should:

a) Provide healthy living conditions for occupiers and users in terms of adequate access to light and avoiding exposure to levels of air, noise, artificial light or other sources of pollution which could have an unacceptable adverse effect on health and the quality of life. Where necessary suitable mitigation measures should be incorporated to secure acceptable living conditions;

b) Not give rise to, or contribute to, an unacceptable level of access to daylight and sunlight for neighbouring residents and occupiers, or unacceptable levels of air, noise, artificial light, water, soil or other forms of pollution on or beyond the site. Adverse impacts of this nature should be avoided where possible, or else mitigated to an acceptable degree. Where possible, opportunities should be taken to reduce

pollution affecting the wider area (such as through traffic and travel management or improved external lighting);

d) Mitigate and reduce to a minimum potential adverse impacts resulting from noise, not result in levels of noise exposure which would have a significant observed adverse effect, and maintain the character of tranquil areas (those areas that have remained relatively undisturbed by noise from human sources and are prized for their recreational and amenity value for this reason); and

e) Limit any adverse impact from artificial light on local amenity, intrinsically dark landscapes (those areas entirely, or largely, uninterrupted by artificial light) and nature”.

Noise Policy Statement for England (NPSE)

- 7.1.6 The NPSE was published on 15 March 2010. It sets out the long-term vision of government noise policy, to promote good health and a good quality of life through the management of noise.
- 7.1.7 The NPSE should apply to all forms of noise including environmental noise, neighbour noise and neighbourhood noise. The NPSE does not apply to noise in the workplace (occupational noise).
- 7.1.8 The NPSE sets out the long-term vision of Government noise policy which is to:
‘Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.’
- 7.1.9 This long-term vision is supported by the following aims, through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:
- avoid significant adverse impacts on health and quality of life;
 - mitigate and minimise adverse impacts on health and quality of life; and
 - where possible, contribute to the improvement of health and quality of life.
- 7.1.10 The aim of the NPSE is to provide clarity regarding policies and practices to enable noise management decisions to be made within the wider context, at the most appropriate level, in a cost-effective manner and in a timely fashion.
- 7.1.11 There are established concepts being applied to noise impacts and which are presented in the NPSE. They are:
- NOEL – No Observed Effect Level: This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise;
 - LOAEL – Lowest Observed Adverse Effect Level: This is the level above which adverse effects on health and quality of life can be detected; and
 - SOAEL – Significant Observed Adverse Effect Level: This is the level above which significant adverse effects on health and quality of life occur.
- 7.1.12 The first aim of the NPSE states that significant adverse effects on health and quality of life should be avoided while also considering the guiding principles of sustainable development.

- 7.1.13 The second aim of the NPSE refers to the situation where the impact lies somewhere between LOAEL and SOAEL. It requires that all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also considering the guiding principles of sustainable development. This does not mean that such adverse effects cannot occur.
- 7.1.14 The third aim of the NPSE seeks, where possible, to improve health and quality of life through the pro-active management of noise while also considering the guiding principles of sustainable development, recognising that there will be opportunities for such measures to be taken and that they will deliver potential benefits to society. The protection of quiet places and quiet times as well as the enhancement of the acoustic environment will assist with delivering this aim.

Guidance

- 7.1.15 The following guidance is of relevance to the appraisal of Noise and Vibration for the Scheme:
- Planning Practice Guidance for noise (MHCLG, 2014); and
 - BS 4142:2014+A1:2019 – ‘Methods for Rating and Assessing Industrial and Commercial Sound’ (BSI, 2019).

Planning Practice Guidance – Noise

- 7.1.16 The Planning Practice Guidance for noise was published in March 2014 and updated in July 2019.
- 7.1.17 Noise needs to be considered when development may create additional noise or would be sensitive to the prevailing acoustic environment, including any anticipated changes to that environment from activities that are permitted but not yet commenced.
- 7.1.18 Table 7.1 below, summarises the noise exposure hierarchy presented in the PPG.

Table 7.1 National Planning Practice Guidance noise exposure hierarchy

Response	Examples of Outcomes	Increasing Effect Level	Action
No Observed Effect Level (NOEL)			
Not present	No effect	No Observed Effect	No specific measure required
No Observed Adverse Effect Level (NOAEL)			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	No Observed Adverse Effect	No specific measure required

Response	Examples of Outcomes	Increasing Effect Level	Action
Lowest Observed Adverse Effect Level (LOAEL)			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g., turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level (SOAEL)			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g., avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g., regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

BS 4142:2014+A1:2019 – ‘Methods for Rating and Assessing Industrial and Commercial Sound’

- 7.1.19 BS 4142:2014+A1:2019 (BSI, 2019) describes methods for rating and assessing sound of an industrial and/or commercial nature.
- 7.1.20 This includes sound from industrial and manufacturing processes, including sound from fixed installations comprising mechanical and electrical plant and equipment.
- 7.1.21 The methods described in BS 4142:2014+A1:2019 use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

- 7.1.22 BS 4142:2014+A1:2019 assesses the likelihood of any adverse impact from proposed or existing industrial/commercial activities on existing or proposed noise sensitive receptors (NSRs).
- 7.1.23 To assess the potential impact, the measured background sound level at the closest NSR or at a representative location, is arithmetically subtracted from the rating level. This is the specific sound source level of the assessed source corrected for acoustical characteristics that may make the sound more subjectively noticeable to the NSRs.
- 7.1.24 The method in BS 4142:2014+A1:2019 is based on the difference between the measured background sound level, without the influence of any industrial noise source assessed, and the rating level of the industrial source assessed, at the receiver location.
- 7.1.25 The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs.
- 7.1.26 Typically, the greater the difference between the background sound level and the rating level, the greater the magnitude of the impact.
- 7.1.27 A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- 7.1.28 A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.
- 7.1.29 The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. 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.
- 7.1.30 Regarding the context, BS 4142:2014+A1:2019 (BSI, 2019) states the following:
'An effective assessment cannot be conducted without an understanding of the reason(s) for the assessment and the context in which the sound occurs/will occur. When making assessments and arriving at decisions, therefore, it is essential to place the sound in context.'
- 7.1.31 Main specific terms used in BS 4142:2014+A1:2019 are presented below:
- Ambient sound level, $L_a = L_{Aeq,T}$
 - equivalent continuous A-weighted sound pressure level, L_{Aeq} , of the totally encompassing sound in a given situation at a given time, usually from many sources near and far, at the assessment location over a given time interval, T. The ambient sound level is a measure of the residual sound and the specific sound when present.
 - Background sound level, $LA_{90,T}$
 - A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time weighting, F, and quoted to the nearest whole number of decibels.
 - Residual sound level, $L_r = L_{Aeq,T}$

- ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound.
 - Specific sound level, $L_s = LA_{eq,Tr}$
 - equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, Tr .
 - Rating level, $L_{ar,Tr}$
 - specific sound level plus any adjustment for the characteristic features of the sound.
- 7.1.32 The background sound level is an underlying level of sound over a period, T , and might in part be an indication of relative quietness at a given location. It does not reflect the occurrence of transient and/or higher sound level events and is generally governed by continuous or semi-continuous sounds.
- 7.1.33 The background sound level should be measured at the assessment location(s), where possible. Where this is not possible, an alternative location, representative of the assessment locations, can be used.
- 7.1.34 The measurement time interval should be sufficient to obtain a representative value of the background sound level for the period of interest. This should comprise continuous measurements of normally not less than 15 minutes intervals, which can be contiguous or disaggregated.
- 7.1.35 The specific sound level needs to be determined at the assessment location(s) as a discrete entity, distinct and free of other influences contributing to the ambient sound. BS 4142:2014+A1:2019 (BSI, 2019) suggests that the specific sound needs to be evaluated over an appropriate reference time interval, 1 hour during daytime and 15 minutes during night-time.
- 7.1.36 The daytime period is defined as the hours ranging from 07:00 to 23:00. The night-time period comprises the hours from 23:00 to 07:00.
- 7.1.37 BS 4142:2014+A1:2019 states that, where possible, the specific sound level by measurement of the ambient sound level and the residual sound level needs to be determined at the assessment location(s).
- 7.1.38 Where determining the specific sound level by direct measurement is not practicable, for example in the case of a source not yet in operation, the method of calculation has to be reported and justified in detail.
- 7.1.39 The rating level in BS 4142:2014+A1:2019 depends on certain acoustic features that can increase the significance of impact over that expected from a basic comparison between the specific sound level and the background sound level.
- 7.1.40 Where such features are present at the assessment location, a character correction is added to the specific sound level to obtain the rating level.
- 7.1.41 BS 4142:2014+A1:2019 states that it is typically feasible to undertake a subjective assessment of characteristics, based on the correction guidelines, as follows:
- Tonality: +2dB for a 'just perceptible' tone, +4dB for 'clearly perceptible', +6dB for 'highly perceptible' tones;

- Impulsivity: +3dB for 'just perceptible' impulsivity, +6dB for 'clearly perceptible', rising to +9dB for 'highly perceptible' impulsivity;
- Intermittency: if the on/off-time of the specific sound is readily distinctive at the NSRs, a +3dB character correction is added; and,
- Other sound characteristics: where the noise source features characteristics that are neither tonal nor impulsive, nor intermittent, though otherwise are readily distinctive against the residual acoustic environment, a penalty of +3dB can be applied.

- 7.1.42 If characteristics likely to affect perception and response are present in the specific sound, within the same reference period, then the applicable corrections ought normally to be added arithmetically.
- 7.1.43 However, if any single feature is dominant to the exclusion of the others, then it might be appropriate to apply a reduced or even zero correction for the minor characteristics.
- 7.1.44 Given that transformers are industrial noise sources in nature, it is therefore considered that the methodology based on BS 4142:2014+A1:2019, 'Methods for rating and assessing industrial and commercial sound' is the most appropriate guidance to follow and consequently has been adopted for the assessment of the potential noise breakout from the site at the identified NSRs, with the intention to design rating levels at or below background sound levels at NSRs.

7.2 Study Area

- 7.2.1 Given the nature of the Scheme, the study area for Noise and Vibration comprises the land required to construct the Scheme, including the land required for the New 400kV High Marnham Substation, and 200m either side of the proposed overhead lines, as well as those to be retained.

7.3 Surveys

- 7.3.1 No surveys were undertaken for the Scheme.
- 7.3.2 Baseline sound levels at the site of the New 400kV High Marnham substation have been established by means of an automated noise survey completed between 30 April and 13 May 2024, considered representative of the most exposed receptors.

7.4 Appraisal Approach

- 7.4.1 Operational noise impacts are most likely to be associated with the new 400kV substation proposed alongside the Scheme. This substation has been appraised and consented separately (insert planning app ref), Information about the operational noise impacts of the new 400kV substation is therefore presented as part of this appraisal alongside the appraisal of noise from the operation of overhead lines.
- 7.4.2 Given the context of the Scheme centred around the existing and proposed High Marnham substations, and the nature of the Scheme, comprising removal and installation of pylons and overhead lines only, the Noise Impact Assessment undertaken for the new 400kV High Marnham substation has been used to evidence the appraisal of impacts on noise and vibration.

- 7.4.3 In order to identify the environmental impacts, a comparison of the current environmental conditions (baseline) was compared to a prediction of how the environmental conditions are likely to change once the construction and operation has been undertaken. An iterative process was followed during appraisal to develop appropriate control measures to avoid or reduce potential environmental impacts. Further details of the appraisal approach can be found in Appendix H, Noise Impact Assessment.

Background Noise Levels

- 7.4.4 During night-time periods, the background sound levels are lower than the daytime background sound levels, and as the supergrid transformers (SGTs) operate 24/7, this makes the night-time period a more onerous assessment. Therefore, only the night-time assessment is presented in the noise assessment.
- 7.4.5 Based on the analysis of the background levels presented above, a representative background sound level of 46dB(A) has been selected for the receptors.
- 7.4.6 In line with BS 4142:2014+A1:2019 (BSI, 2019), a typical background sound level should be selected and should not automatically be assumed to be the minimum value. The typical background sound level presented above has been carefully selected based on the statistical cumulative percentage analysis, which indicates that background sound levels will typically exceed the chosen representative sound levels approximately 70-75% of the time.
- 7.4.7 In light of the above it is considered that the selected background sound levels are conservative and will aid in providing a robust assessment.

Noise Sources Scoped Out of the Appraisal

- 7.4.8 The residual impacts of construction noise and vibration have been scoped out of this EAR on the basis that this will be mitigated through the implementation of a Noise and Vibration Management Plan, via a CEMP and due to the temporary nature of the construction impact. Operational maintenance activities will also be managed by the implementation of noise and vibration management measures.
- 7.4.9 The following operational noise sources have been scoped out of the appraisal:
- overhead lines, as set out in section 3.8 of the main EAR; and
 - operational traffic, given the very low levels of traffic that would be generated during maintenance only.

SGT Sound Power Levels

- 7.4.10 Sound power levels from the SGTs of the new 400kV High Marnham substation have been derived from National Grid's Technical Specification 2.03, Power Transformers and Reactors, TS 2.03, Issue 7, June 2021. This document specifies the maximum sound power level for transformer units under specific operating conditions, in accordance with IEC 60076-10, Power transformers - Part 10: Determination of sound levels.
- 7.4.11 The rated power of the proposed SGTs is 1100MVA. From previous assessments of SGTs with >1000MVA power, sound power levels of up 97dB(A) have been used, therefore a sound power level of 97dB(A) has been used for the 1100MVA SGTs.

Noise Model

- 7.4.1 The specific sound level at the NSRs have been calculated using a 3D sound model using acoustic modelling software Datakustik CadnaA. This software's calculation method is based on ISO 9613-2:1996 and considers the distance between source and receiver including reflection or screening effects from buildings.
- 7.4.2 An additional acoustic model was then created where the sound power levels of the SGTs have been adjusted with the use of acoustic enclosures.
- 7.4.3 Further details on the acoustic models and the results can be found in Appendix H, Noise Impact Assessment.

7.5 Limitations and Assumptions

- 7.5.1 The background sound levels derived from the acoustic survey for the assessment are considered to be suitably representative for surrounding receptors. The weather conditions were continuously monitored during the unattended measurement using a weather station and those periods with wind speeds higher than 5m/s, and/or rainfall as discussed in BS 4142:2014+A1:2019 (BSI, 2019) were discarded from the dataset for the assessment.
- 7.5.2 Source sound power levels have been based on higher voltages and loads than would typically occur, at 102.5% voltage and 50% load from the National Grid Technical Specification document.
- 7.5.3 Specific noise levels have been calculated using a 3D sound model and rated noise levels have considered character corrections.
- 7.5.4 Based on the aforementioned, it is considered that the uncertainty of the measurements, the determination of the background levels, and calculations for the NIA have minimal influence on the outcome of the assessment.

8. Traffic and Transport Methodology

8.1 Legislation, Policy and Guidance

- 8.1.1 This assessment has been undertaken in accordance with current national legislation, and national, regional and local plans and policies relating to traffic and transport in the context of the Scheme. A summary of the relevant legislation, policies and guidance, the requirements of these policies and the Scheme response is provided below.

Legislation

- 8.1.2 This section identifies the legislation in the context of traffic and transport, which includes the Highways Act 1980, Transport Act 2000, and Environment Act 2021.

Highways Act 1980

- 8.1.3 The Highways Act 1980 outlines the duties of the highway authorities, and the management and operation of the highway network. The legislation most relevant to Chapter 3.9 Traffic and Transport of the EAR, include 'Improvement of Highways', which is covered in Part V, and 'Environmental Impact Assessments', which is covered in Part VA.

Transport Act 2000

- 8.1.4 The Transport Act 2000 includes measures to create a more integrated transport system with the aim of improving local passenger transport services, alongside reducing congestion and pollution. This is exemplified by the requirement for local authorities to prepare, publish and review a local transport plan to achieve the outlined aims of this legislation. These plans have been taken into consideration in the assessment of Traffic and Transport.

Environment Act 2021

- 8.1.5 The Environment Act 2021 amends the Environment Act 1995. It establishes the Environment Agency and provides a framework for environmental protection and improvement including the impacts of transport.

Policy

National Policy Statements (NPS)

- 8.1.6 The Overarching National Policy Statement for Energy (EN-1) (DESNZ, 2025) outlines the necessity for a Transport Assessment (TA) if the project is likely to have significant transport implications. This is supported by NPS EN-5 (DESNZ, 2025).
- 8.1.7 In particular, EN-1 Section 5.14 discusses transport impacts and states that energy projects have the potential to have a variety of impacts on Traffic and Transport. These have been considered and are detailed below.

- 8.1.8 National Policy Statement EN-1 states at Paragraph 5.14.1 *‘The transport of materials, goods and personnel to and from a development during all project phases can have a variety of impacts on the surrounding transport infrastructure and potentially on connecting transport networks, for example through increased congestion. Impacts may include economic, social and environmental effects’.*
- 8.1.9 Paragraph 5.14.4 states *‘The consideration and mitigation of transport impacts is an essential part of Government’s wider policy objectives for sustainable development as set out in Section 2.5 of this NPS’.*
- 8.1.10 Paragraph 5.14.12 states *‘Where mitigation is needed, possible demand management measures must be considered. This could include identifying opportunities to:*
- *reduce the need to travel by consolidating trips,*
 - *locate development in areas already accessible by active travel and public transport,*
 - *provide opportunities for shared mobility,*
 - *re-mode by shifting travel to a sustainable mode that is more beneficial to the network,*
 - *retime travel outside of the known peak times,*
 - *reroute to use parts of the network that are less busy’.*
- 8.1.11 Paragraph 5.14.13 states *‘If feasible and operationally reasonable, such mitigation should be required, before considering requirements for the provision of new inland transport infrastructure to deal with remaining transport impacts. All stages of the project should support and encourage a modal shift of freight from road to more environmentally sustainable alternatives, such as rail, cargo bike, maritime and inland waterways, as well as making appropriate provision for and infrastructure needed to support the use of alternative fuels including charging for electric vehicles’.*
- 8.1.12 Paragraph 5.14.21 states that *‘The Secretary of State should only consider refusing development on highways grounds if there would be an unacceptable impact on highway safety, residual cumulative impacts on the road network would be severe, or it does not show how consideration has been given to the provision of adequate active public or shared transport access and provision’.*
- 8.1.13 Section 2.5 of National Policy Statement for Electricity Networks Infrastructure (EN-5) is also relevant to the Scheme. Paragraph 2.5.1 states that *‘When planning and evaluating the proposed development’s contribution to environmental and biodiversity net gain, it will be important – for both the applicant and the Secretary of State – to supplement the generic guidance set out in EN-1 (Section 4.6) with recognition that the linear nature of electricity networks infrastructure can follow for excellent opportunities to:*
- *reconnect important habitats via green corridors, biodiversity stepping zones, and reestablishment of appropriate hedgerows; and/or*
 - *connect people to the environment, for instance via footpaths and cycleways constructed in tandem with environmental enhancements.’*
- 8.1.14 The Scheme would not permanently impact or change existing highway infrastructure or PRow. It has been assumed that temporary PRow diversions will be removed

following construction. However, discussions with the Local Highways Authority (LHA) could be undertaken to identify locations where it may be favourable to retain such infrastructure.

National Planning Policy Framework

- 8.1.15 The NPPF (MHCLG, 2026) sets out the Government's planning policies for England and how these are expected to be applied. The NPPF provides a framework within which locally prepared plans for housing and other development can be produced.
- 8.1.16 Chapter 15 sets out the objectives to promoting sustainable transport, ensuring transport is fully considered in planning and development decisions using a vision-led approach to identify transport solutions that deliver sustainable places. The relevant objectives have been laid out in this report:

TR1: Vision-led approach to planning for transport:

- Early engagement with local communities, transport authorities and other stakeholders should inform development proposals, ensuring they reflect local needs and transport evidence. Plans should also align with wider strategies;
- Making use of The Connectivity Tool to see where proposed development can support sustainable patterns of movement and make use of existing / proposed transport infrastructure;
- Identify sites and routes which will widen transport choices and support active travel; and
- Providing for any transport facilities, such as ports, public transport hubs and electric vehicle charging, that need to be located in the area or for expansion and wider developments.

TR3: Locating development in sustainable locations:

- Prioritise development in sustainable locations that reduce reliance on private cars and provide access to a range of transport options;
- Mitigate significant impacts from the development on the transport network to an acceptable degree using a vision-led approach;
- Identify and assess environmental impacts of transport; and

TR6: Assessing transport impacts:

- Developments that are likely to generate significant amounts of movement should be supported by a transport statement / assessment and a travel plan;
- They should reflect the transport vision for the development and the transport strategy for the area which it is located;
- Reasonable future scenarios should be considered and account for potential cumulative impacts, multimodal trip generation and the promotion of sustainable travel; and
- If development proposals have a severe impact on the transport network, they should be refused.

TR8: Public rights of way:

- Development proposals should protect and enhance the network of public rights of way; and
- Development proposals should take opportunities to extend, link or improve the quality of existing routes, including by improving access to green spaces, enabling direct routes between footpaths and cycle routes, creating safe, accessible and convenient links to services, and enhancing connections to public transport stops.

Nottinghamshire Local Transport Plan, 2011-2026

- 8.1.17 The Nottinghamshire Local Transport Plan (LTP3) (Nottinghamshire County Council, 2011) outlines the transport strategy and a programme of measures to be delivered over the short, medium and long term for Nottinghamshire. This is the third LTP for the county and will run between 2011 and 2026, with the aim of improvement transport in Nottinghamshire.
- 8.1.18 The LTP3 has the three following transport goals:
- To provide a reliable and resilient transport system – supporting the economy and encouraging sustainable and healthy travel.
 - To improve accessibility to key services.
 - To minimise the impact of transport on people's lives, and maximise the opportunities which improve the environment and tackle carbon emissions.
- 8.1.19 The above goals are underlined by the local transport objectives which identify how transport will support economic growth, protect the environment, improve health and safety, improve accessibility, and maintain/improve existing infrastructure.
- 8.1.20 The LTP3 makes reference to making best use of the existing transport network, which involves the following:
- managing disruption on the network;
 - reducing the need for travel through effective land-use planning;
 - an effective parking strategy;
 - delivery of a programme of 'smarter choices' measures;
 - safety and training to enable people to make the best use of the transport networks;
 - supply-side solutions, such as traffic management;
 - the provision of public transport services and cycling and walking facilities; and
 - effective freight management.

Bassetlaw Local Plan 2020-2037

- 8.1.21 The Bassetlaw Local Plan 2020-2037 (Bassetlaw District Council, 2020) was adopted in August 2021, providing the Council's development strategy, planning policies and proposals for up to 2037.
- 8.1.22 The vision for Bassetlaw is as follows:

'In 2037, Bassetlaw District will be a vibrant, prosperous place known for providing residents with a high quality of life and increased access to: quality, suitable housing, a wider range of higher skilled, well-paid jobs and training opportunities; and, high quality services and facilities which promote healthy and active lifestyles within a low carbon environment.'

- 8.1.23 The objective relevant to transport is *'to make efficient use of the existing transport infrastructure and help make walking, cycling and public transport a more attractive and viable choice to jobs and everyday facilities.'*

Guidance

- 8.1.24 Several key sources have guided the traffic and transport appraisal.

Design Manual for Roads and Bridges LA 104 Environmental Assessment and Monitoring (Highways England, 2020)

- 8.1.25 This document outlines the requirements for environmental assessments of projects, which includes the reporting and monitoring of significant environmental effects. The assessment of environmental effects, reporting of assessments and monitoring of environmental effects, aligns with the requirements of the Directive 2011/92/EU as amended by 2014/52/EU.

- 8.1.26 The document covers environmental assessment methodology, including assigning value to receptors, and magnitude of impact.

Environmental Assessment of Road Traffic and Movement ('IEMA Guidelines') (IEMA, 2023)

- 8.1.27 The outlined guidelines are for the assessment of the environmental impact of Traffic and Movement associated with new development. The objective is to provide the basis for a systematic, consistent and comprehensive coverage for the assessment of traffic impacts arising from development projects. This will enable potential problems and possible solutions to be identified at an early stage.
- 8.1.28 The environmental assessment process should run throughout the planning and design stages of the projects. A checklist of the environmental effects which includes traffic noise, disruptions, pedestrian and cyclist impacts, and accidents and safety are contained in Section 2.
- 8.1.29 Within Section 3, traffic issues have been covered. This includes the impact of traffic relating to volume, traffic speeds and operational factors, and traffic compositions, but also the perception of changes in traffic by humans and the impact on ecological systems. The assessment of the environmental impacts due to the associated traffic requires the following:
- determination of the existing and forecasted traffic levels, including the characteristics;
 - determination of the time period suitable for assessment;
 - determining the assessment year; and
 - identifying the geographical boundaries required for assessment.

Transport Evidence Bases in Plan Making and Decision Taking (MHCLG, 2015)

- 8.1.30 This guidance is to help local planning authorities assess and reflect strategic transport needs in Local Plan making. The transport evidence base should identify the opportunities to encourage a modal shift towards sustainable transport usage. This will also enable transport impacts of developments to be assessed and in turn inform sustainable approaches. This guidance highlights the information required and what information needs to be considered when undertaking a transport assessment.

Travel Plans, Transport Assessments and Statements, 2014 (MHCLG, 2014)

- 8.1.31 This guidance provides support regarding Travel Plans, Transport Assessments, and Transport Statements relating to decision-making. This guidance outlines when these documents are required, in addition to what each of these should contain.
- 8.1.32 Travel Plans, Transport Assessments and Statements assess and mitigate the transportation impacts arising from development projects, and they promote sustainable development. They are all required for development which produce substantial traffic movements.
- 8.1.33 Assessments should be based on normal traffic flow and usage conditions, although it may be required to consider the implications of peak traffic flows. Any projections should use local traffic forecasts. The timeframe of the assessments should be agreed with the relevant local planning authorities in consultation with the relevant transport network operators and service providers.

8.2 Study Area

- 8.2.1 The study area for Traffic and Transport is limited to roads along the proposed construction route including Main Street, the unnamed road connecting Main Street to Fledborough, Hollowgate Lane, Polly Taylor's Road, Skegby Road and the A57 (non-strategic road network section). Beyond these roads, the construction traffic will be distributed onto the A1 which forms part of the strategic road network (SRN) dispersing further along numerous SRN routes and the effect of the additional traffic will be diluted. The proposed construction route is shown in Appendix D, High Marnham New Overhead Lines Drawings; Figure 3.9.1 of the EAR.

8.3 Surveys

Desk-Based Study

- 8.3.1 This Traffic and Transport appraisal has been informed by a desk-based study which included a review of existing traffic baseline, transport policy/plans, potential future transport improvements and major development proposals. Discussions with NGET and its Front-End Engineering Design (FEED) contactor were held, in particular around anticipated construction traffic movements and proposed mitigation measures. Initial engagement with Nottinghamshire County Council (NCC) was undertaken to agree the approach taken for this traffic and transport assessment, including the proposed construction route to/from the SRN and the Scheme.

Visual Inspection Survey

- 8.3.2 Site surveys were undertaken on Tuesday 16 April 2024 and Wednesday 17 April 2024 to allow for a visual inspection of the potential construction vehicle routes, confirming findings of background data and identifying any unknown constraints or opportunities. This includes Main Street, Hollowgate Lane and the A57 connecting to the A1, which forms part of the SRN, and PRowS which could potentially be affected by the Scheme. A desktop review was undertaken in June 2026 to provide an update and cover all proposed construction routes.

Traffic Surveys

- 8.3.3 Intelligent Data Collection (IDC) were commissioned to undertake traffic surveys for sections of the proposed construction route where no DfT count data were available on Main Street to obtain classified flows and 85% tile speed data over a one-week period.
- 8.3.4 Traffic surveys were undertaken for a one-week period, for 24 hours between 2 July and 8 July 2024 to avoid the school summer holidays. These data were collected via automatic traffic counts (ATC) on Main Street.
- 8.3.5 For Polly Taylor's Road, traffic surveys (ATC) were undertaken by an adjacent Scheme considered as a committed development in the EAR. These were undertaken between 8 July and 15 July 2024.
- 8.3.6 The traffic surveys which have been undertaken are shown on a plan in Appendix D, High Marnham New Overhead Lines Drawings; Figure 3.9.1 of the EAR.

8.4 Appraisal Approach

- 8.4.1 In order to identify the traffic and transport environmental impacts of the Scheme, a comparison of the current environmental conditions immediately before the Scheme is implemented (future baseline) was compared to a prediction of how the environmental conditions are likely to change during peak construction and during operation. An iterative process was followed during appraisal to develop appropriate control measures to avoid or reduce potential significant environmental impacts.

Assessment Methodology

- 8.4.2 This transport appraisal methodology is broadly based on assessment criteria developed for similar infrastructure projects and IEMA guidelines (IEMA, 2023) and using professional judgement.
- 8.4.3 The appraisal has been undertaken to understand the changes in traffic flows on road links along the proposed construction route to and from the Scheme; to determine potential environmental effects associated with construction traffic generated by the Scheme, if any; and to ensure that proposed construction control measures identified in the EAR, Chapter 3, subsection 3.9 are fit for purpose.
- 8.4.4 The IEMA guidelines (IEMA, 2023) suggest two broad rules that can be applied to the screening process to identify the appropriate extent of the assessment:

- Rule 1: include roads where traffic flows are predicted to increase by more than 30% (or where the number of HGVs is predicted to increase by more than 30%); and
 - Rule 2: include any specifically sensitive areas where traffic flows are predicted to increase by 10% or more.
- 8.4.5 Where traffic increases are below the threshold, Traffic and Transport related environmental effects are considered unlikely to be significant.
- 8.4.6 This transport appraisal is concerned with potential effects relating to impacts during the construction period and considers potential Traffic and Transport effects on:
- existing road users: drivers and passengers; pedestrians; cyclists; public transport users; operators and employees; commercial vehicle users; emergency vehicles users and freight users;
 - sensitive receptors: such as schools, playgrounds, hospitals, tourist attractions etc; and
 - transport infrastructure: road network, and pedestrian and cycle networks.
- 8.4.7 This appraisal has been informed by a desk-based study, and discussions with NGET and its Front End Engineering Design (FEED) contractor, in particular around anticipated construction traffic movements and proposed mitigation measures. Discussions have also been held with NCC: to consult on the proposed construction route for the Scheme, existing traffic baseline, potential future transport improvements, major development proposals, and to incorporate their requirements.
- 8.4.8 The assessment considers conservative assumptions in order to ensure a robust appraisal of traffic and transport impacts. The assessment of construction traffic was undertaken for 2027, as this is the year when the highest predicted levels of construction HGV traffic are expected to occur. The assessment of the operational phase has been scoped out of the appraisal.

Sources of Baseline Data

- 8.4.9 The baseline data have been derived from multiple sources, and a desktop-review undertaken. Sources of baseline data are provided below:
- Annual Average Daily Traffic (AADT) flows have been obtained from Department for Transport (DfT) static traffic counters (DfT, 2025a). Location of the counters is shown on the plan in Appendix D, Figure 3.9.1 Traffic and Transport Proposed Construction Route of High Marnham New Overhead Lines of the EAR;
 - AADT flows from the DfT counts were converted into average weekday traffic flows. 12-hour flows (07:00-19:00 hrs) have been then derived from the DfT traffic data by applying an appropriate factor. This has been based on a standard daily profile over 24-hour period from the DfT's online road traffic statistics table TRA0307 (DfT, 2025b);
 - Traffic Surveys have been undertaken by IDC using ATCs and cameras. Location of the counters is shown on the plan in Appendix D, Figure 3.9.1- High Marnham Overhead Lines Traffic and Transport Proposed Construction Route of the EAR. From these surveys, the 12-hour flows (07:00-19:00 hrs) have been extracted;
 - Traffic Survey for Polly Taylor's Road using data reported in Transport Assessment of Crabtree Lane Energy Hub, planning application reference 24/01138/FUL.

- The latest three-year personal injury collision data from CrashMap (2021-2023) (Department for Transport, 2025);
- Public Rights of Way (PROWs) mapping from Rowmaps (2025);
- Information about public transport from the Marshalls of Sutton on Trent Ltd (2025) and National Rail (2025); and
- Online mapping and aerial photography from Google Maps (2026).

8.5 Limitations and Assumptions

8.5.1 The following limitations and assumptions have been identified for traffic and transport:

- Construction traffic forecasts are based on an initial high-level estimate of construction materials and programme and are considered to provide a reasonable worst-case scenario. It is considered that these limitations do not affect the robustness of the assessment;
- Traffic flows have been obtained from DfT's static traffic counters and traffic surveys to establish the future 2026 baseline for the Traffic and Transport assessment;
- An assessment has been undertaken to identify the likely percentage increase in HGV and in total traffic due to construction on the Local Road Network using the future 2026 baseline traffic flow data. The predicted increase has been assessed against 12-hour weekday flows (07:00-19:00hrs);
- Traffic flow survey data was not available for the unnamed road connecting Main Street and Fledborough and Hollowgate Lane. These roads will be used by construction vehicles, although these are expected to be minimal (11 daily construction traffic movements). Therefore, as a worst-case assessment, the future baseline traffic movements from nearby roads have been used.
- As a worst case for the purpose of the appraisal, working days are assumed to be Monday to Friday, 07:00-19:00hrs, except during system outages. System outages are assumed to only be permitted within the clock change periods for standard summer working (end of March to end of October). During outages weekend working will be required. As such the assessment of predicted impacts from construction traffic against 12-hour weekday flows (07:00-19:00hrs) represent the worst-case scenario;
- It is anticipated that all construction HGV traffic would access the proposed construction routes from the SRN;
- It is assumed that the primary construction route will be between the SRN and the Scheme accesses travelling along the A57, Main Street, the road connecting Main St and Fledborough, Hollowgate Lane, Polly Taylor's Road and Skegby Road; and
- During normal operation of the Scheme, it is understood that the only traffic generated would be associated with infrequent (assumption of 10 vehicles per year) repair and routine maintenance and inspection activities and a small number of operational staff. Operational traffic numbers will also be dependent on any operational issues with the Scheme. Therefore, movements are not anticipated to have a material effect on the transport network and receptors, and therefore, no further assessment will be required.

9. Agriculture and Soils Methodology

9.1 Legislation, Policy and Guidance

- 9.1.1 This appraisal has been undertaken in accordance with current national legislation, and national, regional and local plans and policies relating to Agriculture and Soils in the context of the land required to construct the Scheme. A summary of the relevant legislation, policies and guidance, the requirements of these policies and the Scheme response is provided below.

Policy

- 9.1.2 The Agricultural Land Classification (ALC) assessment is consistent with the direction given Chapter 19: Conserving and enhancing the natural environment, of the NPPF (MHCLG, 2026) as follows:

- N1: Identifying environmental opportunities and safeguards

“1. Development plans should safeguard and enhance the natural environment, and reflect the wider benefits from natural capital and ecosystem services, by using Local Nature Recovery Strategies, Protected Landscape Management Plans, River Basin Management Plans, National Forest Strategies, Community Forest Plans and other relevant evidence at the most appropriate level to:

c. Steer the location of development, including through site allocations, in ways which utilise land of least environmental value where that would be consistent with other policies in this Framework. This should include limiting the scale and extent of development within Protected Landscapes, avoiding the use of higher quality agricultural land where land of poorer quality is available and avoiding and minimising harm to designated sites of importance for nature. Areas which could become of particular importance for nature identified in Local Nature Recovery Strategies should be taken into account as opportunities to integrate development with environmental restoration, but should not necessarily preclude the allocation of land for development;”

- N2: Improving the natural environment

“1. To contribute positively to the natural environment, and support nature’s recovery, development proposals should:

b. Take into account the quality of agricultural land (including that classified as best and most versatile agricultural land, and its grade), and if significant development of agricultural land is necessary, use areas of poorer quality land where possible.”

- 9.1.3 The Bassetlaw Local Plan 2020-2038 (adopted May 2024) states in Policy ST1 Bassetlaw’s Spatial Strategy that sustainable development and growth would be managed by ‘seeking to minimise the use of the most versatile Grade 1-3 agricultural land’. Policy ST49 Renewable Energy Generation also states that ‘community energy schemes will be supported subject to the satisfactory resolution of all relevant site specific and cumulative impacts upon: ... e) the best and most versatile agricultural land...’.

Guidance

- 9.1.4 The ALC system for England and Wales (Welsh Government and Defra, 2025) for grading land quality for land use planning divides agricultural land into five grades (with Grade 3 land subdivided into Grades 3a and 3b). These grades divide land according to the degree of limitation imposed on land use by the inherent characteristics of climate, site, and soils.
- 9.1.5 Protecting BMV agricultural land and the undertaking of ALC is supported by the Natural England Guide to assessing development proposals on agricultural land (Natural England, 2021).
- 9.1.6 A description of each grade is set out below based on the ALC guidelines.

Grade 1 – excellent quality agricultural land

Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.

Grade 2 – very good quality agricultural land

Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.

Grade 3 – good to moderate quality agricultural land

Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown the yields are generally lower or more variable than on land in Grades 1 and 2.

Subgrade 3a – good quality agricultural land

Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.

Subgrade 3b – moderate quality agricultural land

Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.

Grade 4 – poor quality agricultural land

Land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may

be moderate to high, but there may be difficulties in utilisation. The grade also includes very droughty arable land.

Grade 5 – very poor-quality agricultural land

Land with very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

9.2 Surveys and Appraisal

- 9.2.1 A desk study to collate baseline information within the land required to construct the Scheme, such as geology, available ALC and soil information, was undertaken prior to the survey.
- 9.2.2 The ALC survey and assessment was undertaken in accordance with:
- Soil Survey Field Handbook (Hodgson, 2022);
 - ALC guidelines (Welsh Government and Defra, 2025); and
 - Meteorological Office climatological data (Meteorological Office, 1989).
- 9.2.3 The detailed survey involved the examination of the physical soil properties at 80 auger bore locations. The survey was undertaken on the 03 March to 05 March 2025.
- 9.2.4 The survey was conducted at a density of 100m intervals along overhead lines, meeting the Guidance requirement of one auger bore examination per hectare. Auger bores (Appendix C of Appendix F: Agricultural Land Classification Report of the Chesterfield to High Marnham EAR) were set out prior to the field survey and were loaded with Google Earth app into smart phones to locate auger bore locations in the field along with paper map.
- 9.2.5 Soil profiles were examined up to a depth of 120cm by using a 5cm Dutch soil auger.
- 9.2.6 The following soil and site properties were examined/recorded:
- soil texture;
 - horizon depths;
 - stoniness;
 - calcareousness (using 10% hydrochloric acid);
 - matrix colour (based on a Munsell Colour Chart (Munsell, 2022));
 - mottles (colour, size and number);
 - ped structure; and
 - slope (using a clinometer).
- 9.2.7 The auger bore logs are presented in Appendix C of the Chesterfield to High Marnham Environmental Appraisal Report: Section 37 application for Overhead Line works – Appendix F: Agricultural Land Classification Report alongside the following parameters:
- Site: gradient, micro-relief and flooding;
 - Interactive factors: soil wetness class and soil draughtiness; and
 - Most limiting factors and final ALC grade.

- 9.2.8 A Cable Avoidance Tool and Signal Generator was used to scan each auger bore and the soil pit to avoid buried services before breaking ground. Soils from each auger bore were reinstated after examination.
- 9.2.9 Three soil pit descriptions of representative soil types, obtained from the previous ALC survey conducted for the High Marnham Solar Farm Project by Kernon Countryside Consultants in April 2022 (Appendix D of the Chesterfield to High Marnham Environmental Appraisal Report: Section 37 application for Overhead Line works – Appendix F: Agricultural Land Classification Report), were utilised to inform and support this ALC assessment.

9.3 Limitations

- 9.3.1 No limitations or assumptions have been identified.

10. Socioeconomics and Human Health Methodology

10.1 Legislation, Policy and Guidance

- 10.1.1 This appraisal has been undertaken in accordance with current national legislation, and national, regional and local plans and policies relating to Socioeconomics and Human Health in the context of the land required to construct the Scheme. A summary of the relevant legislation, policies and guidance, the requirements of these policies and the Scheme response is provided below.

Legislation

- 10.1.2 This section provides a summary of legislation which is specific to the Socioeconomics and Human Health assessment:

- The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended in 2020) Schedule 4, Section 4 sets out the requirement to include a description of the factors that are likely to be significantly affected by the development, including population and human health.
- Countryside and Rights of Way Act 2000 (as amended in 2015) outlines the principal legislation governing the registration and protection of public footpaths, bridleways, byways open to all traffic and restricted byways.

Policy

- 10.1.3 This section provides a summary of policy which is specific to the Socioeconomics and Human Health assessment:

- The NPPF (MHCLG, 2026) sets out the Government's economic, social and environmental planning policies for England. These policies outline the Government's vision of sustainable development. Chapter 7: Building a Strong, Effective Economy promote sustainable economic growth and investment. The NPPF recognises the important role of infrastructure in supporting the transition to a low-carbon economy, enhancing energy security and delivering environmental, social and economic benefits. Development proposals should therefore contribute towards these objectives whilst ensuring that adverse effects are appropriately avoided, reduced or mitigated.
- Planning Practice Guidance (MHCLG, 2024b) offers guidance on a range of issues, including *'healthy and safe communities'*, and *'open space, sports and recreation facilities, public rights of way and local green space'*.
- The Bassetlaw Local Plan 2020-2038 sets out the development strategy and proposals in Bassetlaw. This includes the provision of rural economic growth (Policy ST8), vision to promote and develop as a destination for visitors (Policy ST10), promoting health and active lifestyles (Policy ST42), protection and enhancement of community facilities (Policy ST43) and promoting sport and recreation (Policy ST45).

Guidance

- 10.1.4 This section provides a summary of guidance for the Socioeconomics and Human Health assessment.
- 10.1.5 There is no specific guidance available on approaches in assessing the impacts of an overhead line on Socioeconomics. The methodology used has been based on experience from similar projects and professional judgement.
- 10.1.6 The assessment of community facilities, business, recreation and tourism assets is guided by DMRB LA 112 Population and Human Health.
- 10.1.7 The assessment of human health is guided by the following:
- Health in Environmental Impact Assessment - A Primer for a Proportionate Approach (IEMA, 2017);
 - Effective Scoping of Human Health in Environmental Impact Assessment (IEMA, 2022a);
 - Determining Significance for Human Health in Environmental Impact Assessment (IEMA, 2022b);
 - Mental Well-being Impact Assessment (MWIA) toolkit (NMWIA, 2011); and
 - International Commission on non-ionizing radiation protection (ICNIRP) Guidelines for Limiting Exposure to Electromagnetic Fields (ICNIRP, 2020).

10.2 Study Area

- 10.2.1 The study area for Socioeconomics and Human Health comprises:
- Socioeconomics: This assessment is based on the local planning authority the Scheme falls within, Bassetlaw District. For comparative purposes, East Midlands and England have also been identified;
 - Community facilities: This assessment is based on a 500m buffer from the land required to construct the Scheme;
 - Business, recreation and tourism assets: This assessment is based on a 500m buffer from the land required to construct the Scheme; and
 - Human health: This assessment is based on the local planning authority the Scheme falls within, Bassetlaw District.

10.3 Surveys

- 10.3.1 No surveys were required in support of the Socioeconomics and Human Health appraisal.

10.4 Appraisal Approach

- 10.4.1 In order to identify the environmental impacts of the Scheme, a comparison of the current environmental conditions immediately before the Scheme is implemented (baseline) was compared to a prediction of how the environmental conditions are likely to change once the construction and operation of the Scheme has been

undertaken. An iterative process was followed during appraisal to develop appropriate control measures to avoid or reduce potential environmental impacts.

10.4.2 The Socioeconomics and Human Health assessment has been undertaken based on a desk-based review of publicly available information from the following sources:

- Nomis (Nomis, 2025);
- English Indices of Deprivation (MHCLG, 2019);
- Department of Health and Social Care (DHSC, 2025); and
- Ordnance Survey (OS) Mapping.

10.4.3 The appraisal undertakes a qualitative assessment and identifies the likely impacts on Socioeconomics and Human Health receptors, including:

- Socioeconomics:
 - A temporary and/or permanent change in the local economy from the direct creation or loss of jobs.
- Community facilities, business, recreation and tourism assets:
 - A temporary and/or permanent change in land use and access to community facilities, business, recreation and tourism assets.
 - A temporary and/or permanent change to recreational routes, including Public Rights of Way (PRoWs) and cycle routes.
- Human health:
 - A temporary and/or permanent change in environmental conditions, including air quality, noise, visual amenity and presence of HGV traffic, which may affect human health.

10.4.4 The assessment of impact has been assigned based on Table 10.1.

Table 10.1 Assessment matrix

Impact	Description
High	<p>Socioeconomics:</p> <ul style="list-style-type: none"> • number of employment opportunities is large in scale when compared to the combined local planning authorities' total number of employees within the sector (for example the construction employment opportunities to be generated by the proposal will represent the majority of the combined local planning authorities' total number of employees in the construction sector). <p>Community facility:</p> <ul style="list-style-type: none"> • loss of resource and/or quality and integrity of resource; or • severe damage to key characteristics, features or elements (for example direct acquisition and demolition of facility); or • introduction (adverse) or removal (beneficial) of complete severance with no/full accessibility provision. <p>Business, recreational and tourism asset:</p>

Impact	Description
	<ul style="list-style-type: none"> • where the extent of impacts on receptors is large in scale (for example loss of recreational or tourism asset; or leads directly to closure); or • where the recreational route will be fully stopped up with no access provision. <p>Human health:</p> <ul style="list-style-type: none"> • 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; substantial service quality implications.
Medium	<p>Socioeconomics:</p> <ul style="list-style-type: none"> • number of employment opportunities is moderate in scale when compared to the combined local planning authorities' total number of employees within the sector (for example the construction employment opportunities to be generated by the proposal will represent half of the combined local planning authorities' total number of employees in the construction sector). <p>Community facility:</p> <ul style="list-style-type: none"> • potential loss of/damage to key characteristics, features or elements (for example partial removal or substantial amendment to access or acquisition of facility); or • introduction (adverse) or removal (beneficial) of severance with limited/moderate accessibility provision. <p>Business, recreational and tourism asset:</p> <ul style="list-style-type: none"> • where the extent of impacts on receptors may be moderate (for example substantial amendment or partial closure to recreational or tourism asset); or • where access to the recreational route will be fully affected with diversion in place. <p>Human Health:</p> <ul style="list-style-type: none"> • 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; small service quality implications.
Low	<p>Socioeconomics:</p> <ul style="list-style-type: none"> • number of employment opportunities is small in scale when compared to the combined local planning authorities' total number of employees within the sector (for example the construction employment opportunities to be generated by the proposal will represent less than half of the combined local planning authorities' total number of employee in the construction sector). <p>Community facility:</p> <ul style="list-style-type: none"> • a discernible change in attributes, quality or vulnerability; or • minor loss of, or alteration to one (maybe more) key characteristics, features or elements (for example amendment to access or acquisition of land resulting in changes to operating conditions that do not compromise overall viability of the community facility; or

Impact	Description
	<ul style="list-style-type: none"> introduction (adverse) or removal (beneficial) of severance with adequate accessibility provision. <p>Business, recreational and tourism asset:</p> <ul style="list-style-type: none"> where the extent of impacts on receptors is considered to be small (for example minor amendment to recreational or tourism asset that does not compromise overall accessibility of recreational route; or minor reduction in annual visitor numbers but this is considered to be within the parameters of normal annual variability); or where access to the recreational route will be partially affected with diversion in place. <p>Human health:</p> <ul style="list-style-type: none"> 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; slight service quality implications.
Negligible	<p>Socioeconomics:</p> <ul style="list-style-type: none"> number of employment opportunities is very small in scale when compared to the combined local planning authorities' (i.e. those within the Wider study area) total number of employees within the sector (for example the construction employment opportunities to be generated by the proposal will represent an insignificant number of the combined local planning authorities' total number of employees in the construction sector). <p>Community facility:</p> <ul style="list-style-type: none"> very minor loss or alteration to one or more characteristics, features or elements (for example acquisition of non-operational land or buildings not directly affecting the viability of the community facility; or very minor introduction (adverse) or removal (beneficial) of severance with ample accessibility provision. <p>Business, recreational and tourism asset:</p> <ul style="list-style-type: none"> where there is no credible scenario whereby the proposal could affect the operation of recreational or tourism asset, visitor numbers, tourism opportunities or benefits beyond a handful of individuals; or where there is no credible change of access to the recreational route. <p>Human health:</p> <ul style="list-style-type: none"> 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; no service quality implication.

10.5 Limitations and Assumptions

10.5.1 The following limitations and assumptions have been identified for socioeconomics and human health.

- The assessment relies on, in part, data provided by third parties (e.g. OS Mapping, Local Authorities, ONS), which are the most up-to-date, available at the time of the assessment. No significant changes or limitations in these datasets have been identified that would affect the robustness of the assessment; and
- No site survey has been undertaken for the purpose of this Chapter. However, this is not considered to affect the robustness of the assessment due to baseline information being publicly available online.

11. Cumulative Impacts Methodology

11.1 Legislation, Policy and Guidance

- 11.1.1 As set out in the EIA screening report, the Scheme is not considered to be an EIA development by the nature of the proposals, in combination with the receiving environment. The EAR gives consideration to the potential for cumulative impacts. Therefore, for the purposes of the EAR, the following text from the EIA Regulations has guided the approach to the appraisal:

‘a description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development’.

11.2 Study Area

- 11.2.1 For the appraisal of intra-project cumulative impacts, the study area was defined by taking into account the study areas set out for each environmental discipline. As such, the study area was reflective of the largest study area of the disciplines and set to 2km.

11.3 Surveys

- 11.3.1 Due to the nature of the appraisal, no surveys were conducted.

11.4 Appraisal Approach

Intra-project cumulative impacts

- 11.4.1 The appraisal of intra-project cumulative impacts was carried out using the below stages.

Stage 1 – Screening

- 11.4.2 This stage identifies whether a sensitive receptor experiences more than one type of residual impact. Sensitive receptors or receptor groups were identified based on the environmental appraisal and professional judgement.
- 11.4.3 Table 3.12.1 of the EAR summarises the sensitive receptors for each environmental discipline and whether they experience more than one residual impact. Impacts were defined as ‘minor or negligible impact’ or ‘moderate or above impact’ depending on their appraisal within the relevant environmental disciplines.

Stage 2 – Intra-project cumulative impacts

- 11.4.4 The appraisal concluded whether an intra-project cumulative impact was or was not identified for each committed development.

Inter-project cumulative impacts

Stage 1 – Long and short list of committed developments

- 11.4.5 A list of committed developments was produced, using a 2km study area. This list contained planning applications within the previous five years. Planning applications of a notably small-scale, for example changes to one building, were excluded from this list based on professional judgement of the scope of impact of the planning application being unlikely to generate a cumulative impact.
- 11.4.6 The list has been prepared using professional judgement, guided by the below criteria:
- A 2km study area;
 - Residential developments of over 10 dwellings;
 - Nationally Significant Infrastructure Projects;
 - Projects that are EIA;
 - Projects that were deemed, using professional judgement, to be of a nature or scale that had the potential to generate environmental impacts; and
 - Have submitted a planning application in the last 5 years and that this application is still valid (for example, it has not been refused).

Stage 2 – Information Gathering

- 11.4.7 Publicly available information was used to carry out the appraisal of inter-project cumulative impacts. Where sufficient information was not publicly available, it was not possible to determine the potential for cumulative impacts with the committed developments.
- 11.4.8 The timing of works, the proximity of the committed development, and the associated impacts of the committed developments was taken into consideration where possible in determining the potential for inter-project cumulative impacts.

Stage 3 – Inter-project cumulative impacts

- 11.4.9 Table 3.12.3 of the EAR presents the appraisal of inter-project cumulative impacts.
- 11.4.10 The appraisal is based on the residual impacts identified in the environmental discipline chapters of the EAR as well as the publicly available information on the committed developments. The appraisal was carried out using professional judgement and environmental information relating to the committed developments available at the time of appraisal.
- 11.4.11 The following topics were scoped out of further appraisal of inter-project cumulative impacts because they were identified as having no impacts during construction or operation:
- ecology;
 - air quality; and
 - noise and vibration.

- 11.4.12 Agriculture and soils were scoped into the inter-project assessment for the construction phase. Agriculture and soils were scoped out of further assessment for the operational phase as there are no operational impacts.
- 11.4.13 The appraisal concluded whether an inter-project cumulative impact was or was not identified for each committed development.

11.5 Limitations and Assumptions

- 11.5.1 The appraisal of inter-project cumulative impacts arising from committed developments was limited to the level of publicly available information on the environmental impacts of those developments.
- 11.5.2 For the purpose of the appraisal of inter-project cumulative impacts, where the programme of the committed development was not known, a 'worst-case' approach was taken that assumed construction and operation of the committed development would overlap with the Scheme.

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