WHITESTONE SOLAR FARM

Volume 6: Environmental Statement

6.20 Appendix 2.1: EIA Scoping Report

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Glossary

Term	Meaning
DCO Limits	The anticipated maximum extent of land included within the DCO
Green Belt	Land use zone designation used in land use planning to retain areas of largely undeveloped or agricultural land surrounding urban areas
Scoped Out	These issues are proposed to be excluded from the EIA
Scoping Report	This EIA Scoping Report
The Applicant	Whitestone Net Zero Limited
The Application	The proposed application for development consent under the Planning Act 2008
The EIA Regulations	Infrastructure Planning (Environmental Impact Assessment) Regulations 2017
The Proposed Development	The construction, operation, maintenance, and decommissioning of the Whitestone Solar Farm
Cable Corridor Options	Corridors for potential routes for underground high voltage cables, connecting solar PV arrays and the point of connection
The Inspectorate	The Planning Inspectorate
The Site	The Site comprises three sections:

Term	Meaning
	Whitestone 1 (W1), located south of Conisbrough (centred on National Grid Reference (NGR) SK 505963); Whitestone 2 (W2), located between Aston in the west and Dinnington in the east (centred on NGR SK 476874); and Whitestone 3 (W3) located south of Wales and Kiveton Park (centred on NGR SK 481808).

Acronyms

Acronym	Meaning
AC	Alternating Current
AD	Anno Domini
AEP	Annual Exceedance Probability
AHLV	Areas of High Landscape Value
ALC	Agricultural Land Classification
ALRA	Abnormal Load Route Assessment
ALV	Abnormal Load Vehicles
AoI	Area of Influence
APS	Annual Population Survey
AQMA	Air Quality Management Area
ASHE	Annual Survey of Hours and Earnings
ASLV	rea of Special Landscape Value
ATC	Automatic Traffic Counts
BCE	Before Christian Era
BCT	Bat Conservation Trust
BESS	Battery Energy Storage System
BGS	British Geological Survey
BMV	Best and Most Versatile
BNG	Biodiversity Net Gain
BoCC	Birds of Conservation Concern
BRES	Business Register and Employment Survey
BS 4142	British Standard 4142:2014+A1:2019 – Methods for rating and assessing industrial and commercial sound
BS 5228	British Standard 5228-1:2009+A1:2014 – Code of practice for noise and vibration control on construction and open sites
BS 8233	British Standard 8233:2014 – Guidance on sound insulation and noise reduction for buildings
BTO	British Trust for Ornithology
CCRR	Climate Change Resilience Review

Acronym	Meaning
CCTV	Closed Circuit Television
CDC	City of Doncaster Council
CDM	Construction Design and Management
CEA	Cumulative Effects Assessment
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
CMIP6	Coupled Model Intercomparison Project Phase 6
CNP	Critical National Priority
CoP	Code of Practice
CoPA	Control of Pollution Act 1974
CoRTN	Calculation of Road Traffic Noise
CP	Country Park
CS	Core Strategy
CTMP	Construction Traffic Management Plan
DC	Direct Current
DCC	Derbyshire County Council
DCO	Development Consents Order
DEFRA	Department for Environment Food and Environmental Affairs
DEMP	Demolition Environmental Management Plan
DESNZ	Department for Energy Security and Net Zero
DfT	Department for Transport
DMRB	Design Manual for Roads Bridges
DoW	Definition of Waste
DSM	Digital Surface Model
DTM	Digital Terrain Model
EA	Environment Agency
EcIA	Ecological Impact Assessment
EIA	Environmental Impact Assessment
ELC	European Landscape Convention
EMF	Electromagnetic Fields
EN-1	Overarching National Policy Statement for Energy
EN-3	The National Policy Statement for Renewable Infrastructure
EN-5	National Policy Statement for Electricity Networks Infrastructure
EP4	Equator Principles
EPA	The Environmental Protection Act 1990
EPS	European Protected Species
ERM	Environmental Resources Management

Acronym	Meaning
ES	Environmental Statement
ESG	Environmental, Social and Governance
FRA	Flood Risk Assessment
FRAP	Flood Risk Activity Permit
GCN	Great Crested Newt
GHG	Greenhouse Gases
GLTA	Ground Level Tree Assessments
GLVIA3	Guidelines for Landscape and Visual Impact Assessment
GW	Gigawatts
HDD	Horizontal Directional Drilling
HE	Historic England
HER	Historic Environment Records
HGV	Heavy Goods Vehicle
HRA	Habitat Regulations Assessment
HSI	Habitat Suitability Index
HVAC	Heating, Ventilation, and Air Conditioning
IAQM	Institute of Air Quality Management
ICCI	In-Combination Climate Change Impact
IEMA	Institute of Environmental Management and Assessment
IPCC	Intergovernmental Panel on Climate Change
ISO 9613	International Standard 9613-2:2014
LAQM	Local Air Quality Management
LBAP	Local Biodiversity Action Plan
LBMP	Landscape and Biodiversity Management Plan
LCA	Landscape Character Assessment
LCRM	Land Contamination Risk Management
LCT	Landscape Character Type
LFA	Lead Flood Authority
LFRMS	Local Flood Risk Management Strategy
LGV	Light Good Vehicles
LiDAR	Lighting Detection and Randing
LLFA	Lead Local Flood Authorities
LNR	Local Nature Reserve
LNRS	Local Nature Recovery Strategy
LOAEL	Lowest Observed Adverse Effect Level
LPA	Local Planning Authority
LSOA	Lower Super Output Area

Acronym	Meaning
LV	Low Voltage
LVIA	Landscape and Visual Impact Assessment
LVIA	Landscape and Visual Impact Assessment
LWS	Local Wildlife Site
MAGIC	Multi Agency Geographic Information for the Countryside
MBC	Metropolitan Borough Council
MoRPh	Modular River Physical
MV	Medium Voltage
MW	Megawatts
NBW	Nighttime Bat Walkover
NCN	National Cycle Network
NE	Natural England
NGR	National Grid Reference
NOAEL	No Observed Adverse Effect Level
NOEL	No Observed Effect Level
NPPF	National Planning Policy Framework
NPPW	National Planning Policy for Waste
NPS	National Policy Statement
NPSE	Noise Policy Statement for England 2010
NSIP	Nationally Significant Infrastructure Project
NSR	Noise-Sensitive Receptor
OBSMP	Outline Battery Safety Management Plan
OCEMP	Outline Construction Environmental Management Plan
OCTMP	Outline Construction Traffic Management Plan
ODEMP	Outline Decommissioning Environmental Management Plan
OEMMP	Outline Excavated Materials Management Plan
OEMP	Operation Environmental Management Plan
OLEMP	Outline Landscape and Environmental Management Plan
ONS	Office for National Statistics
OS	Ordnance Survey
PEI	Preliminary Environmental Information
PFRA	Preliminary Flood Risk Assessment
PPE	Personal Protective Equipment
PPG	Pollution Prevention Guidance
PPGN	Planning Practice Guidance on Noise
PRF	Potential Roost Feature
PRoW	Public Rights of Way

Acronym	Meaning
PV	Photovoltaic
RMBC	Rotherham Metropolitan Borough Council
RMBC	Rotherham Metropolitan Borough Council
RTC	Road Traffic Collision
RVAA	Residential Visual Amenity Assessment
SAC	Special Area of Conservation
SFRA	Strategic Flood Risk Assessment
SM	Scheduled Monument
SOAEL	Significant Observed Adverse Effect Level
SoCC	Statement of Community Consultation
SPA	Special Protection Area
SPD	Supplementary Planning Documents
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage Systems
SWDS	Surface Water Drainage Strategy
SWMP	Site Waste Management Plan
SYAS	South Yorkshire Archaeology Service
TA	Transport Assessment
UAEL	Unacceptable Observed Adverse Effect Level
UKCP8	UK Climate Projections 2018
VP	Vantage Point
W1	Whitestone 1
W2	Whitestone 2
W3	Whitestone 3
WFD	Water Framework Directive
WMP	Waste Management Plan
ZOI	Zone Of Influence
ZTV	Zone of Theoretical Visibility

Units

Units	Meaning
m	Metres
dB	Decibels
km	Kilometres
ha	Hectares
GW	Gigawatts
MW	Megawatts

Units	Meaning
$L_{Aeq,T}$	Continuous equivalent A-weighted sound pressure level
L_{A90}	Percentile A-weighted sound level which is exceeded for 90% of the time within a given interval
L_{A10}	Percentile A-weighted sound level which is exceeded for 10% of the time within a given interval

1 INTRODUCTION

1.1 Overview

1.1.1 This Scoping Report has been prepared by Environmental Resources Management Ltd (ERM) on behalf of Whitestone Net Zero Limited ('the Applicant') in relation to a proposed application for development consent under the Planning Act 2008 (hereafter referred to as 'the Application') for the construction, operation, maintenance, and decommissioning of the Whitestone Solar Farm (hereafter referred to as the 'the Proposed Development').

1.1.2 The Proposed Development comprises the installation and operation of up to 750 Megawatts (MW) of solar photovoltaic (PV) generating modules and on-site energy storage facilities across a site in the administrative boundaries of City of Doncaster Council and Rotherham Metropolitan Borough Council (hereafter referred to as 'the Site'). The Proposed Development would allow for the generation of more than 50 MW of electricity and therefore qualifies as a Nationally Significant Infrastructure Project (NSIP). Solar NSIPs require a Development Consent Order (DCO) under Sections 14(1)(a) and 15(2) of the Planning Act 2008 and require a DCO to grant the required permissions for the Proposed Development to be constructed and operated.

1.1.3 The Proposed Development will also include underground cabling (referred to herein as 'the Cable Corridor Options') to the proposed new 400 kV National Grid substation near Brinsworth, where there will be available capacity which the Applicant has secured by agreement.

1.1.4 The Site is situated within South Yorkshire, approximately 7 km and 5 km to the east of Sheffield and Rotherham respectively on approximately 1370 hectares (ha) of predominantly arable land that is within the Green Belt. The Site comprises three sections:

- Whitestone 1 (W1), located south of Conisbrough (centred on National Grid Reference (NGR) SK 505963);
- Whitestone 2 (W2), located between Aston in the west and Dinnington in the east (centred on NGR SK 476874); and
- Whitestone 3 (W3) located south of Wales and Kiveton Park (centred on NGR SK 481808).

1.1.5 Further detail regarding the Site can be found in **Chapter 3, The Proposed Development** of this Scoping Report.

1.1.6 The Site Location Plan shows the current anticipated maximum extent of land to be included within the DCO Order Limits, hereafter referred to as the 'DCO Limits', and is provided in **Figure 1.1** in **Appendix A, Figures**. The DCO Limits relate to the geographical boundaries of the land required for the Proposed Development i.e. the physical area within which the Proposed Development would be sited, the scope of activities and timeframes during which activities (construction, operation and decommissioning) would take place and the environmental constraints and conditions to protect the environment. The DCO Limits comprise the 'Site Boundary', which includes the land to be used for the solar PV array areas, associated infrastructure, and mitigation / enhancements, and also the 'Cable Corridor Options', which include the potential land to be used

for underground 'grid connection' cabling, as shown in **Figure 1.2**. Throughout this Scoping Report, reference is made to 'the Site' which relates to the land within the Site Boundary only, and not to land within the Cable Corridor Options.

1.1.7 This Environmental Impact Assessment (EIA) Scoping Report supports a formal request for an EIA Scoping Opinion under Regulation 10(1) of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017[1] ('the EIA Regulations').

1.1.8 The Applicant has provided written confirmation to the Planning Inspectorate ('the Inspectorate') that an Environmental Statement (ES) will be submitted in relation to the Application for the Proposed Development.

1.2 Requirement for EIA

1.2.1 The requirement to undertake an EIA for NSIP developments is transposed into UK law through the EIA Regulations. The EIA Regulations specify which developments are required to undergo EIA and schemes relevant to the NSIP planning process are listed under either 'Schedule 1'or 'Schedule 2'[1].

1.2.2 Developments listed in Schedule 1 must be subject to EIA, while developments listed in Schedule 2 are only subject to EIA if they are considered 'likely to have significant effects on the environment by virtue of factors such as its nature, size or location'. The criteria on which this judgement must be made are set out in Schedule 3.

1.2.3 The Proposed Development is a Schedule 2 development under paragraph 3(a) of Schedule 2 of the EIA Regulations as it constitutes '*Industrial installations for the production of electricity, steam and hot water'*; and it is considered that due to the Proposed Development's nature, size and location, it has the potential to have significant effects on the environment.

1.2.4 The Applicant therefore wishes to confirm under Regulation 8(1)(b) of the Infrastructure Planning (EIA) Regulations that an ES will be provided in respect of the Application for the Proposed Development, as it is considered there is the potential for the Proposed Development to meet the criteria set out in Schedule 3[1] of the EIA Regulations.

1.3 The Applicant

1.3.1 The Proposed Development is being brought forward by Whitestone Net Zero Limited, owned by Net Zero One Limited but it is intended to be constructed, managed and operated by Green Nation, a solar developer with extensive experience in both rooftop and ground-mounted solar projects, and currently managing 75 solar farms across the country. Green Nation is working with Net Zero One Limited, a specialist development business, to ensure there is sufficient funding to build, operate and decommission the Proposed Development.

1.4 The EIA Team

1.4.1 The scoping and delivery of the EIA for the Proposed Development is being led by ERM with support from other specialist organisations. ERM is a member of the Institute of Environmental Management and Assessment's (IEMA's) EIA Quality Mark, a scheme that allows organisations to make a commitment to excellence in EIA activities and have this commitment independently reviewed.

1.4.2 In accordance with regulation 14[1] of the EIA Regulations, the ES will be prepared by competent experts and will outline the relevant expertise or qualifications of such experts. The sections of this Scoping Report, and the environmental topics that will be addressed in the ES, will be compiled by EIA practitioners and technical experts from the organisations shown in **Table 1.1**.

Table 1.1 EIA Team

EIA Topic or Scoping Report Section	Provider/Author
Introduction	ERM
Legislative and Planning Policy Context	ERM / DWD
The Proposed Development	ERM
Site Selection and Design Evolution	ERM
Consultation	ERM / SEC Newgate / Broadfield
Environmental Impact Assessment	ERM
Biodiversity and Nature Conservation	ERM / Peak Ecology / Logika
Landscape and Visual	ERM
Cultural Heritage and Archaeology	ERM / Headland Archaeology
Ground Conditions and Land Quality	ERM / LDC
Water Resources and Flood Risk	ERM
Climate Change and Greenhouse Gas Assessment	ERM
Air Quality	ERM
Traffic and Access	ERM / AECOM
Noise and Vibration	ERM
Socio-Economics, Land Use, Tourism and Recreation	ERM
Other Environmental Topics	ERM
Cumulative Effects	ERM
Non-Technical Summary	ERM

1.5 Contents and Purpose of this Scoping Report

1.5.1 In accordance with Regulation 8(1)(b)[1] of the EIA Regulations, the Applicant intends to submit an ES for the Proposed Development. Chapters 7 to 18 of this Scoping Report outline the scope and methodology of the technical studies being conducted. These studies aim to comprehensively evaluate any potential significant environmental impacts and identify appropriate mitigation strategies during the construction, operational, and decommissioning stages. Additionally, the Scoping Report details which environmental topics are suggested to be excluded from the EIA process, along with explanations for why these aspects are not expected to lead to significant environmental effects.

1.5.2 The purpose of the Scoping Report is to provide environmental information to the Inspectorate to inform a Scoping Opinion provided by the Inspectorate, in accordance with Regulation 10(1)[1] of the EIA Regulations. This Scoping Report has been prepared in accordance with EIA Regulation 10(3) and the Inspectorate Advice Note Seven[2] which specify that a request for a Scoping Opinion should include the elements detailed in **Table 1.2**.

Table 1.2 Information to be included in an EIA Scoping Request in line with EIA Regulation 10(3)

Information Required	Where Information is Provided in this Scoping Report
(a) a plan sufficient to identify the land;	Provided in **Figure 1.1**.
(b) a description of the proposed development, including its location and technical capacity;	Provided in **Chapter 3, The Proposed Development**
(c) an explanation of the likely significant effects of the development on the environment; and	Provided within **Chapters 7 to 18**.
(d) such other information or representations as the person making the request may wish to provide or make.	Provided throughout this Scoping Report. This Scoping Report, and the accompanying figures and appendices, represent the full suite of information provided for the Scoping Request.

1.5.3 The Inspectorate Advice Note Seven also advises that the Scoping Report must include the information provided in **Table 1.3**.

Table 1.3 Information advised to be included in an EIA Scoping Request in line with Advice Note Seven.

Information Required	Where Information is Provided in this Scoping Report
The Proposed Development	
An explanation of the approach to addressing uncertainty where such remains in relation to elements of the Proposed Development e.g. design parameters	Detailed in Section 4.4 of Chapter 4, Site Selection and Design Evolution

Information Required	Where Information is Provided in this Scoping Report
Referenced plans presented at an appropriate scale to convey clearly the information and all known features associated with the Proposed Development	Figures detailing the Site Location, the Proposed Site Boundary, and Environmental Considerations are all provided in **Appendix A, Figures.**
EIA Approach and Topic Areas	
An outline of the reasonable alternatives considered and the reasons for selecting the preferred option	Detailed in Section 4.3 in Chapter 4, Site Selection and Design Evolution
A summary table depicting each of the aspects and matters that are requested to be scoped out allowing for quick identification of issues	Provided in Appendix B, Solar Scoping Table
A detailed description of the aspects and matters proposed to be scoped out of further assessment with justification provided	Provided in **Appendix B, Solar Scoping Table**, and within the 'Technical Scope and Approach to EIA' Section (**Section [Chapter Number].5**) within **Chapters 7 to 18**.
Results of desktop and baseline studies where available and where relevant to the decision to scope in or out aspects or matters	Provided within the 'Preliminary Baseline Conditions' Section (**Section [Chapter Number].3**) within **Chapters 7 to 18**.
Aspects and matters to be scoped in, the report should include details of the methods to be used to assess impacts and to determine significance of effect e.g. criteria for determining sensitivity and magnitude	Provided within the 'Technical Scope and Approach to EIA' Section (**Section [Chapter Number].5**) within **Chapters 7 to 18**.
Any avoidance or mitigation measures proposed, how they may be secured and the anticipated residual effects.	Provided within the 'Potential Effects and Mitigation' Section (**Section [Chapter Number].4**) within **Chapters 7 to 18**.

1.5.4 In addition, this Scoping Report identifies issues considered "not significant", which do not require formal assessment as part of the EIA. These issues are proposed to be excluded from the EIA (referred to as "Scoped Out"), and this is clearly outlined in the Scoping Report and summarised in **Appendix B, Solar Scoping Table.**

1.5.5 This Scoping Report also includes the following supporting Appendices:

- Appendix A – Figures;
- Appendix B – Solar Scoping Table;
- Appendix C – Commitments Register;
- Appendix D – Landscape and Visual Methodology;
- Appendix E – Cultural Heritage Gazetteers:
  - Appendix E.1 – Designated Assets within 1 km;
  - Appendix E.2 – Non-Designated Assets within 1 km;

  - Appendix E.3 – Locally Listed Assets within 3 km; and
  - Appendix E.4 – Designated Assets within 3 km.; and
- Appendix F – Cumulative Developments.

1.5.6 The Scoping Report serves the purpose of inviting early consultation comments on the EIA approach and the content of the ES. It also provides information about anticipated key issues and outlines the proposed methodologies for technical assessments. Additionally, feedback received from consultees in response to this Scoping Report will inform the evolution of the Proposed Development's design, the EIA methodology, and the Proposed Development's programme. The handling of these responses will be reported in the Consultation chapter and other relevant technical sections of the ES.

1.5.7 In accordance with Regulation 14(3)(a)[1] of the EIA Regulations, the ES will be based on the Scoping Opinion adopted.

1.5.8 The outputs of the EIA will comprise:

- A Draft ES, produced to inform the statutory consultation process, in accordance with the Planning Act 2008. The Draft ES will present the understanding of the potential likely significant environmental effects at the time of the consultation and its purpose will be to provide information that enables interested parties, including members of the public, local authorities and statutory bodies, to understand those effects so that they can provide meaningful feedback; and
- An updated final ES (the ES) which will be produced in support of the Application. The ES will be informed by statutory consultation on the Draft ES, and ongoing engagement with technical stakeholders. The ES will report on a detailed assessment of the likely significant environmental effects resulting from the Proposed Development, taking account of proposed mitigation measures.

2 LEGISLATIVE AND PLANNING POLICY CONTEXT

2.1 Introduction

2.1.1 This chapter sets out the legislative policy and context within which the Application is being proposed and developed. The Proposed Development will be progressed while taking account of policies at the national, regional and local levels as set out in this chapter.

2.2 Development Consent Legislation

2.2.1 As set out in **Sections 1.1 and 1.2**, the Proposed Development is considered an NSIP under Section 14(1)(a) of the Planning Act 2008. It is considered "Schedule 2" development under paragraph 3(a) of Schedule 2[1] of the EIA Regulations.

2.2.2 Following the completion of the surveys, assessments, and consultation processes outlined in this Scoping Report, an application for development consent will be made to the Secretary of State for Energy Security and Net Zero, for determination in accordance with the Planning Act 2008. The Application will be accompanied by an ES, in accordance with Regulation 5(2)(a) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 ('APFP Regulations')[3].

2.2.3 The Localism Act 2011 appointed the Inspectorate as the agency responsible for operating the development consent process for NSIPs. The Secretary of State will appoint an Examining Authority from the Inspectorate, who will examine the Application for the Proposed Development and make a recommendation to the Secretary of State, who will then make the decision on whether to grant or to refuse development consent.

2.2.4 Other legislation applicable to specific environmental topics is referred to in the relevant chapters of this Scoping Report.

2.3 National Policy

2.3.1 Section 104 of the Planning Act 2008 applies where a relevant National Policy Statement (NPS) has effect. In accordance with Section 104(2) of the Planning Act 2008, the Secretary of State is required to have regard to any relevant NPS where it has effect, amongst other matters, when deciding whether to grant development consent. Section 104(3) requires the Secretary of State to decide applications in accordance with any relevant NPS, except to the extent that one or more of the matters in subsections (4) to (8) applies.

2.3.2 The NPSs published by the Department for Energy Security & Net Zero in November 2023 and formally designated in January 2024 are pertinent to the Proposed Development. It is essential that the Proposed Development adheres to the relevant provisions outlined in these NPSs.

- Overarching National Policy Statement for Energy (EN-1)[4];
- National Policy Statement for Renewable Energy Infrastructure (EN-3)[5]; and

- National Policy Statement for Electricity Networks Infrastructure (EN-5)[6].

Overarching National Policy Statement for Energy (EN-1)[4]

2.3.3 The Overarching NPS for Energy (EN-1) sets out the national policy for delivering major energy infrastructure in England and Wales. The NPS has effect, in combination with the relevant technology specific NPSs, EN-3 and EN-5, of providing the primary basis for decisions made by the Secretary of State.

2.3.4 Applicable to the Proposed Development, paragraph 3.3.20 states *"a secure, reliable, affordable, net zero consistent system in 2050 is likely to be composed predominantly of wind and solar"*.

2.3.5 Paragraph 3.3.62 states "*Government has concluded that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure.*"

2.3.6 Section 4.2 confirms that this includes solar.

National Policy Statement for Renewable Energy Infrastructure (EN-3)[5]

2.3.7 The NPS for Renewable Energy Infrastructure (EN-3) is to be read in conjunction with EN-1[4]. It provides the primary basis for decisions by the Secretary of State on applications received for nationally significant renewable energy infrastructure.

2.3.8 Paragraph 2.10.9 commits the government to *"sustained growth in solar capacity to ensure that we are on a pathway that allows us to meet net zero emissions by 2050. As such, solar is a key part of the government's strategy for low-cost decarbonisation of the energy sector"*.

2.3.9 Paragraph 2.10.10 repeats that the government expects "*a five-fold increase in combined ground and rooftop solar deployment by 2035 (up to 70GW).*"

National Policy Statement for Electricity Networks Infrastructure (EN-5)[6]

2.3.10 The NPS for Electricity Networks Infrastructure (EN-5) is to be read in conjunction with EN-1[4].

2.3.11 NPS EN-5 is relevant to the Proposed Development as paragraph 1.6.1 of the policy recognises electricity networks as *"transmission systems (the long distance transfer of electricity through 400kV and 275kV lines), and distribution systems (lower voltage lines from 132kV to 230V from transmission substations to the end-user) which can either be carried on towers/poles or undergrounded"* and *"associated infrastructure, e.g. substations (the essential link between generation, transmission, and the distribution systems that also allows circuits to be switched or voltage transformed to a useable level for the consumer) and converter stations to convert DC power to AC power and vice versa"*.

2.3.12 The policy statement recognises that new electricity networks required for electricity generation, storage and interconnection infrastructure are vital to achieving the nation's transition to net zero. With regard to cable routing, paragraph 2.10.1 of EN-5 requires applicants to *"consider and address routing and avoidance/minimisation of environmental impacts both onshore and offshore at an early stage in the development process"*.

National Planning Policy Framework (2024)[7]

2.3.13 The recently updated National Planning Policy Framework (2024)[7] (NPPF) sets out the government's planning policies for England and how these are expected to be applied. The NPPF does not contain specific policies for NSIPs as these are determined in accordance with the decision-making framework in the Planning Act 2008 and any relevant NPSs, but it can still be an important and relevant consideration for the purposes of the Secretary of State' decision making when determining the Application.

2.3.14 Notwithstanding the above, the NPPF does state (in paragraph 168) that local planning authorities should "*not require applicants to demonstrate the overall need for renewable or low carbon energy, and give significant weight to the benefits associated with renewable and low carbon energy generation and the proposal's contribution to a net zero future*".

2.3.15 In relation to the interaction of renewable energy and Green Belt, the revised NPPF states in paragraph 160 that "*…elements of many renewable energy projects will comprise inappropriate development. In such cases developers will need to demonstrate very special circumstances if projects are to proceed. Such very special circumstances may include the wider environmental benefits associated with increased production of energy from renewable sources.*"

2.3.16 Looking at the changes to the NPPF, the national policy support for renewable energy has been further strengthened in a significant and meaningful way. This evolution in policy reflects a growing recognition of the critical importance of renewable energy sources in addressing the pressing challenges of climate change and energy security. The updated framework emphasises the need for sustainable development, encouraging local authorities to prioritise the integration of renewable energy projects within their planning processes.

2.3.17 The NPPF updates concentrate on the importance of design. Section 12 of the NPPF recognises that design quality must be prioritised during proposal development and evaluation. Early discussions among applicants, local planning authorities, and communities are vital for aligning expectations and balancing interests. Applicants should provide adequate information showing compliance with design policies and collaborate with affected parties to refine designs based on community feedback. Proposals demonstrating proactive community engagement should be viewed more favourably.

2.4 Local Policy

2.4.1 The Proposed Development is located within two Local Planning Authority (LPA) areas. W1 is located mostly within City of Doncaster Council (CDC), and partially within Rotherham Metropolitan Borough Council (RMBC). W2 and W3 are located entirely within RMBC. This section of the chapter briefly sets out the relevant policy areas regarding Green Belt, energy and climate, and other applicable supporting policies of these LPAs not covered by national policy for the Proposed Development.

2.4.2 Whilst the Proposed Development is an NSIP to be determined via the DCO process, the LPAs are important statutory consultees and as such it is important for the Proposed Development to consider local objectives and policies.

City of Doncaster Council (CDC)

2.4.3 CDC's local plan ('Doncaster Local Plan 2015-2035') was adopted in 2021[8]. Addressing climate change and increasing renewables is part of the CDC's vision to 2035, stating as an objective to "*reduce dependency on fossil fuels to reduce locally produced greenhouse gas emissions and minimise the impacts of climate change in line with the Sheffield City Region and encourage the transition to a low carbon borough*".

2.4.4 Moreover, Table 1 sets out an analysis of the strengths, weaknesses, opportunities and challenges facing the Borough. It recognises that there is an opportunity to maximise the renewable energy opportunities, especially from carbon capture, solar power and district heating.

2.4.5 The key policies pertinent to the Proposed Development are:

- **Policy 1: Settlement Hierarchy (Strategic Policy)**

  6) Green Belt: The openness and permanence of Doncaster's Greenbelt will be preserved. The general extent of the Green Belt will be retained. Within the Green Belt, national planning policy will be applied including the presumption against inappropriate development except in very special circumstances.

- **Policy 58: Low Carbon and Renewable Energy (Strategic Policy)** is supportive of solar schemes, though Battery Energy Storage System (BESS) is not mentioned. Part B emphasises the need for allocations to demonstrate community engagement, Environmental, Social, and Governance (ESG) benefits and that don't have unacceptable adverse impacts generally or on specific protected sites and infrastructure.

2.4.6 The recently amended NPPF[7], referenced above would apply here where the benefits of renewable energy would be considered as part of the exceptional circumstances deliberations, likely against the impact on the openness and permanence referenced in Policy 1 above.

2.4.7 The following local policies may also be of relevance:

- **Policy 30: Valuing Biodiversity and Geodiversity (Strategic Policy)**; the plan places an emphasis on protecting the internationally, nationally, and locally important habitats, sites and species within the Borough. Design proposals should accordingly reflect the concerns outlined in this policy approach where they apply.
- **Policy 32: Woodlands, Trees and Hedgerows**; this policy seeks to ensure that proposals have properly considered potential impacts during the design process, with appropriate surveys and assessments and outcomes demonstrated. It also clearly states that there will be presumption against development that results in the loss or deterioration of ancient woodland and/or veteran trees.
- **Policy 33: Landscape (Strategic Policy)**; this focuses on supporting proposals that take into account existing landscape characteristics and that seek to conserve, enhance or restore said landscapes. Referenced within it are: landscape history, biodiversity, cultural character, tranquillity, views, nature conservation, water features and topography. The policy is detailed and has clear implications for both the design of the Proposed Development and the process upon which that design is reached. That implication is similar to Policies 30 and 32.

Rotherham Metropolitan Borough Council (RMBC)

2.4.8 The Core Strategy[9] ('Rotherham Local Plan Core Strategy 2013-2028') was adopted in 2014 and runs until 2028. RMBC is currently undertaking a partial review of its Core Strategy (CS) as set out in its current local development scheme statement (latest publicly available version: January 2020).

Green Belt Objectives

2.4.9 Overall, the local plan recognises the need for an adjustment of Rotherham's Green Belt boundaries to meet the housing and economic needs of the Borough. Paragraph 5.2.13 specifically states that, *"Taken together the sustainability assessment and Strategic Green Belt Review demonstrate a lack of suitable land and sites to meet identified housing, employment and other development needs within settlement boundaries. This provides justification for the exceptional circumstances that require changes to be made to the Rotherham Green Belt boundary"*. The Council anticipates a release of Green Belt land over the plan period.

2.4.10 The Council's Strategic objective 2: Green Belt, states that "*In implementing the plan's spatial strategy over the plan period, the wider aims of national Green Belt policy will have been safeguarded while a borough-wide review will have informed the release of Green Belt land in the most sustainable locations for growth to meet future needs."*

Green Belt Policies

2.4.11 Policy CS4 'Green Belt' primarily focuses on RMBC's identified need to review Green Belt boundaries to meet its housing and economic objectives. It does suggest that the use of Green Belt for sustainable uses would be considered though this is in reference to Green Infrastructure which could be implemented as part of the Proposed Development. It does however state that in the context of RMBC's Green Belt review, *"this Review will assess land against the national purposes of Green Belt and, together with sustainability and constraints considerations, will identify sufficient land to meet housing, employment and other development needs in the borough"*.

Climate and Renewable Energy

2.4.12 Policy CS30 (Low carbon and renewable energy generation) Part 1 states that developments should "*incorporate low carbon and renewable energy sources*". Part 2 states that: "*Proposals for the development of renewable and low carbon sources of energy, particularly from community owned projects, will be encouraged provided that there are no unacceptable adverse effects on:*

a. Residential living conditions, amenity and quality of life

b. Character and appearance of the landscape and surrounding area

c. Biodiversity, geodiversity and water quality

d. Historical, archaeological and cultural heritage assets

e. Highway safety and infrastructure

Careful consideration will be given to the capacity of the landscape to accommodate renewable energy developments, the ability to mitigate visual

intrusion and the cumulative impact of individual sites. Any proposals will be accompanied by supporting information to clearly show how the surrounding environment will be protected and how site restoration will be carried out when production ends".

2.4.13 Paragraph 5.7.37 in the supporting text to the policy states that *"one of the Core Planning principles set out in the National Planning Policy Framework is to support the transition to a low carbon future in a changing climate, and to encourage the reuse of existing resources and the use of renewable resources"*. It recognises the central role of planning in securing reduction in carbon emissions, mitigating the impact of climate change and supporting the delivery of renewable energy and its associated infrastructure.

Other Policies of Note

- **Policy CS 33 Presumption in Favour of Sustainable Development**; here RMBC will take a positive approach that reflects the NPPF and support applications that are in accordance with the Local Plan. This is to be welcomed for the Proposed Development. This is a very overarching policy that does offer a good level of support but implies that the detail within the plan needs an appropriate level of attention and that this should be reflected in design outcomes.
- **Policy CS 19 Green Infrastructure**; this policy seeks to conserve, extend, manage and maintain its network of Green Infrastructure assets, including its Strategic Green Infrastructure Corridors. It recognises the centrality of such assets in addressing climate change and enabling renewable energy sources. The implications for the Proposed Development are that it should assist RMBC in meeting the objectives set out in CS19.
- **Policy CS 20 Biodiversity and Geodiversity**; as with CS 19 above, RMBC is seeking to shape development into assisting with its biodiversity and geodiversity objectives and to be able to resist proposals that do not. Whilst that might seem an obvious policy objective, it demonstrates that the local plan is focused on enabling sustainable development but not at any price and that should influence the design of Proposed Development.
- **Policy CS 21 Landscape**; this Policy requires new development to safeguard and enhance the quality, character, distinctiveness and amenity value of the Borough's landscapes. The Proposed Development will therefore need to reflect the needs of this Policy in its design process and outcomes.

2.4.14 It should be noted that addressing these local policy concerns is a positive way in which proposed development, that has a considerable weight of national policy impetus behind them, can achieve improved levels of local support with potentially a timelier consenting process.

3 THE PROPOSED DEVELOPMENT

3.1 Site Description

3.1.1 The DCO Limits are located east of Sheffield, South Yorkshire, within the administrative areas of the CDC and RMBC. The location of the DCO Limits is shown in **Figure 1.1**.

3.1.2 The Site Boundary and Cable Corridor Options (together forming the DCO Limits) represent the current maximum extent of land that is expected to be included within the Application. Corridors have been identified for the location of underground cables to connect the Proposed Development to the proposed 400 kV National Grid substation to the east of Brinsworth. The DCO Limits comprising the Site Boundary (the area to be used for the solar PV array, associated infrastructure and mitigation / enhancements) and Cable Corridor Options can be viewed in **Figure 1.2**.

3.1.3 The land within the Site (not including the Cable Corridor Options) covers an approximate area of 1370 ha of mostly arable fields. Farmsteads and woodland blocks interspersed within these fields have been removed from the developable area.

Site Referencing

3.1.4 For ease of reference, the Site has been divided into three areas, connected by underground cables. These areas are shown in **Figures 3.1 to 3.4** and are named after the Proposed Development - “Whitestone Solar Farm” - with an allocated reference number. They will hereafter be referred to as:

- Whitestone 1 (W1);
- Whitestone 2 (W2); and
- Whitestone 3 (W3).

3.2 Environmental Context for W1, W2, and W3

3.2.1 The Environmental Context for the Site is shown in **Figure 3.5** and described in further detail in the following sections.

W1

3.2.2 W1 is mostly located within the administrative area of CDC, with approximately 5% of W1 in RMBC, centred around NGR SK 505963. W1 covers approximately 439 ha and is shown in **Figure 3.2**.

3.2.3 W1 abuts the M18 to the southeast, the village of Clifton to the east and the A630 to the north. It is a broad open landscape in a bowl gently rising with small hills such as Beacon Hill to the east. The landscape comprises predominately larger irregular arable fields, with a mix of hedgerows and lines of trees forming boundaries, which are occasionally gappy or non-existent. There are several isolated properties along Firsby Lane and Arbour Lane, however most nearby

residential properties are concentrated in Clifton to the east, and Conisbrough to the north of the A630. W1 lies within the Doncaster Green Belt. The Green Belt designation is discussed in **Chapter 2, Legislative and Planning Policy Context** and further in **Chapter 4, Site Selection and Design Evolution.** It can also be viewed in **Figure 3.6**.

3.2.4 The Natural England (NE) Provisional Agricultural Land Classification (ALC) mapping shows the area with a provisional ALC of mostly Grade 3, with approximately 5% of W1 classified as Grade 2. Due to the age of the data, further ALC surveys will be undertaken to confirm the grading of the land and to determine whether the Grade 3 land falls within the "Best and Most Versatile" (BMV) Grade 3a subgrade. The results of these surveys will be further discussed in the ES. The provisional ALC for the area is shown in **Figure 3.9**.

3.2.5 The area was historically mined intensively for coal. As a result, there are numerous areas of probable historic shallow mine workings, coal mine entries, and associated Development High Risk Areas. These are further discussed in **Chapter 10 Ground Conditions and Land Quality**.

3.2.6 Kearsley Brook flows along the northern boundary of W1, with the Brook running south through W1. The Environment Agency's (EA) flood mapping and historic flooding, shown in **Figures 11.7** and **11.10**, indicates there is only a very small area (less than 1%) of Flood Zone 3 in the north of W1. Flood Zone 3 areas have a high probability of flooding (annual probability >1%).

3.2.7 W1 is not affected by any statutory landscape designations (National Parks, Protected Landscapes) or European Protected Sites (Special Protection Areas (SPAs) and Special Areas of Conservation (SACs)). There are no Statutory ecological designations (Sites of Special Scientific Interest (SSSI), Local Nature Reserves (LNR), Ramsar (internationally important wetland) Sites) within W1. However, the LNR Firsby Reservoir is located adjacent to the Site Boundary to the southwest, and Thrybergh County Park is located approximately 1 km to the west as shown in **Figure 3.6**. Several Public Rights of Way (PRoW) cross W1, including footpaths and bridleways. These are:

- Conisbrough Parks Bridleways 2, 4, 13, and 14;
- Braithwell Footpath 1; and
- Conisbrough Parks Footpaths 1, 3, 5, 6, 8, 14, and 16.

3.2.8 PRoW locations in W1 are shown in **Figure 3.10**.

3.2.9 Historic Environment Records (HER) indicate no scheduled features within the boundary of W1, however nearby features of note include:

- Three Grade II Listed Buildings within 500 m of W1, on Arbour Lane and in Micklebring;
- Five conservation areas within 2 km of W1 – Clifton, Old Ravenfield, Old Edlington, Conisbrough, and Braithwell; and
- Two Scheduled Monuments within 2km of W1 – Conisbrough Castle, and Moat Hall moated site and ancillary buildings, Braithwell.

3.2.10 HER data also indicates buried archaeology on-site. These archaeological assets are discussed in **Chapter 9, Cultural Heritage and Archaeology**.

W2

3.2.11 W2 is located in RMBC, covering approximately 734 ha, bisected by the M1. W2 centres around NGR SK 476874 and is shown in **Figure 3.3**.

3.2.12 W2 is bordered by Brinsworth in the west, Aston and Aughton in the southwest, North Anston to the southeast, Thurcroft and Dinnington to the east, and Wickersly to the north. The M1 and M18 run north to south through the centre of W2. There are six wind turbines (Penny Hill Wind Farm) in W2 to the west of the M1, with tip heights of 132 m. This wind farm is not connected to the Proposed Development, and appropriate buffers would be given to the turbines within the design of the Proposed Development. Further consideration of this development regarding siting and cumulative impacts will be presented in the ES. W2 lies entirely within the Rotherham Green Belt, as discussed in **Chapter 2, Legislative and Planning Policy Context** and **Chapter 4, Site Selection and Design Evolution** of this Scoping Report.

3.2.13 W2 has a broad open landscape, with undulations in topography forming bowls and small shallow valleys where there are extensive views, however trees and hedgerows generally contain views from roads and footpaths. The area of W2 to the south and west of the M1 is a locally designated Area of High Landscape Value (AHLV). The significance of this is further discussed in **Chapter 8, Landscape and Visual**. There are various PRoWs running across W2, namely:

- Aston Footpaths 16, 17, and 20;
- Bramley Footpath 6;
- Thurcroft Bridleway 9;
- Thurcroft Footpaths 8 and 10;
- Treeton Footpath 4;
- Ulley Bridleway 6;
- Ulley Footpath 3,4, and 5;
- Whiston Bridleway 20;
- Whiston Footpath 19; and
- Wickersley Footpaths 8B and 9.

3.2.14 PRoWs in W2 are shown in **Figure 3.11**.

3.2.15 There are no statutory designations within W2, however Brampton Common Local Wildlife Site (LWS) overlaps with the Site Boundary. This will be considered within the design process, to minimise any potentially harmful impacts that could occur as a result of the Proposed Development. There are also several designated sites within 2 km of the Site (see **Figure 3.7**), namely:

- Anston Stones Wood LNR and SSSI, 60 m southeast of the Site;
- Ulley Country Park, adjacent to the Site Boundary; and
- Catcliffe Flash LNR, 1.1 km west of the Site.

3.2.16 The NE Provisional ALC mapping shows that W2 is located predominantly on Grade 3 land, with less than 5% in the northwest located on Grade 4 land. Due to the age of the data, further ALC surveys will be undertaken to confirm the grading of the land and determine whether any of W2 constitutes BMV land, and this will be further discussed in the ES. Provisional ALC for the area is shown in

Figure 3.9. There is one area of coal surface mining (past and present), within an associated Development High Risk Area in the west of W2, as discussed in **Chapter 10 Ground Conditions and Land Quality**.

3.2.17 The River Rother is located to the northwest of W2, and Ulley Brook runs through the western part of W2, running northeast, southeast, and northwest from Ulley Reservoir. EA flood mapping indicates a very small proportion of W2 (less than 2%) is within Flood Zone 3, with slightly more in Flood Zone 2 (although this constitutes less than 5% of W2's total area) (see **Figures 11.8** and **11.11)**. Flood Zone 2 areas have a medium chance of flooding, at an annual probability of 0.1-1%.

3.2.18 HER indicates that there are no scheduled assets within W2, however there are several nearby assets. These are:

- 27 Grade II Listed Buildings within 500 m of W2, mostly associated with conservation areas;
- 10 conservation areas within 2 km of W2 – Whiston, Treeton, Ulley, Wickersley, Brampton-en-le-Morthen, Laughton-en-le-Morthen, Dinnington, Aston, North Anston, and South Anston; and
- Five Scheduled Monuments within 2 km of W2 – Canklow Hill earthworks, Blue Man's Bower moated site, Hellaby: a deserted medieval village and well, Castle Hill motte and bailey castle, and Manor House moated site.

3.2.19 Archaeological assets in W2 are further discussed in **Chapter 9, Cultural Heritage and Archaeology**.

W3

3.2.20 W3 is located in RMBC, centred around NGR SK 481808. This part of the Site covers an area of approximately 195 ha and is bisected in the south by the M1. W3 is shown in **Figure 3.4**.

3.2.21 W3 abuts Harthill Reservoir and Hard Lane to the east, the A618 and the Derbyshire County border to the south and west and is approximately 500 m from the villages of Kiveton Park and Wales to the north. It is a broad open landscape with expansive views from elevated areas, the topography consists of small hills such as Stone Hill in the west of the Site. In the lower parts there are belts of trees which contain views from these areas. Residential receptors are generally concentrated in the villages of Woodall, Harthill, Kiveton Park, and Wales, as well as a cluster of properties to the southwest, on the A618. W3 is also located in the Rotherham Green Belt which as mentioned previously, is further discussed in **Chapter 2, Legislative and Planning Policy Context** and **Chapter 4, Site Selection and Design Evolution**.

3.2.22 There are no statutory designations within W3. There are however, two within 2 km of the Site Boundary. These are Rother Valley County Park (1 km west of the Site), and Crabtree Wood SSSI (950 m southeast of the Site). Statutory designations are shown in **Figure 3.8**. The various footpaths and bridleways that cross W3 are shown in **Figure 3.12**, and are as follows

- Harthill Bridleways 4, 16, and 29; and
- Harthill Footpaths 5, 15, and 20.

3.2.23 NE data for provisional ALC indicates that W3 is entirely located on Grade 3 land, as shown in **Figure 3.9**. ALC surveys will be undertaken to confirm the ALC of the

land and determine whether any of W3 constitutes BMV land. The results from these surveys will be discussed in the ES. W3 was historically a very active area for coal mining, with a large area of historic surface mining running down the centre of W3, following the M1, and 33 mine entries in the northwest of the area, with associated areas of Shallow Coal Mining and Development High Risk Areas. These are further discussed in **Chapter 10, Ground Conditions and Land Quality**.

3.2.24 EA flood mapping shows approximately 5% of W3 lies within Flood Zone 3. This Flood Zone is associated with Broad Bridge Dyke, in the east of W3. Flood zones and historic flooding are shown in **Figures 11.9** and **11.12**.

3.2.25 HER indicates that there are no scheduled assets within W3, however there are several nearby assets. These comprise:

- Six Grade II Listed Buildings within 500 m, five in Harthill and one in Kiveton Park;
- One Grade II* Listed Building within 500 m in Woodall - 4 Walseker Lane;
- One Grade I Listed Building within 500 m in Harthill - the Church of All Hallows;
- Three conservation areas within 2 km - Wales, Harthill, and Barlborough;
- One Scheduled Monument within 2 km – Manor House moated site in Todwick; and
- One Registered Park and Garden within 2 km – Barlborough Hall.

3.2.26 Archaeological assets in W3 are discussed further in **Chapter 9, Cultural Heritage and Archaeology**.

3.3 National Grid Energy Transmission (National Grid) Substation

3.3.1 The point of connection for the Proposed Development into the National Grid will be the proposed 400 kV Substation, located to the east of Long Lane, Rotherham at approximately NGR SK 444895. National Grid are currently undergoing consultation on plans for the development of this new substation[10]. Connection to the grid is proposed to take place in 2029.

3.4 Cable Corridor Options

3.4.1 Whitestone 1, 2, and 3 will be interconnected and connected to the grid by high voltage underground cables. The voltage of these cables is not yet confirmed but could be up to 400 kV. At this stage in the design process, the exact route of these underground cables is unknown, corridors have therefore been identified within which the cables would run. These corridors serve as boundaries for environmental surveys, which will inform the ultimate routing of the cables. The Cable Corridor Options detailed in this Scoping Report are therefore wider than would be required for the laying of the cables. These corridors will be refined as part of the design, consultation and EIA process and will be assessed within the ES. The proposed Cable Corridor Options are shown in **Figure 3.1**.

3.4.2 Where there is more than one option for Cable routes, for example between W1 and W2, and W2 and W3, both Cable Corridor Options are shown. Methodologies

for assessment of underground cables have been set out in **Chapters 7-17** of this Scoping Report.

3.4.3 Design iterations may include reasonable adjustment of Cable Corridor Options to allow for connection to the proposed 400 kV substation, should plans for the location of the new substation change.

3.5 Scheme Description

3.5.1 The Proposed Development would comprise the following key components:

- Solar Photovoltaic (PV) Arrays;
- Solar Supporting Infrastructure;
- Battery Energy Storage System (BESS);
- On-site Cabling (predominantly underground);
- Collector Substation;
- Satellite Substations;
- Fencing and Security;
- Site Access Junctions and Access Tracks;
- Surface Water Drainage Systems;
- Temporary Construction Compounds; and
- Landscaping and Biodiversity works.

Solar PV Arrays

3.5.2 Solar PV modules are designed to transform sunlight into direct current (DC) electricity. These individual modules, often measuring approximately 2.5 m in length and 1.5 m in width, are typically composed of a sequence of PV cells protected by a layer of hardened glass. The module is typically built from anodised aluminium. As the field of PV technology continues to evolve rapidly, other types of PV technologies may become available by the time of construction.

3.5.3 The DC generating capacity of each solar PV module cannot be confirmed at this early stage as it will depend on advances in technological capabilities that are available at the time of construction.

3.5.4 The modules are attached to a support structure in clusters, referred to as ‘strings’. The quantity and arrangement of modules in each string will be influenced by several factors, including the need to minimise ground disturbance, particularly when avoiding archaeological assets that must be preserved in their original state. Additionally, some flexibility will likely be required to adapt to future technological advancements. **Image 1** shows a typical solar PV array similar to the Proposed Development.



Image 1: Typical example of solar PV array similar to that expected for the Proposed Development

3.5.5 At this stage it is anticipated that fixed south-facing arrays would be installed as part of the Proposed Development. The fixed south facing PV modules would be fixed in a position at an angle between approximately 8 to 25 degrees from the horizontal.

3.5.6 The solar PV modules will also vary in height, depending on whether the modules would be located in in areas susceptible to flooding. At this stage it is considered in areas without flood risk and where flood depths are less than 1 m, the maximum height of the top of the solar PV modules would be 3.8 m. The maximum heights in areas of flood risk greater than 1 m will be determined following further discussions with the Environment Agency. The maximum heights will be detailed in the ES.

3.5.7 The solar PV modules will be mounted on metal racks, known as mounting structures. These will likely be supported by steel poles typically driven 1 m to 4.5 m into the ground, depending on ground conditions. In areas where ground penetration is unsuitable, alternative foundations will be required. These may include concrete ballast foundation to which the mounting structures will be affixed. The maximum depth of the mounting structure piles will be detailed in the ES.

Solar Supporting Infrastructure

3.5.8 The supporting infrastructure comprises inverters, DC and Alternating Current (AC) cabling, inverters, mounting structures, transformers, and switchgear. These components serve multiple purposes. They principally convert direct current into alternating current and increase the voltage for export to the National Grid. Additionally, they house isolators and equipment for monitoring. Fencing and other security measures will also be present on-site.

3.5.9 As the design of the Proposed Development progresses, the configuration of the supporting infrastructure will be guided by environmental and technical considerations. These may include avoiding buried archaeological sites that need to be preserved in situ and protecting ecological assets. Avoidance will be the

primary strategy for environmental protection. When avoidance is not feasible, trenchless techniques (e.g. Horizontal Directional Drilling) will be employed if required. A reasonable worst-case scenario will be evaluated and presented in the ES.

Inverters

3.5.10 Inverters convert DC electricity from the solar PV modules to AC, allowing export onto the grid system. The number of modules that can be connected to each inverter will be determined by the size of the inverters available in the market. Inverter technology is in continuous evolution. Two types of inverters are being considered for use within the Proposed Development:

- Central container inverters – these are bigger than string inverters so a fewer number of them are required.
- String inverters – these inverters are smaller than central inverters but carry less power so a higher number of them would need to be installed on the Site.

3.5.11 The decision on which is the most appropriate type of inverter will depend on technical and environmental aspects which will inform the detailed design.

Switchgear

3.5.12 Switchgear, which includes electrical disconnect switches, fuses, or circuit breakers, is used to control, protect, and isolate electrical equipment. It serves both to de-energise equipment for maintenance and to clear downstream faults. Typically, switchgear is located within or adjacent to the transformer housing.

Battery Energy Storage System

3.5.13 The Proposed Development will incorporate a related BESS, designed to offer peak power generation and grid balancing services to the electrical grid. Its primary function is to store excess electricity generated by the solar PV modules and release it when there is demand. The BESS may also draw additional energy from the electricity grid at times of low demand, and store it until times of high demand, to provide grid balancing services and support the minimisation of energy waste, which assists in provision of a continuous power supply even during periods of low solar activity in the broader grid.

3.5.14 The batteries will be placed either in separate enclosures or within one or more larger structures. The exact count of individual battery storage enclosures will depend on the power capacity level and energy storage duration that the Proposed Development necessitates; this is currently under investigation.

3.5.15 Various designs for the BESS will be examined as part of the iterative design process. The maximum parameters for the compound layouts will be specified in the Application to present and evaluate a reasonable worst-case scenario in the ES.

3.5.16 The precise locations of the BESS, transformers, and dedicated switchgear are yet to be determined, but it is anticipated that they would be located at a suitable distance from residential and recreational receptors so that any potential impacts, such as from noise, would be reasonably mitigated. Each battery energy storage container is expected to have a footprint of approximately 12 m in length, 2.6 m in

width, and 3 m in height, however this will depend on the capacity and is to be later.

3.5.17 The units will be located on areas of hard standing (with typically, up to 1 m deep foundations, subject to ground conditions)

3.5.18 Each battery container will require a cooling system. This system could be either air-cooled or liquid-cooled. An air-cooled system would be external to the containerised unit, either mounted on top or attached to the side, and would include a fan powered by auxiliary power. Alternatively, liquid cooling may be used. The worst case will be assessed across various assessment chapters.

3.5.19 Local Fire and Rescue services will be consulted as part of the DCO process, to support BESS safety requirements incorporation, and to assist local services in remaining aware of the safety systems being proposed and can respond to potential incidents effectively.

On-site Cabling

3.5.20 On-site cabling will facilitate the transfer of electricity from the solar PV modules to the substations within the Site, as well as to connect to the proposed 400 kV substation near Brinsworth, which will export the electricity to the National Grid.

3.5.21 Low voltage cabling is required between the solar PV modules and transformers. Higher rated voltage cables are required between the transformers, switch gear and the substation.

3.5.22 At this stage the precise method of cabling is unknown. The majority of cabling (low voltage cables) between the solar PV modules and the inverters are likely to be above ground level and fixed to the mounting structures.

3.5.23 The higher voltage cabling is likely to be laid underground in trenches (which will subsequently be backfilled/ covered) according to British standards and regulations, with it being laid using an open-cut method or Horizontal Directional Drilling (HDD). The precise details for the cabling, as well as its routing, will take account of technical and environmental aspects.

3.5.24 Where feasible, the higher voltage cables will share trenches with the lower voltage cables along the same routes across the Proposed Development.

3.5.25 Data cables will also be installed, typically parallel to the electrical cables, to facilitate monitoring during operation, such as gathering solar data from pyranometers and inverters.

Collector Substation

3.5.26 The Proposed Development would include a main or collector substation that will act as a combiner point for the output cables from the three solar sections W1 through to W3 into a single cable connection to connect the Proposed Development to the grid connection point described in **Section 3.3**. This collector substation could be a separate area or incorporated into the satellite substation located within W2 as described below.

Satellite Substations

3.5.27 W1 and 2 could each contain satellite substations. These satellite substations will be used to collect the Medium Voltage (MV) cables from the Low Voltage (LV)/MV

transformers and will contain transformers to increase the voltage to 400 kV to match the grid connection agreement voltage. The satellite substations will be located within the land parcels identified for the solar development areas described in **Section 3.2**. The satellite substation may also contain buildings for substation control and operation, welfare facilities and storage areas for equipment for the operation and maintenance of the solar infrastructure.

Fencing and Security

3.5.28 The operational areas of the Site will be surrounded by a security fence. This fence is expected to be a 'deer fence' or another type of mesh security fencing that will not appear incongruous with the landscape, and with an approximate height of 3 m. It is also likely that closed-circuit television (CCTV) systems, mounted on poles and facing internally, will be installed around the perimeter of the operational areas of the Site. These are expected to stand at an approximate height of up to 5 m.

3.5.29 The CCTV cameras will have fixed viewing angles and will be positioned to face along the fence. Any landscaping and biodiversity works will be designed to avoid compromising the effectiveness of the CCTV or security fencing.

3.5.30 Lighting is not required within the solar arrays. However, it will be installed in the substation compounds and the BESS location(s) and will be used only as needed for maintenance and security purposes. All lighting will be motion-activated and directed into the compounds, avoiding tree lines, watercourses, ponds, and other areas to minimise impact on fauna and potential sensitive residential receptors where possible.

Site Access Junctions and Access Tracks

3.5.31 The highest traffic volumes would occur during the construction and decommissioning phases, with only minimal maintenance required during operation. As a minimum, access will be required into each area (W1-3). An outline Construction Traffic Management Plan (CTMP) for each phase of the Proposed Development will be submitted to, and approved by, the relevant planning authority to minimise traffic disruption and impact, and they would be secured by the requirements of the DCO.

3.5.32 Abnormal loads, such as transformers, will be required across the Site. The routing and access points for these will also be determined through the design process and in consultation with the appropriate statutory consultees.

Surface Water Drainage

3.5.33 A preliminary Drainage Strategy will be formulated for the Substations and BESS in conjunction with the overall design of the Proposed Development. It will provide measures to demonstrate the control of surface water to avoid any escalation in flood risk. It is assumed that the solar PV arrays will have no significant impacts, from a flooding and surface water perspective. This strategy will be further refined into a comprehensive drainage plan before the commencement of construction. It will propose appropriate methods to control drainage from the new infrastructure necessitated by the Proposed Development (for instance, solar PV arrays, access routes, and hardstanding areas across the Site) and manage any necessary modifications to existing land drainage systems. Drainage systems would also be

designed to deal with the supply of water via tanks and water runoff from fire suppression systems in the unlikely event of a fire.

3.5.34 The preliminary Drainage Strategy will be provided in **Chapter 11, Water Resources and Flood Risk** within the ES.

Temporary Construction Compounds

3.5.35 Temporary compounds will be set up for storing materials, plant, and equipment during the construction phase. These compounds will also house staff welfare facilities, waste storage, and wheel washing areas. Adequate lighting will be installed to ensure safety and security.

3.5.36 The specific locations of these temporary construction site compounds, considering technical and environmental factors as well as feedback from consultation and engagement, will be detailed in the Application.

Landscaping and Biodiversity

3.5.37 The Impact Assessment for the government's policy on Biodiversity Net Gain (BNG) identifies 10% as the lowest level of biodiversity gain that the Department for Environment, Food, and Rural Affairs (DEFRA) could confidently expect to mitigate a development's role in biodiversity loss. The 10% level provides a small margin of gain to account for uncertainties and variation in application delivery and success.

3.5.38 Although BNG is not mandatory for NSIPs, it is expected that BNG requirements will apply to NSIPs from November 2025 onwards. As the Applicant's programme currently envisages an application submission in 2026, the Proposed Development will incorporate BNG using methodology prescribed in the DEFRA Statutory Biodiversity Metric. The BNG will be derived from an integrated landscape and biodiversity led strategy which will seek to mitigate any potential effects on landscape and visual impacts whilst also incorporating ecological enhancements and BNG.

3.5.39 It is anticipated that the Proposed Development will include management of existing planting, new native planting, hedgerow enhancement, and planting of suitable seed mixes amongst the solar PV arrays. Indigenous planting will also be used to provide natural screening of the Proposed Development. An outline Landscape Biodiversity Management Plan will be developed for the ES, outlining these measures and commitments for aftercare.

3.6 Development Programme

Construction

Construction Programme

3.6.1 The construction phase is expected to span approximately 24 to 36 months. While the exact timeline will depend on various factors, including the submission and determination of the development consent, the current plan is to commence construction in 2027 and conclude by 2029. However, it should be noted that the construction works will be phased across the Site, so it is unlikely for one area to be undergoing construction for a continuous 24 to 36 months. The Draft ES and

the ES will provide further details of the proposed construction activities, including their anticipated duration and an indicative programme of each phase of the construction work. The earliest date of operation would be 2029, in line with the connection date for the Proposed Development.

Construction Phase Activities

3.6.2 The ES will define how construction materials and components of the Proposed Development will be brought to the Site (i.e. by road, rail, river and combinations thereof).

3.6.3 Construction laydown will be located within the Site Boundary set out within this Scoping Report.

3.6.4 Construction activities include, but are not limited to, the following:

- Site Preparation and Access:
  - Transporting construction materials, plant, and equipment;
  - Establishing temporary on-site construction compounds and security fencing;
  - Upgrading road access and constructing new roads, including haul roads;
  - Enhancing existing tracks and building new access roads within the Site;
  - Creating cable crossing points over waterways;
  - Marking infrastructure component locations;
  - Conducting targeted site clearance;
  - Drainage engineering; and
  - Landscape management and early mitigation planting.
- Solar Farm Infrastructure Construction:
  - Assembling module mounting structures and installing solar modules;
  - Setting up electric cabling, substations, inverters, transformer cabins, and battery storage units; and
  - Constructing substation compounds, BESS compounds, and collector compounds, along with equipment installation.
- Landscape and Habitat Enhancement; and
- Testing and commissioning.

Construction Site Access

3.6.5 It is anticipated that the main construction and decommissioning access points to the solar PV arrays will be off the public road network with connections to the M1 and M18 primarily. This will be assessed for the Draft ES and ES. Swept path analysis will be undertaken to determine if land take or road widening is required along the access routes for abnormal load deliveries. It is anticipated that abnormal loads will be required for the transformers for the on-site substations.

3.6.6 All construction and decommissioning access will be confirmed as the Proposed Development's design progresses and in consultation with the County Highways Authorities and National Highways, as appropriate.

3.6.7 Access tracks will be constructed across the Site.

3.6.8 The traffic worst case is expected to be during the peak construction period, with construction traffic predictions to be provided in the ES.

Construction Environmental Management

3.6.9 The Application will be accompanied by an outline Construction Environmental Management Plan (oCEMP). This plan will outline the mitigation measures to be implemented during the construction phase, which will then be developed into a detailed CEMP before construction begins. The primary objective of the CEMP is to set out measures compliant with environmental regulations to minimise environmental impacts. Environmental management plans will be prescribed relating to:

- Use of land for temporary laydown areas, accommodation, etc;
- Construction traffic (including parking and access requirements) and changes to access and temporary road or footpath closures (if required);
- Control measures to protect and manage retained planting, habitats, land restoration and enhancement;
- Control measures for water management (surface water and groundwater) to prevent pollution;
- Noise and vibration measures to control noise and vibration levels to protect wildlife and communities;
- Utilities diversion;
- Control measures to manage dust generation and emissions from construction activities;
- Soil handling, removal, storage and waste generation;
- Emergency response and contingency plans relating to spills or extreme weather conditions;
- Communication strategies to keep communities and stakeholders informed throughout the construction process; and
- Mechanisms for monitoring and reporting on the above.

3.6.10 The detailed CEMP, which will accord with the principles of the outline Construction Environmental Management Plan, will be developed by the designated Construction Contractor after the DCO has been granted. Approval for the detailed CEMP will be sought from the appropriate LPA before construction begins, as stipulated by the requirements of the DCO. This plan will specify the procedures that the Construction Contractor must follow and oversee throughout the construction process. Construction Contractors of the Proposed Development will be required to incorporate environmental control, health and safety regulations, and current legislative and best practice guidance into the detailed CEMP.

3.6.11 The Construction Contractor will also be required to ensure that construction activities are sustainable and that all subcontractors involved are fully compliant with the detailed CEMP. Further details on the CEMP requirements are provided in **Chapter 10, Ground Conditions and Land Quality.**

Operation

Operation of the Proposed Development

3.6.12 During the operational phase, the activities on-site would amount to servicing, maintenance and replacement (where necessary) of plant and equipment associated with the Proposed Development, including solar PV arrays, inverters, transformers, substation compounds, and vegetation and biodiversity management.

3.6.13 An Outline Landscape and Ecological Management Plan will be submitted as part of the ES. This document will set out how soft landscaping, biodiversity mitigation and enhancement measures would be managed throughout the operational phase of the Proposed Development.

3.6.14 There may be a level of HGV activity required to replace equipment on-site. The ES will include further details of the potential maintenance and replacement activities, and appropriate controls will be developed as part of the DCO.

3.6.15 An outline Operation Environmental Management Plan (oOEMP) will accompany the Application, which will describe the framework of operational mitigation measures as identified in the ES to be followed and carried forward into a detailed OEMP, which will accord with the principles of the Outline Landscape and Ecological Management Plan, prior to operation.

Operational Site Access

3.6.16 The key road accesses used during construction to the solar PV array locations will be maintained during the operational period. It is anticipated that the main access points will be off the public road network with connections to the M1 and M18.

3.6.17 The access locations will be confirmed as the Proposed Development's design progresses and in consultation with the County Highways Authorities and National Highways, as appropriate.

3.6.18 The Site access locations will be confirmed at the ES stage.

Decommissioning

Decommissioning of the Proposed Development

3.6.19 After the Proposed Development's operational lifespan (60 years) it will be decommissioned. Decommissioning is likely to involve the dismantling and recycling of the PV arrays with associated vehicle movements. Components of the Proposed Development such as mitigation planting, Site accesses and permanent substation (customer and NG) infrastructure would be left in place.

3.6.20 These activities would be managed through appropriate environmental management plans and industry best practices and are not expected to result in any adverse environmental impacts.

3.6.21 Decommissioning is expected to take between 12 and 24 months and would be undertaken in phases. The effects of decommissioning are usually similar to, or of a lesser magnitude than, construction effects and will be considered in the relevant sections of the ES. The specific method of decommissioning the

Proposed Development at the end of its operational life is uncertain at present as the engineering approaches to decommissioning will evolve over the operational life of the Proposed Development. Assumptions will therefore be made where appropriate.

3.6.22 An outline Decommissioning Environmental Management Plan (oDEMP) will accompany the Application, which will describe the framework of operational mitigation measures as identified in the ES to be followed and carried forward into a detailed DEMP, which accords with the principles of the oDEMP, prior to decommissioning.

3.6.23 Approval for the final DEMP will be sought from the appropriate LPA before decommissioning begins, as stipulated by the requirements of the DCO. This plan will specify the procedures that the appointed contractor must follow and oversee throughout the decommissioning process. Contractors associated with the decommissioning of the Proposed Development will be required to incorporate environmental control, health and safety regulations, and current legislative and best practice guidance applicable at the time of decommissioning.

3.7 Emissions and Waste

3.7.1 The ES will present data on the types and quantities of waste streams produced during construction and decommissioning, process wastes during operation, and other waste streams where there is potential for them to have an impact on the environment.

4 SITE SELECTION AND DESIGN EVOLUTION

4.1 Introduction

4.1.1 The selection of the location for the Proposed Development has been driven by several technical factors and environmental considerations. A detailed methodology for Site selection will be included in **Chapter 4, Site Selection and Design Evolution** in the ES.

4.1.2 On a local level, the selection of each field leading to the Site Boundary has been guided by principles underpinned by national, local planning and environmental policy, and the mitigation hierarchy of avoidance in the first instance. The following principles are at the centre of the development process:

- Minimising Landscape Impact:
  - Avoiding areas with unfavourable topography to preserve landscape character;
  - Avoiding / minimising development on BMV land (ALC Grades 1, 2 and 3a). It is inevitable that parts of the Proposed Development will likely be sited on BMV land; however, an ALC survey will be undertaken to inform the design as it evolves; and
  - Coherently selecting individual fields to contain the Site and prevent sprawl.
- Heritage, Biodiversity, and Amenity Considerations:
  - Avoiding areas with designated heritage assets;
  - Siting away from landscape designations;
  - Not encroaching on national and international biodiversity and geodiversity sites;
  - Avoiding high-risk Flood Zones;
  - Minimising amenity loss by avoiding large villages and towns;
  - Avoiding National Trails;
  - Considering PRoWs and enhancing them where possible; and
  - Selecting areas near appropriate transport routes.
- Electrical Infrastructure Placement:
- Locating larger electrical infrastructure in well-screened, suitable locations away from residential areas where possible.

4.2 Design Principles

4.2.1 The Applicant aims to maximise the amount of clean energy generated for the National Grid, whilst designing a socially and environmentally sensitive development. The Proposed Development will therefore be designed in accordance with Planning Inspectorate, (2024) Nationally Significant Infrastructure Projects: Advice on Good Design[11] and in line with the following principles:

- Maximise the amount of clean energy provided to the National Grid;
- Craft a project that is resilient to the impacts of climate change;
- Take opportunities to limit the amount of embodied carbon across the Proposed Development;
- Engage with stakeholders to develop the design;
- Support local ecology and enhance biodiversity, enriching ecosystems where possible;
- Find out what is important to people about the local area and seek to protect it;
- Consider how people engage with their local environment and retain these patterns and practices where possible;
- Enhance recreational access across the landscape;
- Respect landscape character and cultural heritage;
- Minimise visual impact;
- Take opportunities throughout the Proposed Development's lifecycle to contribute to the local economy; and
- Support research and development.

4.2.2 These design principles will evolve in time and be informed by feedback from the local community and wider stakeholders.

4.3 Alternatives Considered

4.3.1 Schedule 4(2)[1] of the EIA Regulations requires "*A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects"* to be presented in the ES.

4.3.2 The ES will therefore include a description of the alternatives relevant to the Proposed Development that have been considered and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects. The alternatives analysis to be presented in the ES is likely to focus on different Site layouts, sizing, technologies and design parameters.

4.3.3 NPS EN-1[4], paragraph 4.3.27 states "*Alternative proposals which mean the necessary development could not proceed, for example because the alternative proposals are not commercially viable or alternative proposals for sites would not be physically suitable, can be excluded on the grounds that they are not important and relevant to the Secretary of State's decision"*.

4.3.4 A common argument is that brownfield sites and rooftops should be used for solar development instead of greenfield sites. However, all three types of solar development, along with wind, nuclear and hydrogen, will be required to meet the government's energy targets to decarbonise the power sector by 2030. Consequently, the use of greenfield sites to house these energy developments is becoming a necessity.

4.3.5 A full detailed appraisal of the options considered will be presented as part of the ES, discussing the rationale for the final Site layout and design selection, as well

as explaining the flexibility sought within the consent in this regard. The degree of flexibility sought with the consent will be further defined within the Application.

Early-Stage Feasibility Assessment

4.3.6 The Applicant has undertaken a Feasibility Assessment which evaluates the risk associated with development on specific land parcels. Consequently, some land parcels have been deemed unsuitable for solar development and have either been excluded from the Site Boundary or allocated for habitat enhancement and mitigation works.

4.3.7 The Feasibility Assessment considered the following constraints:

- Biodiversity;
- Landscape and visual;
- Cultural heritage and archaeology;
- Residential properties and communities;
- Transport and access;
- Flood risk;
- Provisional ALC;
- Minerals safeguarding; and
- Land use.

4.3.8 The Feasibility Assessment was informed by publicly available data, including DEFRA MAGIC Map[12], Mining Remediations Authority Interactive Map[13]; other local planning interactive maps, and site walkovers.

4.3.9 The assessment follows the principles of the design aims and will be appended to the ES as part of the Site optioneering study to assess the physical limitations of land parcels across the Site.

4.4 Applying the 'Rochdale Envelope'

4.4.1 Large-scale developments often undergo significant design changes during the pre-application stage. Consequently, development design must remain adaptable to economic and technological shifts. The Inspectorate acknowledges the importance of design evolution and flexibility, especially considering how pre-application and EIA consultations can positively influence the Proposed Development's design[14]. The recently published Inspectorate advice note on "Good Design" recognises that there should be *"sufficient flexibility for technical innovation balanced by sufficient detail and controls for post-consent approvals that will ensure good design outcomes are achieved"*.

4.4.2 Despite the need for responsiveness, Regulation 14(2)(a)[1] of the EIA Regulations 2017 mandates that the ES describes the Proposed Development, including Site details, design, size, and other relevant features. This information allows for an informed assessment of the Proposed Development's environmental impact, benefiting decision-makers, statutory consultees, and the public.

4.4.3 An EIA therefore typically strives to define the Proposed Development with sufficient detail to allow the accurate prediction of likely significant environmental effects, whilst defining 'envelopes' of design flexibility or specification ranges within which the Applicant can realistically deliver the Proposed Development.

The Inspectorate Advice Note 9: 'Rochdale Envelope'[15] provides guidance regarding the degree of flexibility that may be considered appropriate within an application for development consent under the Planning Act 2008.

4.4.4 The advice note acknowledges that there may be aspects of the Proposed Development's design that are not yet fixed, and therefore, it may be necessary for the EIA to assess likely worst-case variations to ensure that all foreseeable significant environmental effects of the Proposed Development are considered.

4.4.5 Through this approach, an EIA robustly assesses the likely significant effects of the Proposed Development on the environment by taking account of reasonable design flexibility and variations. Such an approach is good practice, as reflected in case law that led to the definition of the 'Rochdale Envelope' principle: *R. v Rochdale MBC ex parte Milne (No. 1) and R. v Rochdale MBC ex parte Tew [1999] and R. v Rochdale MBC ex parte Milne (No. 2) [2000].* Suitably applied in EIA it can help to avoid the need for protracted resubmission procedures at a later stage, whilst giving a comprehensive assessment of the likely environmental effects.

4.4.6 This EIA has been scoped at a time when the Proposed Development is still evolving so a level of uncertainty is inherent. This Scoping Report makes every effort to be transparent about this and to be clear about the worst-case scenario for each impact such that the approach taken in every case is precautionary whilst proportionate. This has included the development of a suite of assumptions and worst-case scenarios for the Proposed Development, which are set out throughout the Scoping Report, to provide as much detail as possible on the nature of any potential impacts and/or the responses of receptors, and to be very clear where any uncertainty lies. This Scoping Report goes on to specify what the EIA team intends to do in the later Draft ES and ES phases to achieve a reasonable level of confidence/certainty in predicting likely significant effects.

5 CONSULTATION

5.1 Context

5.1.1 Effective consultation and engagement are intrinsic to the Planning Act 2008, and fundamental to the success of the Proposed Development.

5.1.2 The Proposed Development has a wide range of stakeholders (including landowners, statutory consultees, local communities and specialist interest groups) with differing interests that will require varied levels of information. Specific communication activities therefore need to be focussed to meet the needs of individuals and groups.

5.1.3 Consultation and engagement for the Proposed Development are based on the following principles:

- Early and ongoing engagement to inform and influence the Proposed Development's design and assessment process;
- Seeking an appropriate level of feedback at each stage in the iterative design process and ensuring that comments received are taken into consideration;
- Building long-term relationships with key stakeholders throughout the different stages of the Proposed Development to help better understand their views;
- Where possible and practicable ensuring concerns are addressed; and
- Ensuring appropriate statutory consultation is undertaken in compliance with requirements of the Planning Act 2008 and associated guidance.

5.2 Consultation requirements and guidance

5.2.1 The Planning Act 2008 sets the following requirements for pre-application consultation:

- Section 42: Consult with prescribed consultees, local authorities as defined within Section 43 of the Planning Act 2008, and persons with an interest in land as defined within Section 44 of the Planning Act 2008, allowing a minimum of 28 days for comments in accordance with Section 45 of the Planning Act 2008;
- Section 47:
  - Prepare a Statement of Community Consultation (SoCC) outlining how the Applicant intends to consult with the local community, including, in accordance with Regulation 12[1] of the EIA Regulations, how it intends to publicise and consult on the Preliminary Environmental Information (PEI);
  - Consult those local authorities whose administrative area contains a part of the Proposed Development on the SoCC in draft; and
  - Publish the SoCC and consult the community in the manner it sets out.
- Section 48: Publicise the proposed application in the prescribed manner; and
- Section 49: Have regard to all relevant responses.

5.2.2 In addition, the Inspectorate has published guidance that is relevant to consultation including Nationally Significant Infrastructure Projects: Advice on the

Consultation Report[16] and Nationally Significant Infrastructure Projects: Advice on EIA Notification and Consultation[17] .

5.2.3 Guidance on consulting locally in the area of the Proposed Development is provided by Rotherham's Statement of Community Involvement[18] and Doncaster's Statement of Community Involvement[19].

5.2.4 The Applicant has considered the statutory requirements for pre-application consultation on NSIPs and guidance from the Inspectorate, RMBC and CDC in preparing its approach to consultation.

5.3 Consultation Approach

5.3.1 A two-stage approach to consultation with the local community and wider public is planned, as follows:

- A first round of non-statutory consultation in Q4 2024 and Q1 2025 to introduce the Proposed Development and present a preliminary design and the options currently under consideration. This is considered an important stage in gathering feedback despite being outside the statutory requirements; and
- A second round of consultation in Q3 2025, being the statutory consultation pursuant to the Planning Act 2008 and EIA Regulations, including consultation on the Draft ES (which will include the Preliminary Environmental Information).

5.3.2 The approach taken to the non-statutory consultation includes:

- Publicising the consultation using newsletters sent to people living in the vicinity of the Proposed Development, and advertising through social and traditional media;
- Emailing parish councils and prescribed consultees to announce the consultation and how to take part;
- Publishing informational materials including a consultation booklet providing a non-technical overview of the Proposed Development and a consultation website;
- Providing members of the community with an opportunity to meet with the Applicant and ask questions at public exhibitions and a webinar; and
- Organising briefings with parish and town councils, individual residents and other relevant local stakeholders.

5.3.3 The approach to the statutory consultation will be informed by feedback from the first consultation, as well as feedback from the local authorities through the development of the SoCC.

5.3.4 Consultation will also be undertaken with prescribed consultation bodies as well as affected landowners, in accordance with Sections 42 and 48 of the Planning Act 2008.

5.3.5 All responses received during both phases of consultation will be carefully considered in the development of the Proposed Development in accordance with Section 49 of the Planning Act 2008. Details of any responses received during consultation periods and the account taken of those responses will be included in a Consultation Report.

5.3.6 This Consultation Report will be submitted with the Application to the Secretary of State and, if the Application is accepted, will be available for public review.

5.3.7 The Consultation Report will demonstrate how the Applicant has complied with the consultation requirements of the Planning Act 2008 and EIA Regulations and will be considered by the Secretary of State when determining whether to accept the Application, and then in examining of the Application.

5.4 Consultation Completed to Date

5.4.1 A non-statutory consultation was conducted from 18 November 2024 to 31 January 2025. This period was extended from an initial deadline of 17 January 2025 at the request of a number of stakeholders.

5.4.2 The non-statutory consultation detailed in **Section 5.3** now completed included:

- Issuing a leaflet to more than 30,000 addresses in parishes which include a part of the Site;
- Door-knocking / private visits of the project team to near-neighbours of the Proposed Development;
- Emailing all LPAs, statutory consultees, and host and neighbouring parish councils;
- Advertising in local newspapers and on social media;
- Publishing consultation materials including a consultation booklet;
- Launching a consultation website and Facebook page;
- Holding seven in-person public consultation events (five of which were held in December 2024 and two of which were held in January 2025) and one webinar in December 2024; and
- Arranging and attending 16 individual meetings with residents who live near the Site.

5.4.3 In addition, the Applicant held introductory meetings with:

- Parish and town councils;
- Officers and members from CDC and RMBC;
- The Members of Parliament for Rother Valley and Conisbrough and Rawmarsh;
- The Environment Agency; and
- South Yorkshire Archaeology Service (SYAS).

5.5 Actions Following Consultation to Date

5.5.1 Following feedback from non-statutory consultation detailed in **Section 5.4**, the Proposed Development has been refined. This has resulted in the removal or reduction of panels around the most sensitive community areas, particularly around residential dwellings. **Figures 5.1** to **5.3** show indicative developable areas, and indicative areas of mitigation and enhancement.

5.5.2 Indicative developable areas have been identified as areas which are most suitable for solar and supporting infrastructure, as described in **Section 3.5** of this Scoping Report. Where land is less suitable for solar and supporting infrastructure

due to the potential for impact on communities and environmentally sensitive receptors, it is shown as indicative mitigation and enhancement land.

5.5.3 It is worth noting that whilst indicative enhancement land has been set aside primarily for landscape and ecological mitigation and enhancement, it is likely that access routes would need to be constructed on this land to facilitate construction, decommissioning, and operational maintenance of the Proposed Development. These access routes would be developed sensitively in line with the design principles for the Proposed Development, as described in **Section 4.2**.

5.5.4 Cable routes may also need to be laid through land set aside for mitigation and enhancement, but this would only have a temporary impact through the construction phase of the Proposed Development and would be unlikely to impact the establishment of mitigation planting and enhancement measures.

6 ENVIRONMENTAL IMPACT ASSESSMENT

6.1 Technical Advice for Scoping Solar NSIP Development

6.1.1 The Inspectorate released the Technical Advice for Scoping Solar NSIP Development in 2024[20]. The Inspectorate considers that the advice will help enable smoother, more efficient NSIP examinations, with fewer issues needing to be addressed during the examination.

6.1.2 The intention of the advice is to enable applicants to scope out certain matters or aspects of the EIA. This will ensure that the ES focuses on the likely 'main' or 'significant' environmental effects anticipated. The advice note recognises that all NSIPs are likely to possess unique issues and present opportunities that are best identified using an evidence-based approach. Each application will be considered according to its own merits. Therefore, the advice note is not overly prescriptive, nor is it entirely comprehensive in terms of the topics and matters identified to be addressed within an application. Considering this, it does not override the position reached in forming an EIA scoping opinion.

6.1.3 The advice note includes the "Solar Scoping Table" which provides examples of supporting information that can assist the Inspectorate when considering whether to agree to scope aspects. The table provides some select examples of aspects / matters where significant effects are unlikely to occur for a typical solar development or where they can be controlled through the implementation of standard mitigation measures such that a significant effect on the environment is not likely to occur. It should be noted that the table is not an exhaustive list, and it may also be possible to scope other aspects / matters out of the EIA where there is sufficient evidence to conclude that a significant effect is unlikely to occur.

6.1.4 The table template has been utilised and is set out in **Appendix B, Solar Scoping Table**. As per the advice note, there will be subsequent iterations of this table in the Draft ES and the ES.

6.2 EIA Process

6.2.1 Scoping is a crucial process in establishing the scope of an ES and identifying the relevant topics for assessment. It serves as a preliminary step that contextualises the entire EIA process.

6.2.2 During scoping, key environmental considerations are pinpointed early on, allowing subsequent work to focus on those topics where significant effects may arise due to a proposed development. The scoping process is iterative, informed by increasing knowledge gained throughout the EIA process. Inputs to the scoping process include:

- An initial description of the Proposed Development, including key components and their likely maximum parameters;
- Characteristics of the environment near the Site; and
- Review of EIA Regulations to identify relevant topics.

6.2.3 The scope of assessment can then be further refined through scoping workshops, consultation, and initial assessments by topic specialists.

6.2.4 This Scoping Report summarises the findings of the ongoing scoping process. It identifies the effects proposed for consideration within the ES. Each topic area outlines the proposed scope of assessment and identifies any topics suggested to be excluded from assessment due to their lack of predicted significant effects.

6.2.5 As part of the scoping process, a Scoping Opinion will be sought from the Inspectorate. This Opinion will inform the scope of the Draft ES and subsequent ES. Throughout the EIA process, assessment work will continue, and surveys will be completed. If new considerations arise or it becomes evident that certain potential impacts are unlikely to result in significant effects, the assessment scope will be refined based on discussions with stakeholders.

6.3 Preliminary Environmental Information

6.3.1 Under Regulation 12(1)b[1] of the EIA Regulations, the Applicant must outline their approach to publicising and consulting on preliminary environmental information related to the Proposed Development. Regulation 12(2)[1] defines preliminary environmental information as the data compiled by the Applicant, necessary for consultation bodies to form an informed view on the likely significant effects of the Proposed Development (including any associated components). In the specific case of the Proposed Development, as detailed in **Chapter 5, Consultation**, the Draft ES will be made public during the statutory consultation process, currently expected to take place in Q3 2025.

6.3.2 The PEI will be submitted in the form of a Draft ES. This approach aligns with Inspectorate guidance, which emphasises the importance of presenting comprehensive preliminary information to facilitate informed consultation and feedback. According to Advice Note Seven[2] and EIA Regulation 14(2)[1], the Draft ES should include sufficient detail to allow consultees to understand the likely significant environmental effects and the proposed mitigation measures. This ensures that the ES is robust and addresses any concerns raised during the consultation process.

6.4 Environmental Statement

6.4.1 The ES will analyse the anticipated significant effects of the Proposed Development across relevant environmental topics. It achieves this by comparing the existing baseline conditions with the projected conditions during construction, operation and decommissioning. Generally, the effects of decommissioning will not be assessed separately from those of construction, as they are usually similar to, or of a lesser magnitude than, construction effects. Each topic chapter of this Scoping Report details the approach to assessing decommissioning effects. Detailed assessment of decommissioning activities would occur closer to the decommissioning phase, guided by an approved Decommissioning Environmental Management Plan (DEMP) overseen by the local planning authority.

6.4.2 The assessment of potential changes focuses on their likely significance. This determination involves comparing project discharges to legal or industry standards (where applicable) and considering the environment's capacity to absorb or adapt to the identified effects. When specific quantified standards are lacking, alterations to the physical environment (such as air, water, or soils) are not inherently deemed significant. Instead, the significance of a change depends on its impact on environmental receptors — these can include people,

communities, built resources (e.g. listed buildings) and natural resources (such as ecologically important sites and protected species).

6.4.3 The EIA process determines the significance of potential impacts by evaluating the magnitude of each impact in relation to the sensitivity or value of the affected receptors. This evaluation is conducted using industry-standard methodologies whenever they are available and applicable. The magnitude of an impact refers to the extent, duration, and intensity of the change caused by the Proposed Development. Sensitivity or value of a receptor considers the importance, vulnerability, and resilience of the environmental component affected. By systematically comparing the scale of the impact with the importance or vulnerability of the receptors, the EIA process ensures a thorough and standardised assessment of environmental consequences. This approach facilitates informed decision-making and the development of effective mitigation strategies to minimise adverse effects and enhance positive outcomes.

6.4.4 The Inspectorate provides detailed guidance on the EIA process, including the assessment of significance. According to Advice Note Seven[2], the significance of an impact is typically determined by assessing the magnitude of the impact against the sensitivity of the receptor, using established methodologies where available. This guidance helps ensure that the EIA process is consistent, transparent, and robust, supporting the preparation of comprehensive ES' that inform decision-makers and stakeholders.

6.4.5 **Sections 6.5** and **6.6** describe the criteria used to determine the significance of effects. Where potentially significant effects are identified, mitigation measures will be recommended as part of the EIA.

6.5 Baseline Description

6.5.1 The term "baseline conditions" refers to the existing and anticipated future environmental state in the absence of the Proposed Development. Each topic-based chapter of the ES will include a description of the current baseline conditions collected through field and desktop research. These conditions serve as the foundation for the assessment, allowing for the identification of likely significant effects by comparing them with the baseline state.

6.5.2 The baseline also extends into the future (the future baseline), although predictions of this can involve potentially large uncertainties and assumptions. As a result, in most cases the future baseline is assumed to remain unchanged throughout the operation of the Proposed Development. Where this is not the case, this will be stated within the relevant ES topic chapter.

6.6 Effects Significance Criteria

6.6.1 The evaluation of the significance of an effect is important; it is the significance that determines the resources that should be deployed in avoiding or mitigating a significant adverse effect, or conversely, the actual value of a beneficial effect. The Secretary of State will determine the overall environmental acceptability of the Proposed Development, considering the environmental information presented in the ES, which includes all potential beneficial and adverse effects. Where it has not been possible to quantify effects, qualitative assessments will be undertaken, based on available knowledge and professional judgment. Where uncertainty exists, this will be noted in the relevant topic chapter.

6.6.2 The assessment of residual effects considers the effects that are remaining once all mitigation measures have been taken into consideration. The measures which will be taken into consideration for the significance of the effects assessment will be guided by criteria specific to each environmental topic. Criteria to gauge the significance of effects for each environmental topic are established within each topic chapter, taking into careful consideration the aspects listed below:

- The scope and degree of the impact, which is characterised as high, medium, low, or very low;
- The duration of the effect, as detailed in **Section 6.7**, including whether the effects are temporary or permanent;
- The nature of the effect, determining if it is direct or indirect, reversible or irreversible, beneficial or adverse;
- The occurrence of the effect, whether it is isolated, accumulative, or interactive with other effects;
- Performance against any relevant environmental quality standards;
- The receptor's sensitivity, categorised as high, medium, low, or very low; and
- The alignment with environmental policy objectives.

6.6.3 The significance of residual effects will be evaluated with reference to available definitive standards, accepted criteria and legislation. For issues where definitive quality standards do not exist, significance will be based on:

- Local, district, regional or national scale or value of the resource affected;
- Number of receptors affected;
- Sensitivity of these receptors; and
- Duration of the effect.

6.6.4 To maintain consistency throughout the EIA and to ensure effects are comparable, the following terminology and definitions will be used in the ES to define residual effects:

- Adverse – detrimental or negative effects to an environmental / socio-economic resource or receptor; or
- No change - no loss or alteration of characteristics, features or elements; no observable impact in either direction; or
- Beneficial – advantageous or positive effect to an environmental / socio-economic resource or receptor.

6.6.5 Where adverse or beneficial effects are identified, the following scale will be used:

- Negligible - no detectable or material change to a location, environment or species;
- Minor – a detectable but non-material change to a location, environment or species;
- Moderate – a material, but non-fundamental change to a location, environment or species; or
- Major – a fundamental change to a location, environment or species.

6.6.6 Each technical topic outlines the criteria, and rationales for measuring the various types of effects. Where possible, this will be based upon quantitative and

accepted criteria, together with the use of expert interpretation to establish the extent to which the effect is environmentally significant. **Table 6.1** presents a generic matrix for determining the significance of likely effects. Effects that would be 'significant' in terms of the EIA Regulations are shaded.

Table 6.1 Generic matrix for determining the significance of likely effects

	Magnitude of Change			
Sensitivity of receptor	Negligible	Low	Medium	High
Negligible	Negligible	Negligible	Negligible	Negligible
Low	Negligible	Minor	Minor	Moderate
Medium	Negligible	Minor	Moderate	Major
High	Negligible	Moderate	Major	Major

6.6.7 Following the classification of an effect, clear statements will be made within the environmental topic sections as to whether that effect is significant or not significant. As a rule, major and moderate effects are considered to be significant, while minor and negligible effects are considered to be not significant. However, professional judgment will be applied, considering whether the effect is permanent or temporary, its duration / frequency, whether it is reversible, and / or its likelihood of occurrence.

6.6.8 Some environmental topic disciplines may utilise different criteria when undertaking assessments due to differences in industry-accepted guidelines and specifications. Where this is the case, the technical topic will discuss how the assessment methodology or classification of effects differs from the general EIA methodology as described in this section and provide justification

6.7 Timescale of Effects

Construction

6.7.1 For assessment throughout the EIA, construction effects are defined as those for which the source begins and ends during the construction phase, and do not extend beyond the completion of the construction phase.

6.7.2 Sources of effects during construction are likely to include, but not be limited to:

- Construction traffic;
- Construction vehicles causing disruption to road networks (depositing mud and risk of spillages);
- Noise and vibration caused by construction activities;
- Removal of vegetation and disturbance of soil by construction activities;
- Construction dust;
- Site runoff; and

- Landscape and visual intrusion of construction machinery.

6.7.3 Different construction activities vary in duration; as such, construction activities associated with electrical infrastructure will likely have a longer duration and will span the full construction period, whereas works associated with potential land preparation would be shorter in duration and be part of more discrete construction phases.

Operation

6.7.4 For the EIA, operational effects are those impacts that occur during the operational period. They may emerge during the construction phase. These effects can be permanent, last significantly beyond construction, or represent a prolonged cumulative impact of construction or decommissioning activities. Effects of the Proposed Development during operation are likely to include, but not be limited to:

- Landscape and visual effects including glint and glare;
- Noise and vibration effects;
- Effects associated with maintenance activities;
- Effects on drainage; and
- Effects on biodiversity.

6.7.5 Timescales associated with these enduring effects are as follows:

- Short term – endures for up to 12 months after construction or decommissioning;
- Medium term – endures for 1-5 years;
- Long term – endures for more than 5 years;
- Reversible long-term effects – long-term effects, which endure throughout the lifetime of the Proposed Development, but which cease once the Site has been decommissioned (adverse operational effects will all fall into this category); and
- Permanent effects – effects which will not be reversed following decommissioning (e.g. biodiversity net gain and habitat improvements).

Decommissioning

6.7.6 For the purposes of the EIA, decommissioning effects are identified as those impacts that originate and conclude during the decommissioning stage, with no lasting effects beyond the completion of this phase. Effects of the Proposed Development during decommissioning are likely to include, but not be limited to:

- Traffic, noise and vibration from decommissioning activities;
- Dust generation;
- Site Runoff;
- Vehicular disruption to road networks (depositing mud and risk of spillages); and
- Landscape and visual intrusions of machinery and equipment.

6.7.7 As with construction phase effects, some aspects of decommissioning will endure for longer than others.

6.8 Approach to Mitigation

6.8.1 Mitigation measures, beyond those already considered as standard good practice (e.g., as detailed in the oCEMP), will be proposed to prevent, reduce, or address any potentially significant adverse environmental effects identified. Each technical topic of this Scoping Report investigates the measures recommended to mitigate likely significant effects at this stage of the Proposed Development's progression. For consistency throughout the EIA, this strategy of avoidance, prevention, reduction and offsetting is a hierarchical one which seeks:

- First to avoid likely effects;
- Then to reduce those which remain; and
- Last, where no other measures are possible, to propose compensatory measures to offset the predicted effect.

6.8.2 Mitigation will be embedded within the Proposed Development, secured through the DCO and will be documented as part of the Application.

6.8.3 The Advice Note on the Commitments Register[21] defines commitments as "*both embedded measures (measures integral to the design of the project) and additional measures (measures which are not integral to the project), and monitoring proposed by an applicant to either avoid or minimise adverse effects or to provide beneficial outcomes in order to secure good design.*"

6.8.4 The first iteration of the Proposed Development's Commitments Register is included as **Appendix C, Commitments Register** of this Scoping Report.

6.9 Cumulative Effects

6.9.1 An assessment of cumulative effects is crucial for Solar NSIPs as it ensures a comprehensive evaluation of the combined impacts of multiple projects on the environment and communities, or the combined impact of multiple environmental effects on a single receptor. This holistic approach helps identify potential cumulative effects that might not be apparent when assessing projects individually, such as the combined impact on local ecosystems, water resources, and community health.

6.9.2 **Chapter 18, Cumulative Effects** establishes the cumulative long list (stage 1) and short list (stage 2) in accordance with the NSIP Advice on Cumulative Effects Assessment[22] introduced in September 2024.

6.10Environmental Topics

6.10.1 The subsequent chapters identify the environmental topics encompassed within this Scoping Report. They also outline the anticipated likely effects and the proposed methodology for conducting topic assessments. In some instances, the scope of the assessment is based on environmental information already collected (including desk study data, Site walkovers and previously conducted survey work), which is being used to inform the emerging design of the Proposed Development.

6.10.2 The following topics are those for which standalone chapters are not anticipated to be required in the ES. For clarity, these topics are not scoped out of the EIA. They are scoped in, but they will form an 'Other Environmental Topics' chapter. These topics comprise:

- Waste;
- Glint and Glare;
- Telecommunications and Utilities; and
- Major Accidents and Disasters.

6.10.3 The environmental topics that require separate chapters within this Scoping Report, the Draft ES, and the subsequent ES include:

- Biodiversity and Nature Conservation;
- Landscape and Visual;
- Cultural Heritage and Archaeology;
- Ground Conditions and Land Quality;
- Water Resources and Flood Risk;
- Climate Change and Greenhouse Gas Assessment;
- Air Quality;
- Traffic and Transport;
- Noise and Vibration; and
- Socio-Economics, Land Use, Tourism and Recreation.

7 BIODIVERSITY AND NATURE CONSERVATION

7.1 Introduction

7.1.1 This chapter addresses the issues of biodiversity and nature conservation and details the proposed approach to assessing the potential effects of the Proposed Development (as defined in **Chapter 3, The Proposed Development**) on sensitive ecological receptors and how mitigation will be incorporated. The following sections provide a brief overview of the baseline survey findings and their value to date, any additional desk study information obtained, including about designated areas on and around the Proposed Development, and set out additional surveys proposed and key stakeholders who will be consulted.

7.2 Topic-Specific Legislation and Guidance

7.2.1 The approach has taken account of legislation, policy and associated guidance, including the examples listed in the sections below.

Legislation

- Directive 2009/147/EC on the Conservation of Wild Birds ('Birds Directive')[23];
- Directive 92/43/EEC on Conservation of Natural Habitats and of Wild Fauna and Flora (as amended) ('Habitats Directive')[24];
- Hedgerow Regulations 1997[25];
- Protection of Badgers Act 1992[26];
- The Environment Act 2021[27];
- The Conservation of Habitats and Species Regulations 2017[28]; (as amended[29]) ('Habitat Regulations');
- The Wildlife and Countryside Act 1981 (as amended)[30];
- The Natural Environment and Rural Communities (NERC) Act 2006[31];
- The Town and Country Planning (Environmental Impact Assessment) Regulations 2017[1]; and
- UK Biodiversity Framework (2024)[32].

National and Local Planning Policies

- National Planning and Policy Framework (NPPF)[7];
- Overarching National Policy Statement for Energy (EN-1) with reference to Section 4.6 for assessment principles on Environmental and Biodiversity Net Gain and Section 5.4 for impacts[4];
- National Policy Statement for Renewable Energy Infrastructure (EN-3) with particular reference to Paragraph 2.3.6 for National designations, Paragraphs 2.10.76 - 2.10.90 for impacts and paragraphs 2.10.12 – 2.10.13 for mitigation[5];

- National Policy Statement for Electricity Networks Infrastructure (EN-5) with reference to Section 2.5 regarding biodiversity net gain, Paragraphs 2.9.3 – 2.9.6 regarding impacts and Paragraphs 2.10.2 – 2.10.4 regarding mitigation[6];
- Rotherham Metropolitan Borough Council Local Plan[9];
- *Policy NE 1: Biodiversity.* Dinnington St Johns Neighbourhood Plan[33];
- *Policy GS1: Biodiversity & Green Infrastructure*. Wickersley Neighbourhood Plan[34];
- *Policy M9: Nature Conservation.* Maltby Neighbourhood Plan[35];
- Sheffield and Rotherham Local Biodiversity Action Plans (LBAPs)[36,37]; and
- South Yorkshire Local Nature Recovery Strategy (LNRS) (Developing)[38].

Guidance

- Chartered Institute of Ecology and Environmental Management (CIEEM) (2024). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine[39];
- Stanbury, *et al.* (2021). Birds of Conservation Concern (BoCC): the population status of birds in the United Kingdom[40];
- Bat Conservation Trust (2023). Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th Edition)[41];
- Reason, P.F. and Wray, S. (2023). UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats[42];
- Froglife (1999). Reptile Survey: An introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice Sheet 10[43];
- English Nature (2001). Great crested newt mitigation guidelines[44];
- Harris *et al.* (1989). Surveying Badgers, Mammal Society[45];
- Defra (2007). Hedgerow Survey Handbook: A standard procedure for local surveys in the UK, 2nd Edition[46];
- Chanin P (2003). Monitoring the Otter *Lutra lutra*. Conserving Natura 2000 Rivers Monitoring Series No. 10[47];
- Gow, *et al.* (2016). The Water Vole Mitigation Handbook: Mammal Society Mitigation Guidance Series[48];
- WildCRU (2011). The Water Vole Conservation Handbook (3rd Edition)[49];
- UKHab Ltd (2023). UK Habitat Classification Version 2.0[50]; and
- MoRPh River Condition Assessment[51].

7.3 Preliminary Baseline Conditions

Study Area

7.3.1 Information is being gathered to inform the assessment both from the Site and in the surrounding area. The extent to which data will be gathered depends on the

Area of Influence (AoI) of the Proposed Development and the biodiversity features that could be affected.

7.3.2 The nearest European designated areas are over 15 km away and there are no connecting pathways to the Site. There are also no European sites that support geese, or bats within 20 or 30 km respectively of the Proposed Development.

7.3.3 It is expected that the AoI will be localised around the Site and hence records of designated sites, and protected and priority habitats and species from the local ecological records centres (Rotherham, Sheffield and Derbyshire) and from MAGIC (Multi Agency Geographic Information for the Countryside) have been obtained for a radius of 2 km around the Site Boundary.

Temporal Scope

7.3.4 Field surveys are scheduled to be completed in 2025.

7.3.5 There will be a commitment to the necessary Biodiversity Net Gain (BNG) requirements over a period of at least 30 years, with the habitat prescriptions proposed to be in place for at least the duration of the Proposed Development (60 years).

Preliminary Baseline Conditions

7.3.6 The preliminary baseline conditions presented here are based on the findings of initial field surveys on and around the Proposed Development, supplemented by desk study records.

7.3.7 This review is predominantly focussed on the area within the Site Boundary, as the exact route of the underground cables is unknown and the Cable Corridor Options (**Figure 3.1**) have not been surveyed at the time of writing. The Cable Corridor Options will be refined as part of the EIA process and will be assessed within the ES. An extended UKHab Survey has been undertaken across approximately 80% of the Proposed Development (covering land within W1, W2, and W3) between June and October 2024 based on available land access to date (see **Figures 7.12 to 7.14**). It is envisaged that the remaining areas will be surveyed in 2025, subject to access becoming available.

7.3.8 Other more focused surveys undertaken include a walkover survey in June / July 2024, largely from publicly accessible points to assess the suitability of the habitats to support birds. To identify the presence of great crested newt (GCN) (*Triturus cristatus*), a Habitat Suitability Index (HSI) assessment and eDNA sampling was undertaken at four ponds in June 2024. Ground Level Tree Assessments (GLTA) for bats (see **Figure 7.15**), and badger (*Meles meles*) surveys are currently ongoing.

7.3.9 Further surveys will be undertaken over the winter of 2024 / 2025 and throughout 2025 (see **'Further Surveys' Section, from Paragraph 7.3.30**).

Survey Findings

Habitats

7.3.10 The land surveyed was predominantly (approximately 45%) cereal (e.g. wheat, barley, and oat) and (approximately 18%) non-cereal cropland use (e.g. rapeseed, flax, and bean crops). The fields appeared to be intensively sprayed, with limited

arable weeds such as camomile (*Matricaria chamomilla*) and field speedwell (*Veronica agrestis*) recorded. However, the UKHab survey recorded small areas of cereal and non-cereal fields that constituted arable field margins (a priority habitat) or were otherwise managed for wildlife and providing a buffer from field boundary habitat. Field margins typically ranged from 2 m to 6 m in width and recorded a range of commonly found arable weed species, including thistles, camomile, fat hen (*Chenopodium album*), ragwort, (*Jacobaea vulgaris*), field speedwell, doves foot cranesbill (*Geranium molle*), and chickweed (*Stellaria media*). Other/un-specified agricultural land (approximately 12%) included set-aside, horticultural land, and other arable land.

7.3.11 Modified grassland comprised approximately 20% of the surveyed land, which was dominated by perennial ryegrass (*Lolium perenne*) with creeping buttercup (*Ranunculus repens*) and white clover (*Trifolium repens*). Smaller areas of neutral grassland (approximately 2%) were found in scattered land parcels throughout the survey area, typically comprising Yorkshire fog (*Holcus lanatus*) and cock's-foot (*Dactylis glomerata*), with areas dominated by *Deschampsia sp*.

7.3.12 In areas surveyed, the arable fields were bordered by a mix of predominantly native hedgerows, which typically included a mix of blackthorn (*Prunus spinosa*), hawthorn (*Crataegus monogyna*) and elder (*Sambucus nigra*), or less, for species poor hedgerows. Species rich hedgerows comprised of species such as blackthorn, hawthorn, holly (*Ilex* sp.), elder, field maple (*Acer campestre*), pedunculate oak (*Quercus robur*), hazel (*Corylus avellana*), and grey willow species (*Salix* sp.), and included trees in places.

7.3.13 There is no ancient woodland within the Site (see **Paragraph 7.3.25**). Only small, fragmented areas of lowland mixed deciduous woodland and broadleaved deciduous woodland (approximately 1%) were recorded within the Site. Smaller areas of native scrub (approximately 25%) were found in scattered locations within the Site, and typically comprised blackthorn, hawthorn, and bramble species (*Rubus* sp.).

7.3.14 Larger rivers and waterbodies (e.g. reservoirs) lie adjacent to, or in the surrounds of, the Site, although several smaller watercourses and ponds were recorded within the Site.

Species

7.3.15 A walkover by ornithology specialists was completed in June and July 2024. The visits sampled land throughout the Site with the aim of reviewing habitat suitability for birds and collating records of species on the Site, to help inform the scope of more detailed surveys.

7.3.16 A total of 53 species were recorded on the walkovers within, close to or overflying the Site. Overall, the breeding bird assemblage was typical of the geographic area and habitats present. The Site was dominated by winter-sown arable farmland, which is suboptimal for most bird species associated with open farmland habitats, but pea/bean fields and grassland (some cut) were interspersed through the Site, providing variation in habitat and birds. Hedgerows along many field boundaries supported further species. Species of conservation importance associated with farmland habitats are listed below:

- Lapwing (*Vanellus vanellus*) - observed in four locations, including at least two nests in a weedy field and further territorial behaviour in another part of the Site;

- Kingfisher (*Alcedo atthis*) - one recorded along Ulley Brook;
- Skylark (*Alauda arvensis*) - widespread in suitable habitats across the Site;
- Yellow wagtail (*Motacilla flava*) - observed overflying the Site and likely to breed within the Site in small numbers, with one bird observed foraging in a bean field;
- Yellowhammer (*Emberiza citrinella*) - recorded in low numbers in suitable habitats across the Site and assumed to breed locally; and
- Linnet (*Linaria cannabina*) - individuals and small flocks recorded and assumed to breed within the suitable habitat within the Site.

7.3.17 The eDNA samples from the four ponds surveyed were all negative and hence GCN, a protected species, were not present in them.

7.3.18 There were several fauna records as part of the extended UKHab survey including regular sightings of brown hare (*Lepus europaeus*; a priority species) and some evidence of badger (a protected species). However, the timing of the survey over the summer months was suboptimal for detecting signs of badger due to the denser vegetation, and further badger surveys are ongoing at the time of writing.

7.3.19 A number of trees were highlighted during the extended UKHab survey, to be checked for their suitability to support roosting bats. A GLTA is ongoing at the time of writing.

7.3.20 The Site contains suitable habitat for bats (all protected species), including waterbodies and watercourses, woodlands and hedgerows. As part of the UKHab survey, trees were identified that appeared to have Potential Roost Features (PRF) or required further assessment to confirm if PRFs are present. There are brown long-eared bat (*Plecotus auritus*) and pipistrelle bat (*Pipistrellus* sp.) tree roosts recorded within 250 m of the Site Boundary and close to Burnt Wood ancient woodland. There are a small number of agricultural buildings on the Site that will be assessed for their suitability to support bats following completion of an extended UKHab assessment in those land parcels.

7.3.21 The larger watercourses and waterbodies that are likely to support otters and water voles lie outside the Site, either adjacent (e.g. Ulley Brook and reservoirs near Woodall), or in the wider surrounds.

7.3.22 A number of invasive species were identified including Himalayan balsam (*Impatiens glandulifera*), giant hogweed (*Heracleum mantegazzianum*) and Japanese knotweed (*Reynoutria japonica*).

Supplementary Desk Study Information

7.3.18 In addition to the on-site surveys, other existing information was gathered to help set the Site and current findings in context and also to seek evidence of habitats and flora and fauna species that may influence the need for further surveys and inform the design. The approach to this is set out in the **'Further Surveys' Section, from Paragraph 7.3.30**.

Designated Sites

7.3.19 The Site Boundary has been drawn up to avoid designated areas and ancient woodland, wherever possible. No international or national sites of importance,

Local Nature Reserves (LNR), or ancient woodland are directly affected. Only two Local Wildlife Site (LWS) are adjacent to the Site and one LWS lies within the Site and therefore may be directly affected (see **Figures 7.5 to 7.8**).

7.3.20 The nearest designated area of international importance is the South Pennine Moors Special Area of Conservation (SAC) / Special Protection Area (SPA), located 17.5 km southwest from the nearest point of the Proposed Development. Additionally, no SPA / Ramsar sites that contained geese as part of the qualifying interest are present within 20 km of the Proposed Development and no SACs with bats as a qualifying feature are present within 30 km.

7.3.21 The nearest Site of Special Scientific Interest (SSSI), Crabtree Wood, lies approximately 900 m south of the Proposed Development and is one of only two biological SSSIs within 2 km (see **Table 7.1** and **Figures 7.1 to 7.4**).

7.3.22 Similarly, there are no statutory LNRs on the Site. The nearest is Firsby Reservoir, that lies adjacent to the Site to the southwest of W1, with a further three within 2 km (see **Table 7.1** and **Figures 7.1 to 7.4**).

Table 7.1 National / Local Statutory Designated Sites within 2 km of the Proposed Development

Designated Site	Distance from Proposed Development (km)	Site Description
Firsby Reservoir LNR	Adjacent	Standing open water
Crabtree Wood SSSI / LWS	0.9 km	Standing open water, green corridor for wildlife movement
Catcliffe Flash LNR	1.1 km	Flowing river habitat
Anston Stones Wood SSSI / LNR	1.3 km and 60 m	Limestone woodland, calcareous grassland, scrub and wetland
Old Denaby Wetland LNR	2.0 km	River, oxbow and subsistence wetland wildlife

7.3.23 The Site overlaps with approximately 43% of the Brampton Common LWS. Two further LWS (Ulley Country Park (CP) and Killimarsh Pond) are adjacent to the Site Boundary. Brampton Common is designated for its ancient and species rich hedgerows and because of its population of breeding skylark.

7.3.24 Nineteen other LWS / Proposed LWS lie within 1 km of the Site (see **Table 7.2** and **Figures 7.5 to 7.8**).

Table 7.2 Non-statutory Designated Sites

Designated Site	Distance & Direction from Proposed Development (m)	Site Description
Brampton Common LWS	On-site	Ancient/species-rich hedgerow and breeding skylark
Ulley Country Park LWS CP	Adjacent	Neutral grassland, acid grassland & wet grassland,

Designated Site	Distance & Direction from Proposed Development (m)	Site Description
		lowland heath, acid woodland & wet woodland
Killamarsh Pond LWS	10 m north	Standing open water
Pebley Oaks Lane Proposed LWS	95 m south	Mixed broadleaved woodland
High Moor LWS	250 m west	Habitat mosaic
Pebley Reservoir LWS	330 m southeast	Standing open water - lake
Park Brook Grasslands LWS	350 m southwest	Unimproved acid grassland
High Moor Pond	475 m west	Lowland swamp
Hut Lane Meadows LWS	500 m west	Unimproved neutral grassland
Comberwood Farm Pond pLWS	525 m southwest	Not stated
Crabtree Wood LWS	550 m southeast	Secondary broadleaved woodland
Nitticarhill Wood LWS	565 m southeast	Ancient woodland – plantation broadleaved
Comberwood Farm Meadow LWS	600 m southwest	Semi-improved neutral grassland
Hawke Wood Pond LWS	825 m south	Reptile/amphibian assemblage – great crested newt
Norwood Triangle Complex	960 m north	Scrub
Chesterfield Canal LWS	985 m northwest	Derbyshire Red Data Book (DRDB) species. Lowland swamp
Butcherlawn Pond LWS	1. km south	Invertebrate assemblage - odonata
Car Plantation	1.1 km southeast	Secondary broadleaved woodland
Longrybank Wood LWS	1.2 km south	Ancient woodland – plantation broadleaved
Thomson's Holt Pond LWS	1.3 km south	Standing open water - pond
Barlborough Hall South Pond pLWS	1.4 km south	Not Stated
High Wood and Thompson's Holt LWS	1.4 km southwest	Ancient semi-natural oak woodland

7.3.25 Blocks of ancient woodland lie adjacent to the Proposed Development (*e.g.* east of Ulley Lane, north of Moat Lane, and west of the A618 Pleasley Road), as well as in the wider area, and a veteran oak tree (*Quercus* species) lies approximately

400 m from the Site. Additionally, Nor Wood ancient woodland connects in contiguous habitat with broadleaved woodland adjacent to the Proposed Development at Killamarsh Lane (see **Figures 7.5 to 7.8**).

Habitats and Species Information

7.3.26 Collectively, the data requests to local biological record centres returned 653 records of bird species of conservation importance[52] since 1st January 2015. These data comprised 85 species, most of which are typical of the habitat in the area in and surrounding the Site. Some records, such as wildfowl and wading birds, pertained to wetland habitats not found on the Site. Species typical of farmland and hedgerow habitats and assumed to be present on the Site, but not recorded during the walkover (**Paragraph 7.3.11**), included grey partridge (*Perdix perdix*) and tree sparrow (*Passer montanus*).

7.3.27 The data included 16 species listed on Schedule 1 of the Wildlife and Countryside Act 1981 and are therefore afforded legal protection from disturbance at or near an active nest. Most of these occur as vagrants or non-breeding visitors to the area (e.g. on passage or during winter), but species with the potential to nest within the Site, or surrounds, included quail (*Coturnix coturnix*), barn owl (*Tyto alba*), kingfisher, peregrine (*Falco peregrinus*), and Cetti's warbler (*Cettia cetti*).

7.3.28 A review of publicly available datasets, such as eBird[53] and the Sheffield Bird Study Group website[54] provided additional context to the bird interests in the area and helped to inform the proposed survey scope.

7.3.29 The desk study identified records of the following species in the surrounding area that were not identified during the extended UKHab survey:

- Seven species of foraging and commuting bats (brown long-eared bat, common and soprano pipistrelles, Natterer's (*Myotis nattereri*), Daubenton's (*M. daubentonii*), Leisler's (*Nyctalus leisleri*) and noctule (*N. noctule*)), and some unidentified *Myotis* species (all protected species);
- Otter (*Lutra lutra*; a protected species);
- Harvest mouse (*Micromys minutus*) and European hedgehog (*Erinaceus europaeus*) (both priority species);
- Great crested newt, grass snake (*Natrix natrix*; a protected species) and common toad (*Bufo bufo*; a priority species);
- One record of white-clawed crayfish (*Austropotamobius pallipes*; a protected species);
- Six priority insect species: ghost moth (*Hepialus humuli*), cinnabar moth (*Tyria jacobaea*), dingy skipper (*Erynnis tages*), shaded broad-bar (*Scotopteryx chenopodiata*), small heath (*Coenonympha pamphilus*), and wall brown butterfly (*Lasiommata megera*);
- Bluebell (*Hyacinthoides non-scripta*; a protected species); and
- Invasive species such as wall cotoneaster (*Cotoneaster horizontalis*), and New Zealand Pygmy weed (*Crassula helmsi*).

Further Surveys

7.3.30 The findings of the surveys and the desk study have identified the presence, or potential for their presence, of flora and fauna species of importance, including legally protected species. Additional surveys, as listed below will be undertaken.

7.3.31 In addition, an extended UKHab survey and any subsequent detailed surveys will be undertaken along the Cable Corridor Options, as these have yet to be surveyed.

Hedgerow Survey

7.3.32 A survey will be completed predominantly between June and July 2025, with a focus on species rich hedgerows to determine whether they comprise Important Hedgerows as defined in the regulations and associated guidance[46].

Birds

7.3.33 A winter bird survey, following an amended version of the British Trust for Ornithology's (BTO) Winter Farmland Bird Survey[55], has been undertaken with the reporting currently ongoing. The aim of the winter bird surveys is to determine whether any species of conservation importance52 regularly feed or roost within the survey area. The Site (excluding Cable Corridor Options) has been surveyed once per month between October 2024 and March 2025. Surveys focused on areas most likely to support wintering birds (e.g. arable fields / hedgerows, grasslands, water bodies, ditches and conservation areas), and record habitat associations of birds detected.

7.3.34 A breeding bird survey will be completed following a reduced version of the method recommended by the Bird Survey and Assessment Steering Group[56]. The survey will identify the composition and spatial distribution of the breeding bird assemblage within the Site and immediate surrounds. Four visits are proposed to be completed between April and June 2025. Full adoption of the method would require six visits; however, this is recommended to identify the breeding assemblage within complex habitats, such as lowland deciduous woodland, which is present within the Site, but only in small, fragmented areas. Much of the Site is intensive arable farmland, which is more open, and bird species are more easily detected. A four-visit survey exceeds or is comparable to recommended methods for farmland species key to the assessment, such as lapwing, skylark, and yellow wagtail[57], and this approach will be agreed with Natural England in advance of the survey.

7.3.35 Where applicable, species-specific survey efforts will be used to identify features of particular importance to the assessment. Features with the potential to support barn owl, such as buildings, large tree holes, and nest boxes will be subject to review and further survey or physical inspection to identify use.

7.3.36 The results of all bird surveys will be reviewed as received, to identify any potential species of interest and inform the need for any additional, targeted surveys.

Great Crested Newts

7.3.37 A total of 27 ponds on or within 250 m of the Site will require survey for great crested newts (**Figures 7.9 to 7.11**). Each pond will be subject to an HSI survey,

eDNA sampling and up to six visits using population survey techniques (e.g. torching, bottle trapping, netting, egg searches) (see **Section 7.2**). In the event of a negative result at a pond from the eDNA sampling, all other GCN surveys at the pond will cease at that point, as GCNs will have been shown to be absent.

Badgers

7.3.38 Given the evidence of badger activity from both the extended UKHab survey and the desk study information, a walkover survey covering suitable habitats to identify badger presence and/or signs is ongoing at the time of writing as the vegetation has died back and signs are more evident.

Bats

7.3.39 Given the suitable habitat, evidence of presence from historical records, and the records of trees that need to be assessed to see if they could support roosts for bats, further surveys will be undertaken. All will follow prevailing Bat Conservation Trust (BCT) guidance41.

7.3.40 As the Site covers a large area, a Daytime Bat Walkover Survey (DBW) will be undertaken to build on the general findings of the extended UKHab survey. It will confirm areas for the focus of more detailed assessment and confirm which habitats are of high suitability for foraging and commuting bats, and other areas of moderate or low suitability.

7.3.41 A GLTA is ongoing at the time of writing, for trees where avoidance of loss, pruning and / or disturbance effects cannot be guaranteed (see **Figure 7.15**). The surveys will follow the guidance and entail a detailed look at the exterior of a tree from the ground to determine if it supports PRFs that could be used by roosting bats. It is possible that further investigation of any confirmed PRFs may be required (e.g. through tree climbing, emergence surveys), but the need for and location of such surveys will be determined by the findings of the GLTA and a review of the Proposed Development's layout and the potential for effects at each PRF.

7.3.42 A Night-time Bat Walkover (NBW) will be undertaken in each season to gather data on bat flight activity in representative samples of the habitats on the Site. Due to the size of the Site, it is expected that each "survey visit" will require multiple walkovers (each up to 5 km) over several consecutive nights, across all habitats represented on the Site.

7.3.43 Vantage Point (VP) surveys will be undertaken prior to the NBWs across the habitat types on-site and used to provide information about the number of bats, the direction of foraging and ground truthing the findings of the static detectors.

7.3.44 Static detectors will be deployed for five nights per month between April to October 2025.

Otter and Water Vole

7.3.45 The presence of watercourses both on and adjacent to the Site that could support otter and water vole, along with records in the surrounding area of otter, means there is a requirement for further surveys. Surveys for both features will be completed at the same time.

7.3.46 As surveys for water vole are seasonal, a two-visit survey will be completed during the active water vole season to accessible banksides within the Site. Visit 1 (mid-April to June 2025) will focus on identifying and classifying habitat suitability, water vole burrows, and incidental field signs. Visit 2 (July to September 2025) will focus on a detailed inspection of banksides for burrows and field signs. Surveyors will also be searching for otter holts and / or other signs of otter, such as spraints, prints and couches and checking habitats up to 200 m from the Site. A minimum gap of two months will be required between the first and second survey visits and surveys will not be carried out during periods when there is heavy rain, or where there has been rain in the preceding five days prior to survey.

Reptiles

7.3.47 Whilst no reptiles were recorded by the extended UKHab survey, it did identify habitats that may be used by reptiles including basking, foraging and sheltering habitat, and there is evidence from the desk study of grass snake in the vicinity of the Site. Locations where specific surveys are required will be identified. Surveys will likely involve deployment of artificial refugia in suitable habitat (e.g. grassland banks, or field margins), in April to May 2025 or September 2025 (when temperatures and weather conditions are most likely to be suitable for reptile activity) allowing a bedding in period of a fortnight before a seven-visit survey of the artificial refugia and search of any nearby refugia such as log piles.

Modular River Physical Survey (MoRPh)

7.3.48 The MoRPh field survey will be undertaken following current guidance[58] to characterise the local physical structure of watercourse channels and their margins within the Site Boundary at a scale to complement the UKHab surveys. This will be completed by MoRPh trained and registered surveyors. The survey will likely be conducted over a river length of 10 to 40 m. Data will be entered into the MoRPh database by the trained surveyors. 14 numerical indicators will be extracted from the survey data and mapped and downloaded along with the raw data. The surveys will be completed of watercourses within or up to 10 m from the Site Boundary. The results of the MoRPh surveys will help inform, and be incorporated into, the statutory BNG assessment for the Proposed Development.

7.4 Potential Effects and Mitigation

7.4.1 The assessment will consider effects from the Proposed Development, both on-site and in the surrounds. Examples of the potential effects considered, which may be beneficial or adverse; are listed below:

- Loss of habitat or species of flora and fauna from permanent or temporary land take;
- Disturbance to, or displacement of a species from the Site because of permanent or temporary land take;
- Impacts to adjacent habitats (and the species that use them) that are not directly required for construction or operation (e.g. through movements of vehicles and site personnel, lighting, dust, noise and vibration, discharges to water, alteration to drainage regimes);
- Fragmentation of habitat or severance of ecological corridors (such as watercourses, hedgerows, flyways); and

- Creation of new habitat and the introduction of species as a result of the reinstatement works and landscaping.

7.4.2 The assessment will rely on input from other technical disciplines, for example the noise, air quality, water resources and flood risk assessments, all of which will provide the basis for assessing effects on biodiversity features.

7.4.3 Mitigation measures will be developed taking account of the detailed survey findings and the evolving design. The approach will follow the mitigation hierarchy, for example, the Site Boundary has been drawn up already to avoid designated areas and ancient woodland wherever possible. The assessment will include consideration of indicative buffers for specific biodiversity features identified to seek to avoid effects (*e.g.* 10 m from watercourses, 15 m or canopy plus 5 m from woodland, 200 m from otter holts).

7.5 Technical Scope and Approach to EIA

7.5.1 The Ecological Impact Assessment (EcIA) within the ES will consider the likely effects of construction, operational and decommissioning activities of the Proposed Development on habitats and species of conservation importance. The assessment will be informed by a combination of field surveys, desk study findings, and consultation with relevant statutory and non-statutory organisations.

7.5.2 The residual effects will be presented to make it clear to the decision maker and stakeholders the likely significance of the effects of the Proposed Development on nature conservation interests, with all mitigation measures in place. Mitigation measures are included to avoid, minimise, or reduce adverse effects. The assessment will also consider potential cumulative effects.

7.5.3 The significance of effects has been determined using standard impact assessment methods and criteria, including the following:

- The magnitude of both positive and negative effects, as determined by intensity, frequency and by the extent of the effect in space and time;
- The vulnerability of the habitat or species to the changes likely to arise from the Proposed Development;
- The ability of the habitat, species, or ecosystem to recover, considering both fragility and resilience;
- The viability of component ecological elements and the integrity of ecosystem function, processes, and favourable condition;
- Value within a defined geographic frame of reference (e.g. UK, national, regional, local);
- The biodiversity value of affected species, populations, communities, habitats, and ecosystems, considering aspects such as rarity, distinct subpopulations of a species, habitat diversity and connectivity, species-rich assemblages and species distribution and extent; and
- Designated sites and where a site have multiple designations, the effects on the features of each designation; and protected species status.

7.5.4 In accordance with the Guidelines for EcIA in the UK and Ireland produced by the CIEEM[39] an effect is either ‘significant’ at a particular geographical level (e.g. internationally, nationally, locally), or ‘not significant’. A ‘significant effect’ is an

effect "…*that either supports or undermines biodiversity conservation objectives for important ecological features, or for biodiversity in general*."

7.5.5 Legal protection will be considered separately from value. The protection of a particular ecological feature through international or national legislation does not mean that the feature is of international or national importance. For example, badgers and their setts are protected under national legislation[26], but are a widespread species and this legal protection does not mean that the presence of a badger sett is of national importance.

7.5.6 In addition to the EcIA, separate consideration will be given to Habitats Regulations Assessment (HRA) by the Competent Authority, in this case the Secretary of State as the decision-making body. Based on the information about European sites provided in **Paragraph 7.3.20**, it is expected that this will take the form of a brief statement confirming that there are no pathways that could lead to effects on a European site from the Proposed Development.

7.5.2 Proposed Scope of the EIA

7.5.1 Surveys and assessments are currently either not started yet, or are incomplete and ongoing at the time of writing. Where the surveys and assessments identify additional need for other surveys, then these will be added to the elements that can be scoped in or out.

7.5.2 **Table 7.3** sets out the elements of the biodiversity and nature conservation assessment proposed to be scoped in or out of the EIA.

Table 7.3 Elements Proposed to be scoped in or out of the EIA

Potential Effect / Topic	Proposal for Assessment within EIA	Rationale for Scoping in/out of the EIA
Construction Phase		
Protected Species – White clawed crayfish, hazel dormouse	Scoped Out	Not known from the Site or Area of Influence. White clawed crayfish likely absent due to presence of invasive crayfish species recorded extensively in desk study.
International Statutory Designated Sites	Scoped Out	Not present in the Site or Area of Influence.
Protected Habitats – Ancient Woodland	Scoped Out	Not present within the Site and avoidance buffer to be implemented from the Proposed Development to nearest ancient woodland.
Local and National Designated Sites	Scoped In	A local designated site (Brampton Common LWS) is recorded on Site, and local and national designated sites are located within the Area of Influence.
Protected Species – Bats, otter, water vole, great crested newt, reptiles, badger, nesting and Schedule 1 listed birds	Scoped In	Species recorded in desk study and Area of Influence, and habitats present on Site suggest these species could be present. Habitats are suitable and nesting birds do occur within the Site. Habitat suitable for species such as barn owl and kingfisher are

Potential Effect / Topic	Proposal for Assessment within EIA	Rationale for Scoping in/out of the EIA
		present, and further surveys are proposed to identify presence of species.
Priority Species – Birds, Amphibians and Mammals	Scoped In	Species recorded in desk study and Area of Influence, and habitats present on Site suggest these species could be present.
Priority Habitats – Hedgerows, broadleaved woodland, ponds, and watercourses	Scoped In	Habitats recorded in desk study and Area of Influence, and habitats present on Site. Brampton Common LWS is designated for its species rich hedgerows. Conditions suggest that 'Important hedgerows' are present on Site.
Invasive Species	Scoped In	Species recorded in desk study and Area of Influence, and habitats present on Site suggest these species could be present.
Operational Phase		
Protected Species – White clawed crayfish, hazel dormouse	Scoped Out	Not known from the Site or Area of Influence. White clawed crayfish likely absent due to presence of invasive crayfish species recorded extensively in desk study.
International Statutory Designated Sites	Scoped Out	Not present in the Site or Area of Influence.
Protected Habitats – Ancient Woodland	Scoped Out	Not present within the Site and avoidance buffer to be implemented from the Proposed Development to nearest ancient woodland.
Local and National Designated Sites	Scoped In	A local designated site (Brampton Common LWS) is recorded on Site, and local and national designated sites are located within the Area of Influence.
Protected Species – Bats, otter, water vole, great crested newt, reptiles, badger, nesting and Schedule 1 listed birds	Scoped In	Species recorded in desk study and Area of Influence, and habitats present on Site suggest these species could be present. Habitats are suitable and nesting birds do occur within the Site. Habitat suitable for species such as barn owl and kingfisher are present, and further surveys are proposed to identify presence of species.
Priority Species – Birds, Amphibians and Mammals	Scoped In	Species recorded in desk study and Area of Influence, and habitats present on Site suggest these species could be present.
Priority Habitats – Hedgerows, broadleaved woodland, ponds, and watercourses	Scoped In	Habitats recorded in desk study and Area of Influence, and habitats present on Site. Brampton Common LWS is designated for its species rich hedgerows. Conditions suggest that 'Important hedgerows' are present on Site.

Potential Effect / Topic	Proposal for Assessment within EIA	Rationale for Scoping in/out of the EIA
Invasive Species	Scoped In	Species recorded in desk study and Area of Influence, and habitats present on Site suggest these species could be present.
Decommissioning Phase		
The Decommissioning Phase mirrors the activities of the Construction Phase in reverse. It is anticipated that some biodiversity features that are scoped in or out within the Construction Phase may be applicable at the Decommissioning Phase; however, this would be subject to the prevailing legislative environment at the time of the Decommissioning Phase.		

7.6 Limitations and Assumptions

7.6.7 As baseline surveys are still underway, and certain areas still require an Extended UKHAB survey (including The Cable Corridor Search Area), there may be new findings which result in an increase / decrease of the survey scope which has been described in this chapter.

7.6.8 Where possible, valuable habitats will be retained, will remain undisturbed, and will remain functionally suitable to support biodiversity within the Proposed Development. These habitats include:

- Woodland;
- Ponds;
- Watercourses; and
- Hedgerows.

8 LANDSCAPE AND VISUAL

8.1 Introduction

8.1.1 This chapter sets out the approach and scope for the Landscape and Visual Impact Assessment (LVIA) which will consider the potential impacts of the Proposed Development on the landscape and visual amenity of the Site and surrounding area. It seeks to establish a Study Area appropriate to the size and scale of the Proposed Development and identify the sensitive landscape and visual receptors within the Study Area that will need to be scoped into the LVIA.

8.1.2 The LVIA will be carried out in accordance with Guidelines for Landscape and Visual Impact Assessment, Third Edition, 2013 (GLVIA3)[59] and supporting Technical Guidance Notes as set out in the guidance section of this chapter.

8.2 Topic-Specific Legislation and Guidance

8.2.1 The scope of the landscape and visual assessment of the EIA has been developed in line with the following key legislation, policy and associated guidance.

International Policy

European Landscape Convention (Council of Europe, 2004 as Amended by the 2016 Protocol)[60]

8.2.2 The UK is a member state on the Council of Europe and a signatory to the European Landscape Convention (ELC) 2004, which promotes the protection, management and planning of landscapes and organises international co-operation on landscape issues. The treaty introduces the concept of all landscapes having value in terms of quality of life and wellbeing. Signatories commit to

"acknowledging 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".

8.2.3 The LVIA will be a development specific process which accords with Article 6C of the ELC. The LVIA will be informed by extant Landscape Character Assessment studies (as described in **Section 8.3**), which more directly relate to the provision of Article 6C.

National Planning Policy

National Policy Statement for Energy EN–1 (Designated January 2024)4

8.2.4 NPS EN–1 sets out the government's policy for delivery of major energy infrastructure. It recognises that virtually all nationally significant energy infrastructure projects will have adverse landscape effects but that beneficial landscape character impacts may also arise. It sets out the need for applicants to

carry out a LVIA, including assessment of cumulative effects, and that this should include effects on landscape character, landscape components and visibility during construction and operation. NPS EN-1[4] also notes the need for careful siting and criteria for good design which takes account of potential impacts on landscape and visual amenity, to minimise negative effects, and recognising opportunities for landscape enhancement (including as a wider environmental gain and benefit in addition to biodiversity net gain). This is set out in the following sections which are of particular relevance to the LVIA:

- Section 4.3 considers environmental effects and considerations;
- Section 4.6, considers environment and biodiversity net gain;
- Section 4.7 provides criteria for 'good design' for energy infrastructure;
- Section 5.10 sets out the requirements of the LVIA and that it should take account of designated sites and local planning policy; and
- Section 5.11, considers land use, including open space, green infrastructure and green belt.

National Policy Statement for Renewable Energy Infrastructure EN-3 (Designated January 2024)5

8.2.5 NPS EN–3 sits alongside NPS EN–1 as the primary policy for nationally significant renewable energy infrastructure and provides relevant considerations for applicants regarding the potential impacts of renewable energy development on landscape and visual amenity, including visual impacts from PRoW, visual impacts of security and lighting measures, and the need to mitigate these as far as possible. With particular regard to solar farm development, it states that whilst it may be the case that the development covers a significant surface area, in the case of ground-mounted solar PV modules it should be noted that with effective screening and appropriate land topography, the area of a zone of visual influence could be appropriately minimised (Section 2.10 Solar Photovoltaic Generation, paragraph 2.10.95). Section 2.5 addresses the consideration of good design for energy infrastructure.

National Policy Statement for Electricity Networks Infrastructure EN-56

8.2.6 This NPS is to be read in conjunction with NPS EN–1 and NPS EN–3 and sets out the government's policy in relation to electricity networks infrastructure. Section 2.9 Applicant assessment and 2.10 Mitigation, address the need for LVIA and sets out the principal opportunities for mitigating adverse landscape and visual impacts of electricity networks infrastructure.

National Planning Policy Framework (Updated February 2025)7

8.2.7 The NPPF sets out the government's national planning policy for England. Of relevance to the LVIA is:

- Paragraph 135, which requires planning decisions to ensure that developments are visually attractive as a result of good architecture, layout and appropriate and effective landscaping, and that they are sympathetic to local character and history, including the surrounding built environment and landscape setting, while not preventing or discouraging appropriate innovation or change;

- Paragraph 136, which highlights the important contribution made by trees to mitigate and adapt to climate change and that planning decisions should ensure that opportunities are taken to incorporate trees with appropriate measures in place to secure the long-term maintenance of newly-planted trees, and that existing trees are retained wherever possible;
- Paragraph 187 a) and b), which requires that "*Planning policies and decisions should contribute to and enhance the natural and local environment by:*
  - *a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan).*
  - *b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland*"
- Paragraph 192, which states that opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.

Local Planning Policy

The City of Doncaster Local Plan ('Doncaster Local Plan 2015-2035')8

8.2.10 This Local Plan was adopted in 2021. Addressing climate change and increasing renewables is part of the CDC's vision to 2035, stating as an objective to "*reduce dependency on fossil fuels to reduce locally produced greenhouse gas emissions and minimise the impacts of climate change in line with the Sheffield City Region and encourage the transition to a low carbon borough*".

8.2.11 The key policies of relevance to the LVIA are listed out below with a summary of the policy requirements relevant to the LVIA.

Policy 26: Green Infrastructure

8.2.12 This policy requires CDC to protect, maintain, enhance and, where possible, extend or create Doncaster's green infrastructure. Proposals should:

- Create or enhance green corridors, including rights of way;
- Consider tranquillity;
- Avoid loss or damage or deterioration to green infrastructure assets; and
- Define and soften the edge of settlements to provide a high-quality transition between urban and rural areas.

Policy 27: Protecting Open Space and Non-Designated Open Space

8.2.13 CDC will protect open spaces, and within non-designated open space, development proposal will only be supported where:

- Visual amenity is retained and enhanced; and
- Green infrastructure connections are retained.

Policy 32 – Woodlands, Trees and Hedgerows

8.2.14 The Policy sets out the requirements for planting and that proposals will need to:

- Demonstrate that retained features are to be protected during development;
- Provide adequate landscape buffer adjacent to existing woodlands and at settlement edges;
- Provide sufficient provision of appropriate replacement planting; and
- Avoid the loss or deterioration of woodland.

Policy 33: Landscape (Strategic Policy)

8.2.15 Proposals will be supported that take account of the quality, local distinctiveness and the sensitivity to change of distinctive landscape character areas and individual landscape features. Development will be permitted if it conserves, enhances and, where possible, restores:

- The landscape character and local distinctiveness of the area including its historical, biodiversity, cultural character and its tranquillity;
- The distinctive setting of, and relationship between, settlements and buildings and the landscape including important views;
- The nature conservation value of the area including the pattern of woodland, forests, trees, field boundaries, vegetation and other features;
- The special qualities of rivers, waterways, wetlands and their surroundings; and
- The topography of the area including sensitive skylines, hillsides and geological features.

Rotherham Metropolitan Borough Council, Core Strategy 2013 – 2028 (September 2014)9

8.2.16 Rotherham Core Strategy was adopted in 2014. The policies of relevance to the LVIA are set out below.

Policy CS19: Green Infrastructure

8.2.17 The policy sets out RMBC's green infrastructure aspirations and that proposals will be supported which:

- Avoid damage to or loss of green infrastructure assets;
- Improve connectivity between new developments; and
- Assist with the integration of new development into the natural environment.

Policy CS21: Landscape

8.2.18 New development will be required to safeguard and enhance the quality, character, distinctiveness and amenity value of the Borough's landscape. This will be achieved through the principles set out below:

- All new development proposals will be required to respect and enhance the character and distinctiveness of the relevant National Character Areas and the Local Landscape Character Areas identified for Rotherham;
- Within Areas of High Landscape Value, development will only be permitted where it will not detract from the landscape or visual character of the area and where appropriate standards of design and landscape architecture are achieved;
- Significant landscape features, important views including landmarks and skylines will be safeguarded and enhanced. Proposals that reduce the negative visual impact of landscape detractors will be encouraged;
- Development will respect the setting of neighbouring settlements;
- Where opportunities exist, RMBC, and its partners, will support landscape enhancement, restoration, reclamation and other environmental improvements to enhance the quality, appearance and attractiveness of the Borough and encourage future investment, development and tourism;
- Landscape works shall be appropriate to the scale of the development;
- Developers will be required to put in place effective landscape management mechanisms including long term landscape maintenance for the lifetime of the development; and
- Support will be given to initiatives, strategies and projects working towards or contributing to landscape scale conservation, implementing an integrated approach to managing the environment and all its functions.

Policy CS22: Green Space

8.2.19 RMBC seeks to protect and improve the quality and accessibility of green spaces available and accord with the requirements below:

- Requiring development proposals to provide new or upgrade existing provision of accessible green space where it is necessary to do so as a direct result of the new development;
- Protecting and enhancing green space that contributes to the amenities of the surrounding area or could serve areas allocated for future residential development;
- Putting in place provision for long term management of green space provided by development; and
- Requiring all new green space to respect and enhance the character and distinctiveness of the relevant National Character Areas and the Local Landscape Character Areas identified for Rotherham.

Policy CS28: Sustainable Design

8.2.20 Proposals should respect and enhance the distinctive features of Rotherham. Design should take all opportunities to improve the character and quality of an area. The design should consider the following:

- The topography, landforms, green infrastructure assets, river and canal corridors, important habitats, waterways, woodlands, other natural features and open spaces that provide opportunities for an accessible choice of shade

and shelter, recognise opportunities for flood storage, wildlife and people provided by multi-functional green spaces; and

- Views and vistas to landmarks and skylines into and out of Rotherham Town Centre and across Rotherham to the surrounding countryside.

Rotherham Local Plan Core Strategy 2013 – 2028 Five Year Review Refresh9

8.2.21 The five-year refresh reviewed the current RMBC development plan policies, and of relevance is Policy CS21 which is required to be updated. It recommends that "*The policy remains compliant with national policy, the deletion of the Area of High Landscape Value designation in the Sites and Policies document should be reflected.*" See **Section 8.4** below for further information on the relevance of this change to the LVIA.

Neighbourhood Planning

8.2.22 Neighbourhood planning provides communities the opportunity to direct development in their area through creating plans and policies. The opportunity enables communities to take on new roles and responsibilities, preparing statutory planning documents that will be subject to independent examination and referendum.

8.2.23 The neighbourhood plans prepared with the support of RMBC of relevance to the LVIA are listed below.

Maltby Neighbourhood Plan 2017 - 202835

8.2.23 The Maltby Neighbourhood Plan adopted in 2024 includes land within the potential Cable Corridor Options. Although primarily concerned with the heart of Maltby, the Plan includes policies of relevance. The policies of relevance are set out below.

Policy M1: Promoting Good Quality and Distinctive Design

8.2.24 Development should enhance and conserve local distinctiveness by demonstrating high quality design that both respects the existing character and responds to the distinctive character.

Wickersley Neighbourhood Plan 2021 - 202834

8.2.25 Wickersley Neighbourhood Plan adopted in 2022 focusses on the heart of Wickersley but also extends southeast from the village into the countryside and part of W2 comprising Kings Pond Plantation Local Wildlife Site, which is designated under Policy GS1: Biodiversity and Green Infrastructure. Relevant policies include:

Policy GP1 – High Quality Design

8.2.26 All commercial development should take account of and comply with guidance set out in the Wickersley Design Code.

Policy GS1 – Biodiversity & Green Infrastructure

8.2.27 This policy sets out expectations for new development to comply with the following requirements:

- The provision of green infrastructure, and where possible, connect with the existing Strategic Green Infrastructure Corridor and/or Local Wildlife Sites and linkages;
- No severance of existing green infrastructure networks including Local Wildlife Sites;
- To achieve biodiversity net gain;
- The replacement of any trees which are proposed to be removed due to development, subject to viability. Off-site tree planting will only be accepted where it can be demonstrated that it is not possible for tree planting to be provided on-site;
- Ensuring that planting within proposals is beneficial for pollinators and that infrastructure to support and encourage wildlife and biodiversity is included, such as boxes for bats and birds, and hedgehog gaps between gardens to provide permeability; and
- Ensure that the design and management of green infrastructure respects and enhances the character and distinctiveness of an area with regard to habitats, species, ecosystems, accessibility, functionality and landscape types.

Planning Practice Guidance

Natural Environment (Landscape), (Updated 14 February 2024)[61]

8.2.8 With particular reference to paragraphs 036 (Reference ID: 8 – 036 - 20190721), and 037 (Reference ID: 8 – 037 - 20190721) which describe how planning policies can conserve and enhance landscapes and sets out the benefits of using landscape character assessment.

Renewable and Low Carbon Energy (Updated August 2023)[62]

8.2.9 With particular reference to paragraphs 005 (Reference ID: 5 – 005 - 20150618) and 013 (Reference ID: 5 – 013 - 20150327) which identify several LVIA considerations, including visual impact, mitigation through screening, and glint and glare.

Guidance

8.2.10 The LVIA will follow the guidance provided in the following documents:

- National Infrastructure Commission Design Group, (2020) Design Principles for National Infrastructure[63];
- Natural England (October 2014) An Approach to Landscape Character Assessment[64];
- The Landscape Institute and Institute of Environmental Management and Assessment (April 2013) Guidelines for Landscape and Visual Impact Assessment, 3rd edition;

- The Landscape Institute. (September 2019) Technical Guidance Note (TGN) 06/19 Visual Representation of Development Proposals[65];
- The Landscape Institute (September 2020) TGN 04/2020 Infrastructure[66];
- The Landscape Institute (May 2021) TGN 02-21 Assessing Landscape Value Outside National Designations[67];
- The Landscape Institute (March 2019) TGN 02/19 Residential Visual Amenity Assessment (RVAA)[68]; and
- The Landscape Institute (August 2024) LITGN-2024-01 Notes and Clarifications on Aspects of the 3rd Edition Guidelines on Landscape and Visual Impact Assessment (GLVIA3)[69].

8.3 Preliminary Baseline Conditions

Data Sources

8.3.1 The Draft ES and ES will present detailed baseline information on the Landscape and Visual effects resulting from the Proposed Development following the review and analysis of the following data sources:

- Aerial Imagery
- Ordnance Survey 1:25,000 and PRoW Explorer mapping;
- City of Doncaster Council, Landscape Character & Capacity Assessment of Doncaster Borough (2007);
- City of Doncaster Council, Doncaster Landscape Character Assessment Update – Sensitivity to Wind Energy Development (2020);
- Rotherham Metropolitan Borough Council, Landscape and Visual Impact Appraisal – Areas of High Landscape Value, (2009);
- Rotherham Metropolitan Borough Council, Landscape Capacity Assessment for Rotherham MBC (2015);
- Rotherham Metropolitan Borough Council, Rotherham Landscape Character Assessment and Landscape Capacity Study (2010);
- Rotherham Metropolitan Borough Council, Rotherham Strategic Green Belt Review (2012);
- Derbyshire County Council, The Landscape Character of Derbyshire (2014);
- Sheffield City Council, Preliminary Landscape Character Assessment;
- Natural England, National Character Areas (2014);
- Natural England, MAGIC geographic information relating to the natural environment (various datasets including national designations, open access land and ancient woodland inventory);
- DEFRA & Environment Agency, National LiDAR programme data (2022); and
- Reference to other environmental topics including Ground Conditions and Land Quality (**Chapter 10**), Biodiversity and Nature Conservation (**Chapter 7**), and Cultural Heritage and Archaeology (**Chapter 9**) of this Scoping Report.

Preliminary Study Area

8.3.2 In accordance with GLVIA3, the landscape and visual Study Area will include,

"…the site itself and the full extent of the wider landscape around it which the proposed development may influence in a significant manner".

8.3.3 GLVIA3 explains that the Study Area is

"*usually based on the extent of Landscape Character Areas likely to be significantly affected… [or be based] on the extent of the area from which the development is potentially visible… or a combination of the two*."

8.3.4 At this scoping stage, a preliminary 7.5 km Study Area has been defined through a combination of desk-based study including the preparation of a preliminary computer-generated Zone of Theoretical Visibility (ZTV), and initial fieldwork, as well as professional judgement and experience on projects of a similar nature and scale. It has been established through consideration of the existing landform and vegetation as well as the scale, nature and heights of the Proposed Development within each Site area, with a focus on where significant effects would be likely to arise.

Preliminary ZTV

8.3.5 For the scoping stage a preliminary Study Area of 7.5 km from the Site Boundary was adopted, following best practice guidance and the point at which visual impact is unlikely to result in a significant effect. Preliminary ZTVs were then generated to test this. These ZTVs indicate the potential areas of land from within which the Proposed Development may be theoretically visible and therefore could potentially appear in existing views, in order to assist in defining an appropriate and proportionate Study Area for the LVIA.

8.3.6 Bare Earth ZTVs have also been produced using ArcGIS. These use Ordnance Survey (OS) Terrain 5 data which provides a 5 m resolution Digital Terrain Model. The ZTV represents a worst-case scenario as it does not allow for existing features such as buildings, vegetation and boundary features, which can screen or filter views.

8.3.7 A preliminary ZTV is provided for each area (W1, W2 and W3) separately, with a consolidated ZTV also provided to help indicate the full theoretical extent of visibility of the Proposed Development as a whole.

8.3.8 The Proposed Development has been modelled for scoping at the following height parameters which is the absolute maximum worst-case scenario, as in reality the Proposed Development elements will likely be smaller. For the assessment the ZTV will be run according to the parameters set out in **Chapter 3, The Proposed Development** in the ES. The scoping ZTV was generated on the following parameters, accounting for margin of error in terrain data:

- 3.8 m height solar PV arrays across the DCO Limits for sites W1, W2 and W3; and
- The ZTVs are based upon a 100 m x 100 m grid of target points set out across the Site Boundary and at this stage are not based upon a Proposed Development layout. The ZTVs use a 2 m high observer height above ground level and includes an adjustment for the Earth's curvature and light refraction.

8.3.9 Initial fieldwork was undertaken on 27 September 2024 to consider the ZTVs and inspect general visibility of the Site for this Scoping Report. This identified that existing features including intervening built development and vegetation generally limits the extent of views to within 5 km of the Site Boundary. It is judged that likely significant landscape and visual effects would not occur beyond this distance.

8.3.10 Therefore, the final Study Area has been set at 5 km, and is shown on **Figure 8.1** which shows the maximum theoretical visibility within a 5 km Study Area. The actual extent of visibility on the ground will be significantly less than suggested on the Preliminary Bare Earth ZTVs.

8.3.11 The exact route of the cable corridor is yet to be determined but it will be within the Cable Corridor Options as shown in **Figure 3.1** which will be refined during the design and assessment process. A 0.5 km Study Area is proposed from the outer boundary of the Cable Corridor Options as the construction works for cabling will be localised, temporary and relatively short in duration.

8.3.12 The preliminary ZTV shows that visibility to the east and south of the Proposed Development within the Study Area is predominantly contained to 3 km with small patches of visibility further east from elevated largely inhabited areas.

8.3.13 To the west of the Proposed Development within the Study Area, the visibility of the Proposed Development extends westward with concentrated pockets of visibility from elevated areas and small hills, these areas are largely dense urban areas which would limit visibility due to screening by buildings.

8.3.14 To the north, visibility extends in pockets from elevated areas.

Proposed Landscape and Visual Study Area

8.3.15 The Study Area may be modified as part of the iterative design process as more detailed analysis is carried out and discussions are held with the LPAs and relevant consultees.

8.3.16 A review of the preliminary ZTV shows that visibility is broadly contained within 5 km of the Site Boundary and contains the sensitive receptors likely to experience significant effects.

8.3.17 Therefore, the Study Area for scoping and for the LVIA is proposed to be 5 km extending from the Site Boundary.

8.3.18 The Study Area and preliminary ZTVs are illustrated on the following Figures:

- **Figure 8.1** Study Area and Preliminary ZTV - Overview;
- **Figure 8.2** Preliminary ZTV – W1 – Study Area;
- **Figure 8.3** Preliminary ZTV – W2 – Study Area; and
- **Figure 8.4** Preliminary ZTV – W3 – Study Area.

Temporal Scope

8.3.19 The Proposed Development has the potential to cause temporary significant adverse landscape and visual effects during the construction phase due to alterations to surface landform and vegetation from agricultural land to the built form, the presence of construction plant and machinery, introduction of

construction compounds and access routes, increased levels of noise and activity on-site and an associated reduction of tranquillity.

8.3.20 The Proposed Development has the potential to cause significant adverse landscape effects during operation due to the change in land use and the introduction of solar PV arrays and associated infrastructure into the landscape, although this is regarded as reversible. The Proposed Development would have a significant effect on existing views, many of which are currently across farmland and rural in character albeit with some influences from scattered dwellings, settlement and infrastructure.

8.3.21 The Proposed Development also has the potential to result in beneficial landscape and visual effects in the longer term, resulting from changes to land cover and new planting.

8.3.22 The decommissioning phase has the potential to cause temporary significant adverse landscape and visual effects due to the presence of construction machinery and increased levels of activity on the Site when removing the solar PV arrays and associated infrastructure. Following removal however, there is potential for beneficial effects following decommissioning as the land will be returned back to its former use.

8.3.23 The landscape and visual assessment will be undertaken for the following scenarios:

- Peak construction activity, assuming that construction activity would take place at the same time across the Proposed Development during winter, to demonstrate the worst-case scenario;
- Year 1 of operation, winter to reflect a worst-case scenario;
- Year 15 of operation, summer to reflect the entirety of the Proposed Development and when any Proposed Mitigation has achieved its design intent and effectiveness; and
- Peak decommissioning activity during winter to demonstrate the worst-case scenario.

8.3.24 The proposed embedded landscape and visual mitigation will be set out within the LVIA and will be agreed through consultation with statutory consultees throughout the EIA process.

The Site and its Surroundings

8.3.1 The Site and Study Area are located east of Sheffield, South Yorkshire. The Study Area is loosely defined by Mexborough and the southwestern edge of Doncaster to the north; to the east by land approximately 5 km east of the M18 and M1; and to the south, broadly by the A619. To the west, the extent of the Study Area is defined by the eastern urban edge of Sheffield. The M1 and M18 form a strong central spine through the Study Area.

8.3.2 The landscape within the eastern half of the Study Area comprises a limestone ridge running north to south. This ridge creates a narrow belt of elevated land, forming a prominent feature that enables expansive views to the west. The landscape includes open, rolling arable farmland enclosed by hedgerows, along with plantation woodlands, historic estate properties, and parkland. Rivers dissect the raised plateau from west to east.

8.3.3 To the west is a low-lying area characterised by hills and escarpments above wide valleys and the industrial settlements of Sheffield and Rotherham. Scattered throughout the middle of the Study Area are numerous small settlements and villages interspersed within the countryside, connected via a network of A roads and minor roads. Rivers and waterways are common features throughout this landscape.

8.3.4 The main transport links include the M18, which runs through the centre of the Study Area to the north, and the M1, which runs due west before meeting the M18 in the centre of the Study Area and heading south. A train line runs through the eastern part of the Study Area from north to south, with a disused spur through the centre of the Study Area, highlighting the former mineral workings throughout the area. Pockets of small ponds now occupy areas of former workings, reflecting the industrial past of the region.

8.3.5 The Study Area comprises a number of Ancient Woodlands, Conservation Areas, and a few Registered Parks and Gardens. These contribute to the value and sensitivity of the landscape changes associated with the Proposed Development.

8.3.6 Overhead lines cross the Study Area, with Penny Hill Wind Farm, located in the centre of the Study Area, being a prominent feature in this landscape

8.3.7 The landscape is connected by a series of minor lanes and tracks, with numerous public footpaths. The Rotherham Round Walk Long Distance Walking Path (LDWP) passes through the west of the Study Area, and Cuckoo Way LDWP to the south runs along a former railway.

8.3.8 The main settlements in proximity to the Site, from north to south, include Conisbrough, Wickersley, Thurcroft, Dinnington, Aston, Wales, Kiverton Park, and Anston. In addition, there are several smaller settlements: Hooton Roberts, Clifton, Ravenfield, Ulley, Brampton en-le-Morthen, and Harthill. There are also several isolated farmsteads dispersed within the Site, but not included in the DCO Limits.

8.3.9 The Site is divided into three composite areas: W1 in the north, W2 in the centre, and W3 to the south.

W1

8.3.10 W1 is located south of Conisbrough, extending south from the A630 to Ravenfield and Micklebring, with the Firsby Brook forming the southern boundary. The eastern boundary is formed by the former railway with some parcels extending further east which follow the base of Beacon Hill and the edge of Clifton. Park Lane runs through the centre of the Site. The western extent is defined by belts of trees and Firsby Lane, with Hooton Roberts located further to the west.

8.3.11 The landscape comprises large, irregular arable fields, bounded by a mix of mature hedgerows and lines of trees, sometimes with defunct hedgerows. The main tree cover is limited to a belt of trees along a brook running south and along the disused railway line in the eastern part of the Site. There is a thin belt of ancient woodland located along the southern boundary of the Site, as well as Hooton Cliff ancient woodland adjacent to the western boundary.

8.3.12 Across the Site, the landform features a central basin, rising to a small hill at 100 m Above Ordnance Datum (AOD), in the southeast and to a ridgeline to the east, west of Clifton, also at 100 m AOD. To the northwest, a small hill on the western boundary rises to 85 m AOD dropping to the northwest where a tributary forms the northern boundary.

8.3.13 There are no conservation areas within the Site, but several exist within the surrounding area, the closest being Clifton to the northeast and Ravenfield to the southwest.

8.3.14 W1 is crossed by a network of bridleways and footpaths, most running north to south, such as Firsby Lane and Park Lane Bridleways.

8.3.15 Conisbrough Lodge is centrally located within the Site (but is not included in the DCO Limits), with Firsby Hall Farm to the southwest. Clifton to the west, Ravenfield to the south, and the southern edge of Conisbrough are the closest settlements to the Site.

W2

8.3.16 W2 is located south of the M1 and extends south to Aston. It comprises a main central area divided by the M18, with a cluster of fields to the west and a single field just north of the M1 junction 33. There is also a cluster to the north of the M1, adjacent to the west of the M18 around King's Pond Plantation, and another cluster north of Todwick bordering the A57 and south of North Anston.

8.3.17 W2 features large irregular arable fields, bound by a mix of hedgerows and lines of trees, which are sometimes gappy or non-existent. Woodlands are limited to blocks surrounding watercourses and old mineral workings. There are ancient woodlands adjacent to the Site; for example, Spring Wood is located to the south of the central cluster, Burnt Wood to the south of the western cluster, and Moat Wood to the south of the northern cluster. Other blocks of ancient woodland are scattered throughout the Study Area.

8.3.18 The landform features a valley that runs through the central cluster, rising to the north and south to Penny Hill at 105 m AOD. The landform undulates to the southeast of the Site between 120 m and 100 m AOD. This broad open landscape offers extensive views across the landscape, with Penny Hill Wind Farm being a notable feature within the central cluster.

8.3.19 Adjacent to the west of the central cluster is the Ulley conservation area, with the Brampton-en-le-Morthen conservation area to the north of the central cluster. The north and south Anston conservation areas are adjacent to the eastern cluster.

8.3.20 Settlement is sparse within W2, characterized by small hamlets, with Ulley being a notable hamlet adjacent to the west of the central cluster and Brampton-en-Morthen located to the northeast. Larger settlements include Aston to the south and North Aston adjacent to the eastern cluster.

8.3.21 W2 is crossed by a network of bridleways and footpaths, including the Rotherham Round Walk, which runs to the north and west of the Site and through the centre of the western cluster.

W3

8.3.22 W3 is located around Woodhall Services on the M1. It comprises a cluster of fields to the north that extends to Wales and Kiveton Park, with Kiveton Waters forming the northern boundary. The western cluster extends from the M1, reaching Norwood and Upperthorpe. The eastern cluster extends east of the M1 to Longrybank Wood and southward to Barlborough, with Harthill Reservoir forming the boundary of this area.

8.3.23 This diverse landscape consists of large, irregular arable fields, with a mix of hedgerows and lines of trees forming boundaries, although some are gappy or

non-existent. Belts of trees and small irregular blocks are dotted throughout, particularly around former mineral workings. This area contains no ancient woodland; the closest is Norwood to the northwest.

8.3.24 Across W3, the landform comprises a series of small hills, reaching 140 m AOD to the southwest and 125 m AOD at Stone Hill in the southeast cluster. Adjacent to the east is the Harthill conservation area. Barlborough Hall Registered Park and Garden is located to the south of this area along with the Barlborough conservation area.

8.3.25 W3 is sparsely settled, with the settlement of Woodall located in the central area of the clusters and Harthill to the east. The M1 serves as a notable transport link. Additionally, Woodall Services presents a strong linear feature in this otherwise arable landscape.

8.3.26 W3 is crossed by a network of bridleways and footpaths, with the Cuckoo Way long-distance trail running adjacent to the north of this area.

National Landscape Designations

8.3.27 Landscape may be valued at local or national level and as such may be designated at the national and / or local level. At the National level the Site and Study Area are not designated on account of their landscape quality. Their quality, however, may be recognised at the local level, which is considered following guidance provided in TGN 02/21 regarding landscape value outside of national designations.

Local Non-Statutory Landscape Designations

8.3.28 The landscape of the Site is not designated at a national or local level on account of its landscape quality.

8.3.29 There are a number of local designations within the Study Area, which are listed below and presented on **Figure 8.5**.

Rotherham Metropolitan Borough Council

8.3.30 Policy CS21 of the adopted Rotherham Core Strategy sets out Areas of High Landscape Value (AHLV), noting that: "*Within Areas of High Landscape Value, development will only be permitted where it will not detract from the landscape or visual character of the area and where appropriate standards of design and landscape architecture are achieved*".

8.3.31 The Study Area contains four AHLVs. These are set out on **Figure 8.5**. They are:

- Hooton Roberts, covers the western extent of W1;
- Dalton Dean north of W2;
- Ulley Whiston, covers the western half of W2; and
- Sandbeck / Harthill, covers the eastern extent of the Study Area and is adjacent to the eastern boundary of W3.

8.3.32 As set out in the Core Strategy five-year review in **Section 8.2** above, it is recommended that AHLV policy is to be deleted. In conjunction with this, the review highlighted that no supporting information has been provided regarding the special qualities of the AHLVs listed above or the basis of these designations.

8.3.33 Therefore, it is proposed that potential effects upon the above listed AHLV designations will not be assessed and will be scoped out of the LVIA. However, they may be considered in determining value of landscape receptors.

City of Doncaster Council

8.3.34 Policy ENV17 of the Doncaster Unitary Development Plan sets out Areas of Special Landscape Value (ASLVs) for protection within areas defined on the proposals map. The policy states that development within these areas will only be permitted where it would not detract from the visual character of the area and where the highest standards of design and landscaping are employed.

8.3.35 The Study Area contains three ASLVs and these are set out on **Figure 8.5**. The areas are not named and none cover the Site Boundary, the closest being adjacent to the east of W1.

8.3.36 The current adopted local plan did not carry forward this policy or designation. However, they are mentioned within the Doncaster Landscape Character Assessment (2007). In conjunction with this no supporting information has been provided for the special qualities of these ASLVs or the basis of the designation.

8.3.37 It is proposed, therefore, that potential effects upon these designations will not be assessed and will be scoped out of the LVIA. However, they may be considered in determining value of landscape receptors.

Registered Parks and Gardens

8.3.38 The Site contains no Registered Parks and Gardens, and so there would be no direct impacts upon these designations. However, there are a number of these within the Study Area, the locations of which are provided in **Figure 9.9** and discussed in **Chapter 9, Cultural Heritage and Archaeology**. Of note is Balborough Hall, (currently a private school) which lies within approximately 1 km south of W3.

8.3.39 Where they are relevant to inform the landscape value within the landscape character assessment, Registered Parks and Gardens will be referred to within the LVIA baseline.

8.3.40 It is proposed to scope out effects upon Registered Parks and Gardens from the LVIA. Visual impacts and effects on setting will be reported in **Chapter 9, Cultural Heritage and Archaeology** of the ES.

Other Designations

8.3.41 Other non-designated designations used to inform value will be considered in the LVIA. These include the following:

- Areas of ancient woodland within the Study Area or immediately adjacent to the Site Boundary as set out in the Site area descriptions above (refer to **Figure 7.5** for their locations);
- Registered Parks and Gardens within the Study Area but not directly within the Site (refer to **Figure 9.9** for their locations); and
- Numerous conservation areas associated with settlements in the Study Area, none of which are within the Site Boundary (refer to **Figure 9.9** for their locations and **Chapter 9, Cultural Heritage and Archaeology**). Those of relevance are set out in the area descriptions above.

Green Belt

8.3.42 The Site and much of the Study Area lies wholly within Green Belt (refer to **Figure 3.5**). Green Belt is not a landscape designation, but effects on the openness of the Green Belt (a planning consideration) can be influenced by visual effects. As such, the visual effects upon the openness of the Green Belt will be considered in the LVIA, in order to inform wider planning judgements.

National Landscape Character Area

8.3.43 The Study Area is covered by two National Character Areas (NCAs), NCA 30 covers the eastern part of the Study Area, and NCA 38 covers the western part.

NCA 30 - Southern Magnesian Limestone

8.3.44 The key characteristics of relevance are as follows:

- Underlying limestone, creating an elevated ridge with smoothly rolling landform; river valleys cut through the ridge, in places following dramatic gorges. There are also some dry valleys;
- Fertile, intensively farmed arable land, with large fields bounded by clipped hawthorn hedges, creating a generally large-scale, open landscape;
- Large number of abbeys, country houses and estates with designed gardens and parklands, woodlands, plantations and game coverts;
- Long views over lowlands to the east and west, and most prominent in the south;
- Woodlands combining with open arable land to create a wooded farmland landscape in places, where traditionally coppiced woodlands support dormouse populations;
- Localised industrial influences, especially in the Aire and Don valleys, and in the south and along the fringe of the Coal Measures to the west, with former mines and spoil heaps (many now restored), power lines, settlements, industry and transport routes. Influenced by the transport corridor of the A1, which is apparent in an otherwise undisturbed rural countryside; and
- Archaeological evidence, with some notable prehistoric sites, reflecting the longstanding importance of the area for occupation and transport.

NCA 38 Nottinghamshire, Derbyshire and Yorkshire Coalfield

8.3.45 The key characteristics of relevance are:

- A low-lying landscape of rolling ridges with rounded sandstone escarpments and large rivers running through broad valleys, underlain by Pennine Coal Measures;
- Local variations in landscape character reflecting variations in underlying geology;
- Several major rivers flowing through the rural and urban areas of the NCA, generally from west to east in broad valleys;
- A mixed pattern of built-up areas, industrial land, pockets of dereliction and farmed open country;

- Small, fragmented remnants of pre-industrial landscapes and more recent creation of semi-natural vegetation, including woodlands, river valley habitats and subsidence flashes, with field boundaries of clipped hedges or fences;
- Many areas affected by urban fringe pressures creating fragmented landscapes, some with a dilapidated character, separated by substantial stretches of intact agricultural land in both arable and pastoral use;
- A strong cultural identity arising from a history of coal mining, steel making and other heavy industry which resulted from the close relationship between underlying geology and resource availability, notably water power, iron ore and coal;
- Features of industrial heritage such as mills, goits, tips, old railway lines, canals and bridges are evident, along with former mining villages;
- Many large country houses and estates established by wealthy industrialists in the 18th and 19th centuries and ancient monuments create focal points and important recreational opportunities within the landscape, such as Bretton Hall, Wentworth, Woodhouse, Temple Newsam, Nostell Priory, Bolsover Castle and the ruins of Codnor Castle;
- Widespread influence of transport routes, including canals, roads and railways, with ribbon developments emphasising the urban influence in the landscape;
- An extensive network of multi-user trails on former railway lines and canal towpaths, such as the Trans Pennine Trail and the Ebor Way; and
- Continuing development pressure including land renewal and regeneration projects, especially along river corridors and around towns.

Local Landscape Character Areas

8.3.46 The Study Area is covered by the following landscape character assessments:

- Doncaster Landscape Character Assessment;
- Rotherham Landscape Character Assessment;
- Sheffield Preliminary Landscape Character Assessment; and
- Derbyshire Landscape Character Assessment.

8.3.47 The Site at a local level spans three published landscape character assessments, namely the Doncaster, Rotherham and Derbyshire studies.

8.3.48 The published landscape character assessments above will form the basis of the landscape assessment. These are presented on **Figure 8.6**.

8.3.49 The following Landscape Character Areas (LCAs) and Landscape Character Types (LCTs) cover the Study Area and their relevance to each area within the Site is detailed.

W1

8.3.50 W1 is contained within the Doncaster Landscape Character Assessment and the majority sits within the Conisbrough and Denaby Coalfield Farmlands LCT. A small part of the eastern extent of W1 sits within the Stainton to Edlington Limestone Plateau LCT.

8.3.51 Immediately adjacent to the west of W1 is the Rotherham Landscape Character Assessment with the Thrybergh and Treeton Tributary Valleys LCA forming the western boundary of W1.

W2

8.3.52 W2 is contained within the Rotherham Landscape Character Assessment with the central clusters within Thurcroft Plains LCA, and the western clusters within Thrybergh and Treeton Tributary Valleys and Rother Valley LCAs

W3

8.3.53 W3 is contained within the Rotherham Landscape Character Assessment within the Thurcroft Plains LCA, with a small part of the northeastern cluster within Dinnington Limestone Plateau LCA. A small section of the southern cluster is within the Derbyshire Landscape Character Assessment within the Wooded Farmlands and Limestone Farmlands LCTs.

Visual Amenity

8.3.54 The preliminary ZTV and initial walkover survey identified the potential likely visual receptors (people) whose views may be impacted by the Proposed Development.

8.3.55 The Proposed Development would be visible from public views from minor roads and PRoW within the Study Area. Private views are likely to be available from dwellings within the countryside around the Proposed Development and at the edges of nearby settlements.

8.3.56 Further fieldwork will be undertaken throughout the design and assessment process.

8.3.57 Photography will be captured from representative viewpoints across the Study Area in winter conditions and, if possible, summer conditions to show the seasonal effect of vegetation on the visibility of the Proposed Development. If not possible, commentary will be provided noting the change in the view in the different seasons.

Visual Receptors

8.3.58 The visual receptors likely to experience effects from the Proposed Development are those situated along the edges of settlements, isolated farmsteads and properties within or adjacent to W1, W2 and W3. These include the residents of settlements in the Study Area as follows:

- Maltby;
- Bramley;
- Conisbrough;
- Clifton;
- Hooton Roberts;
- Old Ravenfield;
- Wickersley;
- Thurcroft;

- Laughton Common;
- Todwick;
- Ulley;
- Wales;
- Kiveton Park;
- South Anston;
- Harthill;
- Killamarsh;
- Woodall;
- Barlborough;
- Handswoth;
- Brinsworth;
- Aughton; and
- Aston.

8.3.59 This list is preliminary and is likely to include additional receptors as the assessment and design advances through the EIA process. The proposed preliminary representative viewpoints are presented on **Figures 8.2**, **8.3** and **8.4** and within **Tables 8.1**, **8.2** and **Table 8.3**. Other receptors likely to experience visual impacts include:

- Residents of farmsteads and isolated properties within the open countryside;
- People travelling along PRoW throughout the Study Area, and those travelling along the Rotherham Round Walk, Cuckoo Way and Trans Pennine Trail;
- People travelling throughout the landscape within the Study Area on the road network, this includes minor roads to trunk roads and motorways; and
- Visitors to open access land and public parks and amenity spaces, which are likely to include:
  - Kiveton Waters Community Woodland;
  - Rother Valley Country Park; and
  - Ulley Country Park.

Proposed Viewpoints

8.3.60 A number of preliminary representative viewpoints have been selected for the assessment of visual effects upon sensitive visual receptors within the Study Area likely to experience views as illustrated by the preliminary ZTV and preliminary site survey. These are presented in **Table 8.1,**

8.3.61 **Table 8.2** and **Table 8.3**.

8.3.62 The proposed viewpoints will be subject to further refinement as the Proposed Development evolves and more detailed survey work is carried out. The exact location of Viewpoints will be micro sited during the fieldwork and subject to discussion and agreement with the relevant stakeholders.

Table 8.1 Potential Viewpoints for W1

Viewpoint Ref	Location and Description	Receptors
1	PRoW south of A630	• Residents on southern edge of Conisbrough • Users of PRoW • Travellers along Kearsley Lane • Visitors to Church
2	Permissive path on Kearsley Lane	• Recreational users travelling along Kearsley Lane
3	PRoW east of Conisbrough Parks Farm	• Residential views from Conisbrough Parks Farm • Recreational users of the PRoW
4	PRoW south of Clifton heading to Beacon Hill	• Residential views from properties west of Clifton • Recreational users of PRoW
5	PRoW north of M18	• Recreational users of PRoW
6	PRoW north of Micklebring	• Residential views from properties north of Micklebring • Recreational users of PRoW
7	Bridleway north of Conisbrough Grange Farm / Park Lane	• Recreational users of Bridleway
8	Bridleway east of Birk Lodge Farm	• Residential views from Birk Lodge Farm • Recreational users of the Bridleway
9	PRoW north of Ravenfield Common	• Residential views from properties north of Ravenfield Common • Recreational users of the PRoW
10	Bridleway east of Ravenfield	• Residential views from properties east of Ravenfield • Recreational users of Bridleway
11	Bridleway north of Firsby Hall Farm / Firsby Lane	• Residential views from Firsby Hall Farm • Recreational users of Bridleway
12	Bridleway east of Hooton Roberts / Back Lane	• Residential views from properties east of Hooton Roberts • Recreational users of Bridleway
13	Bridleway south of Hill Top / Firsby Lane	• Residential views from properties at Hill Top • Recreational users of Bridleway

Viewpoint Ref	Location and Description	Receptors
14	Bridleway south of A630	• Residential views from properties south of Conisbrough • Recreational users of Bridleway
15	PRoW adjacent to Parks Farm Cottages	• Residential views from Parks Farm Cottages • Recreational users of Bridleway
16	Bridleway adjacent to Conisbrough Lodge	• Residential views from Conisbrough Lodge • Recreational users of Bridleway

Table 8.2 Potential Viewpoints for W2

Viewpoint Ref	Location and Description	Receptors
17	PRoW south of Lings Common	• Residential views from southern edge of Wickersley • Recreational users of PRoW
18	Bridleway along Orchard Lane	• Recreational users of Bridleway and PRoW
19	PRoW west of Holmlea Farm	• Residential views from Holmlea Farm • Recreational users of PRoW
20	PRoW north of Long Road	• Residential views from Common Farm • Recreational users of PRoW
21	New Road, North Anston	• Residential views from properties west of North Anston
22	PRoW at Anston Bridge	• Residential views from properties on west edge of North Anston • Recreational users of PRoW
23	PRoW west of South Anston	• Residential views from properties on west edge of South Anston • Recreational users of PRoW
24	PRoW north of Todwick	• Residential views from properties on north edge of Todwick • Recreational users of PRoW
25	PRoW east of Todwick Grange	• Residential views from Grange Farm • Recreational users of PRoW

Viewpoint Ref	Location and Description	Receptors
26	PRoW east of Hardwick Hall Farm	• Residential views from Hardwick Hall Farm and Hardwick Grange • Recreational users of PRoW
27	PRoW north of Vessey Close Farm	• Residential views from Vessey Close Farm • Recreational users of PRoW
28	PRoW north of Aston	• Residential views from properties on north edge of Aston • Recreational users of PRoW
29	Wood Lane / Treeton Wood	• Recreational visitors to Treeton Wood
30	Rotherham Round Walk, north of Treeton	• Residential views from Conisbrough Lodge • Recreational users of Bridleway
31	Rotherham Round Walk west of Guilthwaite Hall Farm	• Residential views from properties on north edge of Treeton • Recreational users of Rotherham Round Walk
32	Sheffield Circular Walk east of Junction 33	• Residential views from Guilthwaite Hall Farm • Recreational users of Rotherham Round Walk
33	Sheffield Circular Walk at Blue Man's Bower	• Recreational users of Sheffield Circular Walk
34	Sheffield Circular Walk / Sandy Flat Lane	• Residential views from properties on west edge of Wickersley • Recreational users of Sheffield Circular Walk
35	PRoW east of Wickersley	• Residential views from properties on east edge of Wickersley • Recreational users of PRoW
36	Moat Lane	• Residential views from Moat Farm and surrounding properties
37	New Slacks Farm	• Residential views from Slacks Farm
38	PRoW east of Penny Hill	• Residential views from properties at Brampton Villa • Recreational users of PRoW
39	PRoW east of Ulley	• Residential views from properties on east edge of Ulley

Viewpoint Ref	Location and Description	Receptors
		• Recreational users of PRoW
40	Penny Hill Lane, east of Ulley	• Residential views from properties on east edge of Ulley
41	PRoW north of Ulley	• Residential views from properties on north edge of Ulley • Recreational users of PRoW
42	Reservoir Road, west of Ulley	• Residential views from properties on west edge of Ulley • Recreational users of PRoW to west
43	Carpark at Ulley Country Park	• Recreational users of Ulley Country Park
44	PRoW / Bridleway south of Upper Whiston	• Residential views from properties at Upper Whiston • Recreational users of PRoW
45	PRoW south of Morthen	• Residential views from properties at Morthen • Recreational users of PRoW
58	High Lane	• Recreational users of permissive path • Residential views from Ulley Beeches Farm
59	Rotherham Round Walk, east of Spa Farm	• Recreational users of Rotherham Round Walk • Residential views from Spa Farm

Table 8.3 Potential Viewpoints for W3

Viewpoint Ref	Location and Description	Receptors
46	PRoW south of Wales	• Residential views from properties south of Wales • Recreational users of PRoW
47	Cuckoo Way	• Recreational users of Cuckoo Way
48	Bridleway south of Kiveton Community Woodland	• Recreational users of Kiveton Community Woodland • Recreational users of Bridleway
49	PRoW west of Harthill	• Residential views from properties west of Harthill • Recreational users of PRoW

Viewpoint Ref	Location and Description	Receptors
50	PRoW south of Harthill	• Recreational users of PRoW and visitors to Harthill Reservoir
51	PRoW southwest of Harthill	• Residential views from properties west of Harthill • Recreational users of PRoW
52	PRoW north of Pebleygrove Farm	• Residential views from Pebleygrove Farm • Recreational users of PRoW
53	PRoW at Woodall Common	• Recreational users of PRoW
54	Killamarsh Lane, east of High Moor	• Residential views from properties at High Moor
55	PRoW East of Highmoor Farm	• Residential views from Highmoor Farm • Recreational users of PRoW
56	PRoW at Wood Hill	• Residential views from properties on south edge of Wales Bar
57	Dowcarr Lane	• Residential views from properties along Dowcarr Lane
60	PRoW east of Woodall	• Recreational users of PRoW • Residential views from Woodall and Harthill

Visualisations

8.3.63 Subject to agreement with relevant stakeholders, and where significant effects are likely, a number of visualisations of the Proposed Development will be produced from the Viewpoints being used within the assessment. The exact number and locations are not known at this stage and will be confirmed during the assessment. The visualisations will be created in accordance with TGN 06/19.

Residential Visual Amenity Assessment

8.3.64 The purpose of Residential Visual Amenity Assessment (RVAA) is to consider how the change in view resulting from the Proposed Development would impact upon the visual aspect (as distinct from other aspects such as noise) of the residential amenity of nearby properties and whether the predicted effects would affect living conditions.

8.3.65 TGN 02/19 prepared by the Landscape Institute sets out the best practice guidance for RVAA. The guidance reflects relevant cases and reflects the difference between significant visual effects and unacceptable effects on residential amenity.

8.3.66 The issue to be considered in RVAA is not whether there would be any change in a view from a private property as a result of the Proposed Development, but whether the effect is of such a nature and / or magnitude that it potentially affects the quality of life for the resident. This is known as the Residential Visual Amenity Threshold (RVAT).

8.3.67 In relation to the Proposed Development, the new structures proposed would be low in height. In consideration of similar schemes, it is considered that the RVAT would not be met beyond 250 m, and therefore it is proposed to scope out properties beyond 250 m at scoping stage.

8.3.68 Due to the preliminary information currently available, it is not possible to scope out RVAA within 250 m of the Proposed Development. However, this will be reviewed as the design and assessment of the Proposed Development progresses, and a RVAA will be undertaken if deemed to be required.

8.4 Potential Effects and Mitigation

8.4.1 Likely significant effects on the landscape and visual resources may occur from the Proposed Development and are likely to include:

- Effects on landscape features and fabric if / where vegetation requires removal or landform requires alteration to accommodate the Proposed Development, as well as potential beneficial effects as a result of new planting within the Site Boundary;
- Effects on landscape character resulting from the change in land cover and presence of solar PV arrays and associated infrastructure; and
- Effects on views and visual amenity for recreational, residential and transport receptors experiencing changes to the character and composition of their views. Views would range from short distance and close up views of the Proposed Development from PRoW and roads through the Site, to views of the solar PV arrays in the distance. For both, the Proposed Development could change large parts of the landscape within the view.

Mitigation

8.4.2 The LVIA will inform the iterative design of the Proposed Development and designed-in mitigation measures to avoid or reduce landscape and visual impacts on sensitive landscape and visual resources and receptors. Designed-in measures relevant to landscape and visual receptors would include:

- Siting and layout of the solar PV arrays and associated infrastructure to avoid important landscape features and elements such as existing trees and hedgerows and to provide suitable buffers between the solar PV arrays and construction areas and woodland, trees, properties and PRoW. Consideration will also be given to the findings of the Glint and Glare Assessment, breaking up large solar PV arrays where feasible and considering the colour and tone of associated infrastructure to minimise their visibility and scale in the landscape and views;
- Any access tracks to utilise existing tracks wherever possible with new routes located to pass through existing gates and gaps in hedgerows where feasible;
- Landscape proposals, which would seek to deliver landscape and biodiversity enhancement, integrate and embed the Proposed Development within the

existing landscape character, provide new green infrastructure that connects to the wider green infrastructure network, provide hedgerow and landscape reinstatement, and provide visual filtering and screening as appropriate; and

- No significant permanent night-time lighting to be proposed.

8.4.3 The proposed landscape and visual mitigation will be set out within the LVIA, the Outline Landscape Biodiversity Management Plan (oLBMP) and the oDEMP, and will be consulted upon with statutory consultees throughout the EIA process.

8.5 Technical Scope and Approach to EIA

Proposed Scope of the EIA

8.5.1 The proposed scope of the LVIA regarding receptor groups is set out below in **Table 8.4**.

Table 8.4 Landscape and Visual Scoping Table

Receptor Group	Construction	Operation	Decommissioning	Rationale for Scoping Sub-topics In or Out
Landscape fabric including trees (and Tree Preservation Order (TPO) or veteran trees), woodland (and ancient woodland) and hedgerows, landform and land use and features/ characteristics of value on the Site (considered in its local context)	Scoped in	Scoped in	Scoped in	The Proposed Development would result in adverse and beneficial, direct and indirect landscape effects upon landscape features and fabric. This would involve new elements, changes and removal of existing landscape resource.
Landscape subject to statutory landscape designation	Scoped out	Scoped out	Scoped out	There are no National Parks or National Landscapes within the Study Area.
Landscape subject to non-statutory / local landscape designation	Scoped out	Scoped out	Scoped out	There are no local designations within the Site.
National Character Area NCA 30 – Southern Magnesian Limestone and NCA 38 Nottinghamshire, Derbyshire and Yorkshire Coalfield	Scoped in	Scoped in	Scoped in	Although this is a national scale character assessment, at this stage landscape effects upon the NCA are scoped in due to the scale of the Proposed Development.
Local Landscape Character Areas / Types within the Study Area	Scoped in	Scoped in	Scoped in	The Proposed Development would result in adverse and beneficial, direct and indirect landscape effects upon landscape character through the introduction of new elements, changes and removal of existing landscape characteristics.
Local Landscape Character Areas outside of the Study Area	Scoped out	Scoped out	Scoped out	Landscape Character Areas that lie at the periphery of the Study Area or have no intervisibility or interconnectivity with the Site have been scoped out as it is considered the Proposed Development would have no or limited indirect adverse effects upon their character.

Receptor Group	Construction	Operation	Decommissioning	Rationale for Scoping Sub-topics In or Out
Visual effects on the openness of the Green Belt	Scoped in	Scoped in	Scoped in	Visual effects on openness will be assessed to inform wider planning arguments in relation to the Green Belt.
Visual receptors using public rights of way within the Site Boundary	Scoped out	Scoped in	Scoped out	PRoWs which cross the Site will be temporarily closed during the construction phase and will therefore be scoped out of the LVIA at construction and decommissioning stages.
Visual receptors using public rights of way within the Study Area where the ZTV demonstrates likely visibility	Scoped in	Scoped in	Scoped in	There would be views of the Proposed Development from a range of public locations across the Study Area at the construction, operational, and decommissioning stages. Draft representative viewpoints are proposed in **Table 8.1,** **Table 8.2** and **Table 8.3**.
Visual receptors using public rights of way or other public outdoor locations within the Study Area where the ZTV demonstrates no visibility	Scoped out	Scoped out	Scoped out	Where the ZTV has identified no visibility then no effect would occur or if there is potential visibility this would not be significant.
Visual receptors at public locations within the Study Area where the ZTV demonstrates likely visibility	Scoped in	Scoped in	Scoped in	There would be views of the Proposed Development from a range of public locations across the Study Area at the construction, operational, and decommissioning stages. Draft representative viewpoints are proposed in **Table 8.1**, **Table 8.2** and **Table 8.3**.
Visual receptors at public locations outside of the Study Area	Scoped out	Scoped out	Scoped out	Views may be possible beyond the Study Area. Where visible, it is considered that the Proposed Development would not be readily perceptible or is unlikely to result in significant adverse visual effects given consideration of the distance, intervening screening and context of existing views.

Receptor Group	Construction	Operation	Decommissioning	Rationale for Scoping Sub-topics In or Out
Visual receptors: private residents within the Study Area	Scoped in	Scoped in	Scoped in	Residents would have a range of views of the Proposed Development at the construction, operational and decommissioning stages. Assessment of visual effects upon residential properties would be considered on the basis of 'groups' or general locations of properties and undertaken from the curtilage of residential properties where publicly accessible or appropriate representative viewpoints from publicly accessible locations, applying professional judgement
Visual receptors: workers on the land or private outdoor recreational locations	Scoped out	Scoped out	Scoped out	Workers and those involved in a certain outdoor activity e.g. sports are unlikely to be focused upon views and any adverse effects upon their views would not be significant
Cumulative Effects of similar developments with intervisibility within the Study Area	Scoped in	Scoped in	Scoped in	Any relevant planning applications that come forward during the assessment, up to an agreed cutoff date with the statutory consultees to allow completion of the LVIA, would be considered and assessed in terms of their potential cumulative landscape and visual effects.
Cumulative Effects of similar developments without intervisibility or outside of the Study Area	Scoped out	Scoped out	Scoped out	Where developments are outside the Study Area and / or have no intervisibility with the Proposed Development would not result in significant cumulative effects so would be scoped out.
Night-time effects and / or lighting effects	Scoped out	Scoped out	Scoped out	The Site would not be routinely lit during operation with lighting restricted to periods of maintenance or emergencies, and where used it would be limited to low level security lighting. There would be some lighting required during construction / decommissioning normal working hours, but this would be managed in accordance with best practice guidance. Short periods of 24-hour construction may require lighting (e.g. trenchless crossings)

Receptor Group	Construction	Operation	Decommissioning	Rationale for Scoping Sub-topics In or Out
Residential Visual Amenity Assessment for properties within 250 m of the Proposed Development.	Scoped out	Scoped in	Scoped out	As the Proposed Development's design progresses it will be reviewed to consider residential properties in proximity to the Proposed Development. If it is likely that visual change would materially affect residential amenity then a separate RVAA would be undertaken. Construction and decommissioning impacts would be for a short duration so are scoped out of the RVAA.
Residential Visual Amenity Assessment for properties beyond 250 m from the Proposed Development.	Scoped out	Scoped out	Scoped out	The Proposed Development would comprise structures that are of relatively low height, and which are not located in proximity to residential properties. Views of the Proposed Development beyond 250 m would be unlikely to result in visual change that would materially affect residential amenity.

Assessment Methodology

8.5.1 The LVIA will be carried out with a project specific methodology prepared in accordance with GLVIA3 which will be appended to the LVIA. An example of the methodology is included in **Appendix D, Landscape and Visual Methodology**.

8.5.2 A separate methodology for the ZTV and visualisations that accompany the LVIA will be prepared in accordance with GLIVA3,TGN 06/19 and other relevant guidance. This will be appended to the LVIA.

8.5.3 The LVIA will establish:

- A clear understanding of the Site and its setting in respect of landscape character and visual amenity;
- The Proposed Development and its relationship with the landscape character and visual amenity;
- The potential effects of the Proposed Development upon landscape character; and
- The potential effects of the Proposed Development on visual receptors, including, where required, sequential visual effects.

Approach to Assessment

8.5.4 The LVIA that will be undertaken will involve a combination of desktop study and field surveys (including photography), with subsequent analysis and assessment, summarised below.

8.5.5 Establishing the landscape and visual baseline:

- A review of relevant published background data (including Ordinance Survey mapping and historic mapping, aerial photography, published Landscape Character Assessments, studies and relevant supporting evidence base documents);
- Field surveys of the Site and surrounding area and inspection of publicly accessible views with consideration of private views for groups of properties and broad locations based upon the nearest available public location alongside professional judgement. Representative photographs will be taken during field work and will be presented in the LVIA in accordance with current best practice guidance from the Landscape Institute;
- Evaluation of the features and components of the landscape and their contribution to the landscape character, context and setting, based on the above desktop study and fieldwork;
- Evaluation of the potential area in which the Proposed Development may be visible, considering people (visual receptors) who may experience views, viewpoints and the nature of views based upon the above desktop study and fieldwork;
- The landscape and visual baseline will be based upon the Site as it is at the time the LVIA is undertaken but, where appropriate, considering committed development and / or development allocations not yet implemented, including a cumulative assessment which will be reported in the ES; and

- Input into the ongoing design of the Proposed Development as part of an iterative assessment and design process, reviewing initial design proposals and considering and advising upon mitigation options to avoid, reduce, or offset adverse landscape and visual effects and maximise opportunities for landscape integration and enhancement.

8.5.6 Assessment of landscape effects:

- Identification of the components of the landscape that are likely to be affected by the Proposed Development (landscape receptors), such as overall character and, where appropriate, any key characteristics, individual elements or features, and specific aesthetic or perceptual aspects;
- Review of the design proposals and mitigation measures proposed to avoid, reduce or offset significant adverse effects; and
- Analysis and consideration of the potential landscape and visual effects of the Proposed Development.

8.5.7 Development on landscape receptors:

- Determine the sensitivity of the landscape to the changes likely to arise from the Proposed Development, combining judgements about:
  - The value attached to the landscape receptor; and
  - The susceptibility of the landscape receptor to the type of change arising.
- Assessment of the magnitude of effect, made up of judgements about:
  - The size and scale of the effect;
  - The geographical extent of the area that will be affected; and
  - The duration of the effect and its reversibility.
- Assessment of the significance of the effect on the landscape (taking into consideration the sensitivity of the receptor and the magnitude of effect) during construction, at winter Year 1, at summer year 15, and during decommissioning to determine which effects are significant in EIA terms.

8.5.8 Assessment of visual effects:

- Identification of the visual receptors (people) likely to experience changes to views and visual effects of the Proposed Development;
- Assessment of the sensitivity of visual receptors to the changes likely to arise from the Proposed Development, combining judgements about:
  - The value attached to views; and
  - The susceptibility of the visual receptor to the type of change arising.
- Review of the design proposals and mitigation measures proposed to avoid, reduce or offset significant adverse effects;
- Assessment of the magnitude of effect, made up of judgements about:
  - The size and scale of the effect;
  - The geographical extent of the area that will be affected; and
  - The duration of the effect and its reversibility.
- Assessment of the significance of visual effects (taking into consideration the sensitivity of the receptor and the magnitude of effect) during construction, at

winter Year 1, at summer year 15, and during decommissioning to determine which effects are significant in EIA terms.

8.5.9 In accordance with the EIA Regulations, it is essential to determine whether the predicted effects are likely to be 'significant'. In this instance, significant landscape and visual effects resulting from the Proposed Development are typically those effects that result in a 'major', a 'moderate – major', or 'moderate' effect. For each, a judgement will be made to state whether effects are significant or not significant with supporting narrative where required.

Assumptions and Limitations

Assumptions

8.5.10 It is assumed all current vegetation (excluding any removed for construction / operation of the Proposed Development) within and outside the Site Boundary such as field boundaries would be maintained as the baseline condition for the lifespan of the Proposed Development.

8.5.10 Any proposed mitigation planting would be subject to a long-term management and maintenance regime for the lifespan of the Proposed Development.

8.5.11 Unless noted otherwise in the assessment, the year 1 effects reported exclude any allowance for mitigation by planting unless advance planting has been carried out, but will include allowance for screening measures such as soil bunds, fencing and / or walling as appropriate.

8.5.12 The assessment will assume the worst-case Proposed Development with the maximum heights and massing as set out in **Chapter 3, The Proposed Development** description. The design set for scoping may evolve and the LVIA will be reviewed and amendments made to the scope and Study Area where required.

8.5.13 Additional key assumptions or limitations that are made during the assessment will be set out in the body of the LVIA.

8.5.14 It is assumed that PRoW that cross the Site will be temporarily diverted during the construction phase. The assessment will consider the effects on the views of users of the diversion which would be temporarily implemented.

Limitations

8.5.15 All field work will be undertaken from publicly accessible locations.

8.5.16 Assessment of effects on residential receptors will be undertaken using professional judgement and supported by viewpoints near, or of a similar, view to that from residential properties aided by the ZTVs, aerial photography and LVIA figures.

Uncertainties

8.5.17 The final locations of the substations, Cable Corridor Options and BESS are not known at this stage. However, once they are confirmed the ZTV and, where required, Study Area will be amended to capture any additional potential likely sensitive receptors subject to potentially significant effects.

8.5.18 The final layout, siting and heights of the solar PV arrays, substations and associated infrastructure are yet to be agreed. The LVIA Study Area and landscape and visual receptors will be reviewed as the Proposed Development evolves, informed by further desktop review, refinement and ground-truthing of ZTVs as well as professional judgement.

9 CULTURAL HERITAGE AND ARCHAEOLOGY

9.1 Introduction

9.1.1 This chapter of the Scoping Report outlines the scope of the cultural heritage assessment for the Proposed Development. It provides a summary of legislation and guidance; an overview of baseline conditions; likely effects and mitigation, and a summary of the proposed methodology.

9.2 Topic-Specific Legislation and Guidance

9.2.1 This scope of the cultural heritage assessment section of the EIA has been developed in line with the following key legislation, policy and associated guidance.

Legislation

Ancient Monuments and Archaeological Areas Act 1979[70]

9.2.2 This Act consolidates and amends laws related to ancient monuments, providing for their investigation, preservation, and recording. It includes provisions for the protection of scheduled monuments and areas of archaeological importance.

Planning (Listed Buildings and Conservation Areas) Act 1990[71]

9.2.3 This Act provides special controls for buildings and areas of special architectural or historic interest. It includes provisions for the listing of buildings, the control of works affecting listed buildings, and the designation of conservation areas.

Hedgerows Regulations 199725

9.2.4 These regulations protect countryside hedgerows, specifying when and how they can be legally removed. They aim to preserve important hedgerows for their historical, ecological, and landscape value.

National Planning Policy

National Policy Statements (NPS) for Energy Infrastructure (2024)

9.2.5 The NPSs for energy infrastructure outline the government's policy for delivering major energy infrastructure. The 2023 revised NPSs (EN-1 to EN-5) came into force in January 2024.

9.2.6 The NPSs provide the primary policy against which the Secretary of State and any examining authority/Planning Inspector appointed by the Secretary of State, will determine NSIPs in England and Wales (including territorial waters and wider UK Renewable Energy Zones). Overarching NPS EN-1[4] is supported by Technical

NPSs EN-2 to EN-6, of which EN-3[5] and EN-5[6] are of relevance to the Proposed Development.

National Planning Policy Framework (NPPF) (2024)7

9.2.7 Section 16 of the NPPF outlines policies for conserving and enhancing heritage assets. It emphasises the importance of sustaining and enhancing the significance of heritage assets, considering their wider social, cultural, economic, and environmental benefits.

Local Planning Policy

Cirt of Doncaster Local Plan 2015 - 2035 (2021)8

Policy 34: Valuing our Historic Environment (Strategic Policy)

9.2.8 *"Doncaster's historic environment will be conserved in accordance with the following principles:*

- Proposals and initiatives will be supported which preserve and, where appropriate, enhance the heritage significance and setting of the Borough's heritage assets (including locally identified undesignated heritage assets), and especially those elements which contribute to the distinct identity of the Borough. These include:
  - The nationally important waterlogged archaeological remains at Sutton Common, Thorne Moor, and Hatfield Moor;
  - The Roman camps and settlements, motte and bailey castles, historic houses, historic parks and gardens and villages, with special regard to those along the Southern Magnesian Limestone Ridge;
  - The Georgian townscape and the railway heritage of Doncaster, its historic grain, including its street layouts and plot sizes and key views and vistas especially of the spires and towers of Doncaster's churches;
  - The Borough's historic market towns such as Thorne, Hatfield, Bawtry, and Tickhill;
  - Early twentieth century suburban developments, including planned colliery villages; and
  - Sites and structures associated with aviation history including the heritage of the second world war and cold war.
- Proposals and initiatives will be supported which improve the accessibility and enjoyment of the Borough's existing and potential local, regional and national historic attractions in keeping with their heritage significance. These include:
  - The Mansion House;
  - Cusworth Hall and its parkland;
  - Doncaster Minster (St. George's Church);
  - Conisbrough Castle; and
  - Brodsworth Hall and parkland.

- Proposals and initiatives will be supported which identify, promote and secure the long-term future of Doncaster's heritage assets. These include:
  - Increasing and making publicly available our knowledge and understanding of the historic environment gained through the planning process;
  - Continuing to review existing and prospective parks and gardens of local historic interest and consideration of the designation of buildings of local architectural and historic interest;
  - The identification of heritage assets at risk and implementing strategies and initiatives to reduce their number through positive management;
  - Supporting the re-use of sites and buildings of heritage significance putting them to viable uses consistent with their conservation; and
  - Supporting investment in the repair and maintenance of Doncaster's historic buildings"

Policy 35: Understanding and Recording the Historic Environment

9.2.9 *"Proposals that affect known or potential heritage assets will require:*

- *The provision of a heritage statement (or its equivalent) that includes:*
  - *Sufficient information to gain an understanding of the potential impact that the proposals will have on the significance of any heritage assets or historic environment likely to be affected; and*
  - *For heritage sites with archaeological interest, at least a desk-based assessment and, where appropriate, the results of a field evaluation.*
- *In the exceptional circumstances where harm could be justified, detailed investigation and recording will be required to an agreed standard in advance of any alteration, demolition or groundwork to ensure that an understanding of the affected heritage asset is gained and that knowledge is widely publicised including deposition of the site archive with the relevant archive repository and deposition of a report on the results with the South Yorkshire Sites & Monuments Record (Historic Environment Record)."*

Policy 36: Listed Buildings

9.2.10 *"Development proposals affecting a listed building or its setting will be assessed against the following principles:*

- *Proposals that enhance or better reveal the significance of a listed building or structure will be supported. Proposals that harm the significance of a listed building or its setting will not be supported other than in circumstances where that harm is clearly outweighed by the public benefits of the proposal having regard to the significance of the heritage asset affected.*
- *Alterations and extensions to a listed building will be considered acceptable where they are sympathetic to the historic proportions and massing of the building; make use of materials that complement the materials used on the building; and preserve and enhance its special interest.*
- *Measures for improving the energy efficiency of a listed building will be supported where they do not conflict with its special interest as a listed building. Where there is a conflict of interest the Council will weigh the public*

benefits of the proposal against the harm to the listed building having regard to the significance of the heritage asset.

- *A proposal for a change of use to a listed building would be considered acceptable where it does not harm its heritage significance. Where a change of use requires significant alterations with potential harm to the listed building it will be necessary to demonstrate that the proposed alterations are necessary to secure the long-term survival of the listed building.*
- *Permission will not be granted for proposals which would result in substantial harm or total loss of a listed building or structure unless the building cannot reasonably be repaired and the Council is satisfied that every effort has been made to secure, repair, or reuse the building, to find an alternative use through maintenance, grant assistance, or offer for sale or lease, or, that there are substantial and demonstrable public benefits to be gained which outweighs the loss of the building."*

Policy 37: Conservation Areas

9.2.11 *"Development proposals affecting, or within the setting of, Conservation Areas will be assessed according to the following principles:*

- *Proposals should take fully into account the identified significance contained in the Conservation Area Appraisal for the relevant designated area where published.*
- *Proposals should not detract from the heritage significance of a conservation area by virtue of their location, layout, nature, height, density, form, scale, materials or design or by the removal of trees, the loss of important open spaces or other important landscape features, or through adverse impact on key views and vistas. Proposals that result in harm to a conservation area will be refused unless the harm is outweighed by public benefits arising from the development.*
- *Proposals will be supported where it can be demonstrated that they will enhance or better reveal an element which can contribute to the character and appearance of the conservation area. Proposals within conservation areas requiring the demolition of buildings that make a positive contribution to the conservation area will not be supported unless the building is currently derelict and is incapable of rehabilitation; or the removal of the building, and/or the proposed redevelopment of the site, would result in demonstrable public benefits sufficient to outweigh the harm.*
- *Any proposal for the demolition of a building or site in a conservation area will need to be accompanied by an acceptable redevelopment scheme or a remedial scheme for making good the building or site which will be required to be implemented immediately following demolition."*

Policy 38: Historic Parks and Gardens

9.2.12 *"Development affecting Historic Parks and Gardens will be assessed against the following principles:*

- *Development proposals within, or affecting, Doncaster's nationally registered parks and gardens, and parks and gardens of local historic interest (as shown on the Policies Map), should preserve and, where appropriate, enhance the heritage significance of these parks and gardens.*
- *Proposals affecting a historic park of local or national significance should not result in harm to the built or landscape features or key views or vistas which*

contribute to the significance of the historic park or garden, or which might prejudice future restoration.

- *Where proposals result in harm or substantial harm to the significance of a nationally designated historic park the proposal will be considered in relation to the extent of harm arising from the proposal, the relative significance of the historic park and garden, and any public benefits arising from the proposal. In the case of parks and gardens of local interest a balanced judgement will be taken weighing the scale of any harm against the significance of the park."*

Policy 39: Development Affecting Archaeology

9.2.13 *"Development affecting archaeological remains will be assessed against the following principles:*

- *Development that would result in harm to the significance of a scheduled monument or other nationally important archaeological assets will not be permitted other than in exceptional circumstances.*
- *Development affecting other archaeological assets will need to demonstrate how any benefits will outweigh harm to the site. When development affecting such sites is justifiable, the Council will seek to ensure preservation of the remains in situ as a preferred solution. When in situ preservation is not justified, the developer will be required to make adequate provision for appropriate investigation and recording including excavation in accordance with Policy 35."*

Policy 40: Buildings or Structures of Local Historic Interest

9.2.14 *"Development proposals affecting buildings that meet the criteria of buildings of local historic interest, either as part of a local list or as part of the planning application process, will be assessed against the following principles:*

- *Proposals which retain those elements of a building of local historic interest which have been identified as contributing to its heritage significance, or proposals which better reveal its significance will be supported.*
- *Proposals should seek to avoid harm to those features, including setting, which contribute to the significance of the building of local historic interest. Where proposals result in harm or substantial harm to the significance of a building of local historic interest a balanced judgement will be made taking into account the degree of harm and relative significance of the heritage asset."*

RMBC - Rotherham Local Plan (2018)9

Policy SP 40 Listed Buildings

9.2.15 "Development proposals affecting a Listed Building or its setting will be considered against the following principles:

- *Special regard will be given to the preservation of Listed Buildings and structures. Therefore, substantial harm to or demolition of a Listed Building will be strongly resisted;*
- *The significance of a Listed Building can be harmed by unsympathetic extensions or alterations to its appearance, plan form or replacement of windows. Extensions and alterations to a Listed Building will only be*

considered acceptable where they relate sensitively to the Listed Building and preserve or enhance the special interest and significance;

- *The Council encourages the development of good quality, contextual design, including any development within the setting of Listed Buildings. Development which has an adverse effect on the setting of Listed Buildings will not be acceptable;*
- *The best use for a Listed Building is usually that for which it was designed, however other uses may be considered acceptable provided they do not harm the significance of the Listed Building. Where significant alterations are required that potentially harm the Listed Building it will be necessary to demonstrate that the original use of the Listed Building is no longer viable or sustainable and that the proposed alterations are necessary to secure the long-term survival of the Listed Building;*
- *The Council will support proposals and alterations to Listed Buildings in order to mitigate climate change only where such proposals respect the significance of the Listed Building and do not have an adverse impact on its appearance, character or historic fabric;*
- *The Council will take necessary measures to ensure that neglected Listed Buildings are appropriately repaired and / or reused; and*
- *Where appropriate, proposals will be supported which enhance or better reveal the significance of a Listed Building or structure."*

Policy SP 41 Conservation Areas

9.2.16 "*Development proposals within or likely to affect the setting of a Conservation Area will be considered against the following principles:*

- *Developments are required to ensure the preservation or enhancement of the special character or appearance of Rotherham's Conservation Areas and their settings;*
- *There is a presumption in favour of the preservation of buildings and structures, both listed and unlisted, which make a positive contribution to the special character or appearance of Conservation Areas. Permission will not be granted for the demolition of a building in a Conservation Area which makes a positive contribution to the character or appearance of the Area unless it can be clearly demonstrated that:*
  - *There is no realistic prospect of the building continuing in its existing use or that a suitable alternative use cannot reasonably be found; or*
  - *The building is in poor structural condition and the cost of repairing and maintaining it would be disproportionate in relation to its importance and to the value derived from its continued use; and*
  - *The demolition is part of a redevelopment proposal which would, in its own right, serve to preserve or enhance the character or appearance of the Conservation Area;*
- *Spaces, street patterns, views, vistas, uses, trees and landscapes which contribute to the special character or appearance of a Conservation Area will be safeguarded;*
- *Depending on the scale of the development and when deemed necessary, developers will be required to submit character statements to assess the*

impact of the development upon the character and appearance of the Conservation Area and to minimise the effect of development proposals though careful consideration of their design.

9.2.17 *Under section 211 of the Town and Country Planning Act 1990 the Local Planning Authority must be notified six weeks before the carrying out of works to, or removal of trees in a Conservation Area that are not protected by a Tree Preservation Order unless an exception applies. This notice period gives the Authority an opportunity to consider whether to make a Tree Preservation Order on the tree or trees."*

Policy SP 42 Archaeology and Scheduled Ancient Monuments

9.2.18 *"Development proposals that may impact upon archaeology, whether designated as a Scheduled Ancient Monument or undesignated, will be considered against the following principles:*

- *Development that would result in harm to the significance of a Scheduled Monument or other nationally important archaeological site will not be permitted;*
- *The preservation of other archaeological sites will be an important consideration. When development affecting such sites is acceptable in principle, the Council will seek preservation of remains in situ, as a preferred solution. When in situ preservation is not justified, the developer will be required to make adequate provision for archaeological recording to ensure an understanding of the remains is gained before they are lost or damaged, in accordance with Policy SP 43 'Conserving and Recording the Historic Environment'."*

Policy SP 43 Conserving and Recording the Historic Environment

9.2.19 *"All proposals affecting a heritage asset will require careful assessment as to the impact and appropriateness of development to ensure that the historic, architectural, natural history, or landscape value of the asset and / or its setting are safeguarded and conserved, and any conflict avoided or minimised in accordance with the policies of this Local Plan.*

9.2.20 *Development proposals that affect known or potential heritage assets will need to provide supporting information in sufficient detail that the impact of the proposed scheme on those heritage assets can be established, in line with the following approach:*

- *Where proposals involve sites which have been assessed as part of the Council's Archaeological Scoping Studies evidence base, Heritage Statements will be required where sites are identified as having 'major', 'potential' or 'uncertain' objections to development. Where this applies to sites allocated through Policy SP 1 'Sites Allocated for Development' it is identified in the site-specific development guidelines at Chapter 5 'Site development guidelines';*
- *Proposals on other sites will be required to submit a Heritage Statement if development would affect a known or potential heritage asset.*

9.2.21 *Heritage Statements should consider the impact of the specific development proposed with regard to the setting of heritage assets on or in the vicinity of the site; detailed archaeological assessment; and the results of field evaluation.*

9.2.22 *In the exceptional circumstances that harm could be justified, resulting in the loss or damage of a heritage asset, appropriate recording will be required to an agreed standard in advance of any alteration, demolition or groundworks, to ensure that: an understanding of the remains is gained before they are lost or damaged, that the knowledge gained is widely disseminated, and that the resulting archive is deposited for long-term duration."*

Policy SP 44 Historic Parks, Gardens and Landscapes

9.2.23 *"The Council will seek to ensure the protection and appropriate enhancement of the borough's historic parks and gardens. Development proposals should:*

- *Safeguard those features which form an integral part of the special character or appearance of the Park or Garden;*
- *Ensure that development does not detract from the enjoyment, layout, design, character, appearance or setting of the Park or Garden, key views out from the Park, or prejudice its future restoration. Where development is likely to affect a Historic Park and Garden or its setting, applications should include a Heritage Impact Assessment setting out the likely impact which the development would have upon its significance and the means by which any harm might be mitigated."*

Policy SP 45 Locally Listed Buildings

9.2.24 *"The Council will seek to ensure and encourage the preservation and enhancement of Locally Listed Buildings and will use its powers where possible to protect their significance, character and setting, by the following means:*

- *Consent will not normally be granted for the demolition of Locally Listed Buildings;*
- *Alterations and extensions should be based on an accurate understanding of the significance of the asset including the structure. Proposals should respect the architectural character, and detailing of the original building. The structure, features, and materials of the building which contribute to its architectural and historic interest should be retained or restored with appropriate traditional materials and techniques;*
- *Any proposals should protect and enhance the setting of Locally Listed Buildings;*
- *Taking a practical approach towards the alteration of Locally Listed Buildings to comply with the Disability Discrimination Act 2005 and subsequent amendments, provided that the building's special interest is not harmed, using English Heritage advice as a basis."*

Policy SP 46 War Memorials

9.2.25 *"Where development proposals may impact upon War Memorials or their siting, Memorials should be retained in situ, if possible, or otherwise sensitively relocated following appropriate community consultation."*

Dinnington St John's Neighbourhood Plan 2016 – 2028 (Adopted May 2021)33

Policy Bed 1: Dinnington Character Buildings and Structures of Local Heritage Interest

9.2.26 *"The Plan identifies the buildings and structures listed below (and shown on figures 3 to 9) as Dinnington Character Buildings and Structures of Local Heritage Interest:*

1. Dinnington Colliery Pit Wheel (Coronation Park).

2. Gurnhill Trough (Coronation Park).

3. Cenotaph (Coronation Park).

4. Old Library (Laughton Road).

5. Front of the Old Brewery (Laughton Road).

6. Handsworth Woodhouse Co-op Buildings (Laughton Road).

7. Old Dentists (Lidgett Lane).

8. Croft Cottage (Barleycroft Lane).

9. Middleton Institute (Barleycroft Lane).

10. Silverdales Social Club (Lordens Hill).

11. Carlisle Terrace (Last of "The Barracks").

12. Remains of the Old Blacksmiths (Laughton Road).

13. The Old Plant Workshop (Bottom of Church Lane).

14. St Leonards Church (Anglican) (including Font, Lectern and Dinnington Miners Banner).

15. St Joseph's Church (Catholic).

16. The Old Rectory.

17. The Older Rectory (Laughton Road).

9.2.27 *Development proposals will be supported which conserve or enhance the heritage significance and setting of a Character Buildings or Structure.*

9.2.28 *Development proposals will be required to take into account the character, context and setting of these locally important assets, including important views towards and from them.*

9.2.29 *Development proposals will be required to be designed appropriately, taking account of local styles, materials, detail and heritage value.*

9.2.30 *Development proposals that may impact upon any Dinnington Character Building or Structure shall be accompanied by a heritage statement which considers the impact of the specific development proposed with regard to the character, context and setting of the assets on or in the vicinity of the site."*

Maltby Neighbourhood Plan (Adopted February 2024)35

Policy M2: Maltby Character Buildings and Structures of Local Heritage Interest

9.2.31 "*The following buildings and structures (see maps in Appendix 1 of the Neighbourhood Plan) are identified as Maltby Character Buildings and Structures of Local Heritage Interest:*

1. Former White Swan, 9 Blyth Road.

2. The Queen's Hotel, Tickhill Road at the junction with Muglet Lane.

3. Abbeyfield House, 43 Blyth Road.

4. The Wesley Centre, Blyth Road (formerly Maltby Wesleyan Methodist Chapel).

5. Former Anglican Church of the Ascension, Firth Crescent (now Ascension Mews Flats).

6. St Mary Magdalene Roman Catholic Church, Morrell Street.

7. Former Anglican Church of The Venerable Bede, Salisbury Road (now Bede House).

8. Former Maltby Grammar School (including Rotherham Road Frontage), Braithwell Road (now within Maltby Academy).

9. Former Maltby Church of England School, Church Lane.

10. The Crossley Memorial, Makins Hill, Maltby.

11. Barn to the rear of Roche Abbey Mill Farm, Kings Wood Lane, Stone.

12. The Nook, Blyth Road, Stone.

13. No's 1 & 2 Stone Cottages, Blyth Road, Stone.

14. The Old School House, Blyth Road, Stone.

15. Stone Lodge, Blyth Road, Stone.

16. Stone Cottage, Blyth Road, Stone.

17. The Cottage, Horseshoe Lane, Stone.

18. Stone Mill Bridge, Horseshoe Lane, Stone.

19. Stone Grange, Blyth Road, Stone.

20. Stone Grange outbuildings fronting Blyth Road, Stone.

21. Four Lane Ends, Blyth Road.

22. The Old Barns (Four Lane Ends), Blyth Road.

23. Yews Lodge, The Yews, Firbeck

24. Yews Cottages, The Yews, Firbeck.

9.2.32 *Development proposals will be supported which conserve or enhance the heritage significance and setting of a Character Building and Structure.*

9.2.33 *Development proposals will be required to take into account the character, context and setting of these locally important assets, including important views towards and from them.*

9.2.34 *Development proposals must be designed appropriately taking account of local styles, materials, detail and heritage value.*

9.2.35 *Development proposals that may impact upon any Maltby Character Building and Structure shall be accompanied by a heritage statement which considers the impact of the specific development proposed with regard to the character, context and setting of the assets on or in the vicinity of the site."*

Wickersely Neighbourhood Plan 2012 – 2028 (Adopted May 2022)34

9.2.36 "*The following buildings and structures are proposed to be included as Locally Listed Buildings.*

1. *Castle House, Bawtry Road (Lister's Castle)*
2. *Numbers 258 – 272 Bawtry Road, Wickersley*
3. *Sycamore Cottage, 3 Morthen Road, Wickersley*
4. *Lilac Farm, Morthen Road, Wickersley*
5. *1 Lilac Farm Close, Wickersley*
6. *3, Lilac Farm Close, Wickersley*
7. *10 & 12 Morthen Road, Wickersley*
8. *1 Moss Close, Wickersley*
9. *Minden Cottage, 7 Morthen Road*
10. *Minden Cottage outbuildings at the junction of Morthen Road and Minden Close*
11. *2, Church Lane, Wickersley*
12. *Manor Farm, Church Lane, Wickersley*
13. *13, Morthen Road, Wickersley*
14. *West Thorpe Cottage, 17 Morthen Road, Wickersley*
15. *The Barn, Church Lane, Wickersley (also known as the Church Hall)*
16. *30-34 Morthen Road, Wickersley including outbuildings*
17. *19-25 Morthen Road, Wickersley*
18. *27-33 Morthen Road, Wickersley*
19. *39 Morthen Road, Wickersley*
20. *40 Morthen Road, Wickersley (Wickersley Club)*
21. *42 Morthen Road, Wickersley*
22. *46 & 48 Morthen Road, Wickersley + rear outbuildings*
23. *2-14 Sitwell Terrace, Wickersley*
24. *91 Morthen Road, Wickersley*
25. *1 Wood Lane, Wickersley + outbuildings*
26. *11 & 15 Wood Lane, Wickersley*
27. *58 Morthen Road, Wickersley*
28. *1-7 Quarryfield Lane, Wickersley*
29. *23 Quarryfield Lane, Wickersley*

30. *17 & 19 Gillott Lane, Wickersley*
31. *Pinchfield Cottage, 31 Gillot Lane, Wickersley*
32. *Moat Farm, Moat Lane, Wickersley*
33. *The Dovecote, Moat Lane, Wickersley*
34. *Pinchmill Farm, Pinchmill Lane, Wickersley.*
35. *17-25 Lings Lane, Wickersley*
36. *Wickersley Grange, 38 Morthen Road*
37. *Wickersley War Memorial, Morthen Road*

9.2.37 *These buildings will be subject to Policy SP45 of the Rotherham Local Plan."*

Policy GP5: Design & Development in the Conservation Area

9.2.38 *"In order to preserve and enhance the character and appearance of Wickersley Conservation Area, as shown on the Neighbourhood Plan Policies Map, new buildings, and extensions and alterations to existing buildings, within or affecting the setting of the conservation area, should be sympathetic to its distinctive local characteristics and achieve the following objectives whilst not preventing or discouraging appropriate innovation or change:*

A) Layout should be sympathetic to the traditional building pattern of the conservation area and building heights, scale and massing should respond to and reinforce the character of the conservation area;

B) Development should be sympathetic to existing architectural detailing such as roof forms, coursing and pointing of stonework, the proportions of window openings, joinery profiles and opening pattern of new and replacement windows and doors;

C) Use of quality materials, such as natural stone that is sympathetic to the interest of the area and sit harmoniously with the existing building fabric and respect the uniformity in the colour and texture of the built form of the conservation area;

D) Retention of existing stone boundary walls, gates, gateposts and railings and incorporation of new means of enclosure in a way which complements those already in existence using similar materials and details where possible;

E) Retention of other architecturally or historically interesting features that testify to the evolution of the structures and are of good quality in their own right where possible; and

F) Where traditional features have been replaced by modern alternatives, the reinstatement of original traditional features should be the presumed aim of conservation."

National Guidance

Planning Practice Guidance (PPG) – Historic Environment (July 2019)[72]

9.2.39 This guidance provides detailed advice on the assessment of harm to heritage assets, complementing the NPPF. It includes definitions of heritage assets, discussions on the nature of harm, and guidelines for assessing the impact of proposals on heritage assets.

Countryside Hedgerow Protection Guidance – Removing Hedgerows (September 2024)[73]

9.2.40 This guidance provides detailed advice to assess if a hedgerow can be removed or worked on. It outlines the criteria for determining whether a hedgerow is protected and gives an overview of the legal processes of removing a hedgerow.

Industry Specific Best Practice and Guidance

English Heritage (2008) Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment[74]

9.2.41 This document sets out principles for the sustainable management of the historic environment, aiming to support quality decision-making and clear, transparent management practices.

Historic England (2015) Historic Environment Good Practice Advice in Planning Note 2: Managing Significance in Decision-Taking in the Historic Environment[75]

9.2.42 This advice note provides guidance on assessing the significance of heritage assets and making informed decisions during the planning process.

Historic England (2016) Preserving Archaeological Remains Decision-taking for Sites under Development[76]

9.2.43 This guidance focuses on the preservation of archaeological remains during development, particularly waterlogged sites, and provides methodologies for assessing and mitigating impacts.

Historic England (revised 2017) Historic Environment Good Practice Advice in Planning Note 3: The Setting of Heritage Assets[77]

9.2.44 This document offers guidance on managing changes within the settings of heritage assets, emphasizing the importance of understanding and preserving their significance.

Historic England (2019) Statements of Heritage Significance: Analysing Significance in Heritage Assets. Historic England Advice Note 12[78]

9.2.45 This document offers guidance on recognising and analysing heritage significance to help applicants and local authorities to make decisions on the impact of proposals for change to heritage assets.

Chartered Institute for Archaeologists (CIfA) guidelines: Standard and guidance for archaeological desk-based assessment (2020)[79]

9.2.46 This document outlines good practices for conducting and reporting desk-based assessments in archaeology, ensuring compliance with CIfA's Code of Conduct.

CIfA (2020) Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment[80]

9.2.47 This guidance provides standards for commissioning archaeological work and offering consultancy advice, ensuring that services are fit for purpose and conducted by qualified professionals.

Historic England (2021) Commercial Renewable Energy Development and the Historic Environment[81]

9.2.48 This Historic England Advice Note describes the potential impacts on the historic environment of commercial renewable energy proposals. It is written for all of those involved in commercial renewable energy development, helping them to give appropriate consideration to heritage issues.

Institute of Environmental Management and Assessment (IEMA) (2021) Principles of Cultural Heritage Impact Assessment in the UK[82]

9.2.49 This document provides guidance in the form of a framework to understand cultural heritage assets and evaluate the consequences of change to them. There is additional supporting direction on adhering to best practice.

9.3 Preliminary Baseline Conditions

9.3.1 This section provides an overview of the key data sources that will be used to inform the forthcoming assessment; an archaeological and historical overview of the Study Area (as shown on **Figure 9.1,** and defined below); a summary of designated heritage assets; and key sensitivities relating to heritage.

Data Sources

9.3.2 The following key data sources will be used in the cultural heritage assessment:

- Historic England (National Heritage List) for information on World Heritage Sites, Scheduled Monuments, Listed Buildings, Registered Historic Parks and Gardens, and Historic Battlefields[83];
- South Yorkshire Historic Environmental Record (HER)[84];
- Derbyshire Historic Environment Record (MDR)[85];
- British Geological Survey BGS Index[86]
- National Library of Scotland Maps[87];
- Rotherham Archives and Local Studies Service;
- Clifton Park and Museum Archives and Local Studies;
- City of Doncaster Archives;
- Derbyshire Record Office;
- East Riding Archives;

- Readily accessible published sources and grey literature (e.g., results from previous studies);
- Relevant academic papers and thesis;
- Regional historic environment research frameworks;
- Unpublished site reports and survey results held by local heritage groups;
- Relevant published and grey literature historic environment reports; and
- Results of non-intrusive and intrusive surveys.

9.3.3 Primary survey will be used to supplement the secondary data sources. The scope of primary survey will be agreed with SYAS (South Yorkshire Archaeology Service) during the production of the ES Chapter. Primary survey works will at a minimum involve walkover survey, setting site surveys and geophysical survey. In addition, several additional survey methods are likely to be employed in order to comprehensively assess the heritage potential of the Site and inform likely impacts and effects. Primary survey may also include:

- Field walking;
- Trial trenching;
- Test pitting (shovel and machine excavated);
- Metal detecting;
- Geoarchaeological investigation (boreholes); and
- Targeted excavation.

Proposed Cultural Heritage Study Areas

9.3.4 To assess potential Direct/Indirect Physical Impacts and Setting Impacts on the historic environment, two Study Areas have been established:

- 1 km Study Area; and
- 3 km Study Area.

9.3.5 These study areas have been established based on a contextual review of the Proposed Development and the understanding of potential impacts and the historical and archaeological baseline.

1 km Study Area

9.3.6 The 1 km Study Area (**Figure 9.1**) will be used to inform the heritage baseline against which potential direct impacts and effects to known and currently unknown heritage assets will be assessed. This Study Area takes in the Site itself and the land within a 1 km radius of the Site. The wider historic environment will be considered as and when pertinent to the Proposed Development.

3 km Study Area

9.3.7 The 3 km Study Area (**Figure 9.1**) will take in the Site and land up to 3 km distant from the Site. The Study Area will be used to identify potential Indirect Effects (Setting) to designated assets as well as selected non-designated assets identified through consultation with the LPAs surrounding the Site. The 3 km Study Area will not be used as an arbitrary cut-off point for assessing these

impacts. Due consideration will be given to heritage receptors beyond 3 km that fall within the bare earth ZTV of the Proposed Development, as well as heritage receptors specifically identified for inclusion within any cumulative assessment by Historic England (HE) and the LPAs. As part of the assessment of Indirect Effects to Setting, a sieving exercise will be undertaken to determine which heritage assets will be included within the detailed Setting Assessment. A table listing assets for inclusion within, or exclusion from, the assessment of Indirect Effects to Setting will be provided to stakeholders along with a rationale for any decisions made. A detailed assessment of Indirect Effects to Setting will form a standalone Technical Appendix to the Archaeology and Cultural Heritage ES Chapter. The sieving exercise itself will form a standalone Technical Appendix to the ES Chapter within which all designated and selected non-designated assets will be listed along with a rationale for inclusion and exclusion and a summary of predicted impacts and effects.

9.3.8 The 3 km Study Area will also serve as the initial extent of any assessment of Cumulative Impacts.

9.3.9 Any other assets located beyond these search areas but that are considered relevant to establishing the Site's historic landscape context or that are identified as potentially susceptible to impact, will also be considered.

9.3.10 Within the 3 km Study Area, there are four Local Planning Authorities, all of which are listed below:

- RMBC;
- CDC;
- Sheffield City Council; and
- Derbyshire County Council.

9.3.11 Three of these, RMBC, CDC and Sheffield City Council utilise the South Yorkshire Archaeology Service (SYAS)[88] for advice and input into archaeological and heritage matters pertaining to developments, whilst Derbyshire County Council have their own in-house archaeology and planning team[89].

Temporal Scope

Construction

9.3.12 The Construction phase of the Proposed Development may cause the following impacts upon cultural heritage assets:

- Ground disturbance during construction phase causing potential loss of whole or part of a heritage asset or site. The effects would be permanent and irreversible. Construction activity and associated ground disturbance would only typically impact assets within the Site itself; and
- Impact upon the setting of cultural heritage assets during the construction phase of the Proposed Development. This includes visual, dust and audio intrusions or changes to the wider historic landscape that may detract value from the cultural heritage assets. Changes to setting during the construction phase would typically be short lived, lasting only a matter of days, weeks or months.

Operation

9.3.13 The Operational phase of the Proposed Development may cause the following impacts upon cultural heritage assets within the Study Areas:

- Maintenance and associated groundworks have the potential to generate further impacts to heritage assets, should works extend beyond the original footprint of construction. Impacts can result from vibration associated with Site infrastructure or through maintenance activities. Impacts would typically be of a much lower magnitude of scale than during construction. However, the effects would be permanent and irreversible. This would only typically impact assets within the Site itself; and
- The operational phase of the Proposed Development may impact upon the setting of cultural heritage assets within the Study Areas. This includes visual and noise intrusions or changes to the wider historic landscape that may detract value from cultural heritage assets. Impacts to setting would last for the lifetime of the Proposed Development, but would typically be fully reversible, following the removal of all above ground infrastructure.

Decommissioning

9.3.14 Decommissioning will involve similar types and numbers of vehicles and equipment to the construction phase and may introduce temporary noise, dust and visual changes to the environment that have the potential to affect the settings of cultural heritage assets. Decommissioning groundworks will be restricted to the same areas as construction groundworks and will therefore not introduce any further impacts on buried archaeology that may have been located there.

Preliminary Baseline Conditions

Archaeological and Historical Background

9.3.15 This section provides a period-by-period overview of the historical development of the 1 km Study Area and focuses on the known heritage assets within the Site. Further information on these assets is listed in **Technical Appendix E** below and can be seen in **Figures 9.2 – 9.4**.

Palaeolithic (c. 900,000 BCE – c. 8800 BCE)

9.3.16 It was not until c. 9700 BCE at the beginning of the Holocene that the climate became milder, and Britain was continuously occupied by mobile hunter-gatherers. The Palaeolithic period is characterised by mobile hunter gatherer groups and seasonal exploitation of resources. Palaeolithic settlement, burials and decorative goods such as engraved bones have been found across Britain, but the most common evidence recovered from this period are flint tools.

9.3.17 There are no finds or features dating to the Palaeolithic period within the Site. However, there are three non-designated assets within the 1 km Study Area which date to the Palaeolithic period. These consist of scrapers (HER 00826/03) located 121 m southeast from W1; a collection of flint finds located 779 m south-east from W2 (HER 05328); and a potential cave shelter (HER 01241/01) located c.38 m south from W1 respectively.

9.3.18 Notable Palaeolithic sites within the wider historic landscape include Creswell Crags, a collection of caves dated to the Upper Palaeolithic era[90] and located c. 7.5 km to the southeast of W3. These caves were discovered to have evidence of Upper Palaeolithic seasonal occupation, shown by lithic assemblages, and faunal and flora remains. Palaeolithic art was also discovered, depicting prehistoric animals and peoples, along with what are believed to be the drawings connected to ritual activities[91]. The caves were also believed to have been connected and utilised within a wider Palaeolithic landscape, which is still being researched during the present day.[92]

9.3.19 The presence of tools dating to this period from W1, W2 and W3 is indicative of exploitation of this landscape, on at least a seasonal, transient basis during the Upper Palaeolithic and there is a moderate potential for further such finds to be present within these sections of the Proposed Development.

Mesolithic (c. 8800 BCE – c. 4300 BCE)

9.3.20 Warmer and wetter conditions prevailed during the Mesolithic and complex patterns of seasonal occupation are detectable in the archaeological record across the UK. Smaller, composite stone tool technologies employing hafted microlithic flakes characterise assemblages from this period, including microlithic arrows and harpoons, which are the most common type of Mesolithic find. Subject to significant flora and faunal changes, the wider landscape of South Yorkshire would have held a variety of natural resources for the itinerant hunter-gatherer Mesolithic population, as demonstrated by the environmental record and the diversification of lithic industries at the time.

9.3.21 There are three non-designated assets within the Site which have been dated to the Mesolithic period, all of which are present within W2. These are all groups of lithics, located near the north-western side of W2, within the areas of Whiston, Ulley and Treeton (HER 04362/01; 05107; 05112).

9.3.22 A further 17 non-designated heritage assets are also present within the wider 1 km Study Area. Four of these are located within 1 km of W1 and include arrowheads (HER 00826/01), blades (HER 00826/02), waste cores (HER 00826/04) and borers (HER 00826/05). The remainder of the non-designated Mesolithic assets are located within 1 km of W2, to the northwest (HER 05316; 04046/01; 00986/01; 00987/01; 00988/01; 00989/01; 00991/01; 00995/01; 01051/01; 01053/01; 05312; 05314; 05321; 05322 and 05305), with one to the south of the boundary (HER 05106). Those located to the northwest consist of flint collections (HER 05316; 04046/01; 00986/01; 00987/01; 00989/01; 00991/01; 00995/01; 01051/01; 05312; 05314; 05321 05322; and 05305).

9.3.23 The available evidence from this period is suggestive of hunting and foraging across the landscape, with no evidence of permanent settlement. The Proposed Development as a whole retains a moderate potential for further finds from this period to be recovered.

Neolithic (c. 4300 BCE – c. 2000 BCE)

9.3.24 During the Neolithic, agricultural and pastoral farming was introduced to Britain by farmers from the continent. Agro-pastoralism existed alongside, and was integrated with, hunter-gatherer subsistence methods. Permanent settlement became more common, and the control of land and resources meant that nucleated communities started to form. In these communities, distinct forms of material culture began to emerge, with goods traded across large distances.

Farmland began to become enclosed and funerary monuments are recognised for the first time. However, South Yorkshire is recognised as an area with a sparsity of Neolithic funerary monuments.

9.3.25 There is one non-designated asset dating to the Neolithic period within the Site, located within W2, which comprises a polished stone axe (HER 00990/01).

9.3.26 A further five non-designated assets dated to the Neolithic period are also present within the 1 km Study Area. One of these is located near W1 and comprises flint tools (HER 02121/01), with three more stone axes located near W2 (HER 00996/01; 00997/01; and 00998/01). Further worked flint finds (HER 01895/01) are also present. This pattern of discovery of flints and stone axes is a common pattern within South Yorkshire, with researchers believing a supply chain and a lithic industry was somewhat established within the area, stretching from East Yorkshire through to South Yorkshire[93]. The later Neolithic sees a small change in the production of such lithics, with arrowheads becoming more varied and distinctive, whilst other tools become less distinctive[94].

9.3.27 The available evidence from this period is derived from the recovery of flints tools across the landscape, with no evidence of permanent settlement. The Proposed Development as a whole retains a moderate potential for further finds from this period to be recovered.

Bronze Age (c. 2000 BCE – c. 800 BCE)

9.3.28 Bronze Age society is traditionally defined by the introduction and use of copper and copper alloys for the manufacture of tools, ornaments, and weapons. Bronze Age technology was reliant on supplies of copper and tin from a range of wider sources across Britain and Europe, meaning that the Bronze Age in England saw an intensification of a potential formalisation of international exchange. With the emergence of bronze as a technology, the complexity and ostentatiousness of cultural and funerary/ritual material monumentality increased, with selected ceramics, jewellery, and funerary traditions from across the UK, Ireland and the continent becoming visible within the archaeological record. Prehistoric houses are recorded in both upland and lowland contexts set either in isolation or clustered in settlements and generally consist of roundhouses or hut circles.

9.3.29 Funerary monuments are also widespread, although with regional variation. The burial record is in keeping with types and traditions from the rest of the British Isles. For example, individual inhumation burials began to replace the collective Neolithic rites in the early Bronze Age. This was then succeeded by cremations in larger groups and cemeteries appearing in the later Bronze Age.

9.3.30 Within the Site, there is one asset dating to the Bronze Age. This asset comprises a number of bronze age earthworks (HER 03362/02) within W1.

9.3.31 A further 11 non-designated assets dated to the Bronze Age have also been recorded within the 1 km Study Area, the most notable of which includes two potential Bronze Age Barrow cemeteries (HER 01002/01 and 05833), one located to the west of W2 (HER 01002/01) and the other located to the northeast of W3 (HER 05833).

9.3.32 Further Bronze Age assets include three thumb nailscrapers, one located to the south (HER 00831/01), and east (HER 00929/01) of W1, with the other located to the west of W2 (HER 00994/01). Pottery (HER 03292/01) and flint (HER 05625; 01054/01) are also present, located to the west of W1 (HER 03292/01) and W2 (HER 05625; 01054/01).

9.3.33 The remaining three non-designated assets dating to the Bronze Age are located within the vicinity of W1 and two collections of flint finds (HER 01284/01; 00933/01), both located to the northeast; and an arrowhead (HER 00833/01) located to the south.

9.3.34 The large number and pattern of lithics found within the Site and 1 km Study Area, along with two potential Bronze Age barrow cemeteries is reflected within the wider archaeological record for the period across the rest of South Yorkshire.

9.3.35 There is evidence of both funerary activity and settlement within W1 and 2 and there is a high potential for similar unknown remains from this period to be recovered. The evidence within W3 is less substantive. However, the presence of funerary, settlement and lithic finds in the surrounding landscape would suggest a moderate potential for further material from this period to be present within W3.

Iron Age (c. 800 BCE – c. 450 AD)

9.3.36 The first millennia BC saw a shift in bronze to iron technologies, and a decrease in the visibility of funerary/ritual traditions within the landscape, but with a perceptible increase in defensive and communal centres. In contrast to the earlier prehistoric periods, the Iron Age is a highly visible landscape, with surviving settlement examples in the form of roundhouse settlements, unenclosed platform settlements, enclosed farmsteads, and hillforts[95]. Whilst early Roman sources such as Tacitus generally grouped the inhabitants of the region as 'Brigantes', scholars have recently hypothesised that within this region, two different groups of peoples were present; the Brigantes and the Corieltauvi, with the River Don acting as the boundary between the two[96]. The Brigantes were present in South Yorkshire during the Iron Age, with two key sites located within the region; a settlement at Wincobank, located 6 km to the west of W2; and Carl's Wark fortifications, located 19 km southwest of W2[97].

9.3.37 There are six non-designated assets within the Site dated to the Iron Age period. These include two enclosures located within W2 (HER 02349/01; 6163), another two potential enclosures (HER 02005/01; 6114) located within W1, and the remaining two located within W3, which could also comprise a potential settlement site (HER 05835) and a ditch (HER 05836).

9.3.38 A further 19 non-designated assets are located within the wider 1 km Study Area, along with the Scheduled Monument of Canklow Hill Earthworks (SM1004818), located 564 m to the west of W2. The remaining non-designated assets include 16 enclosure sites (HER 04846; 00090/01; 02141/01; 06108; 02140/01; 02340/01; 05752; 02007/01; 06113; 02139/01; 03240/01; 03354/01; 00088/01); four field systems (HER 00091/01; 00089/01; 05717; 05834); and a cropmark with Iron Age characteristics (HER 02661/01).

9.3.39 There is evidence of likely Iron Age settlement, enclosures and field systems across the Proposed Development and the wider historic landscape. Given this, there is a high potential for further remains from this period to survive within the Site Boundary.

Roman (c. 48 AD – c. 410 AD)

9.3.40 By the final decades of the first millennia BCE, contact and trade with the continental Roman World was touching the lives of native British tribes. Whilst the Roman invasion of England occurred in AD 43, the Romans' arrival within the region of South Yorkshire occurred in AD 48, with the arrival of an army sent to

suppress a rebellion against Queen Cartimandua of the Brigantes[98]. Whilst the Romans did not settle, Tacitus mentions that they returned in AD 51 – 52, to support the same Queen Cartimandua. During this campaign, a Roman auxillary fort was established at Templeborough, located near the Iron Age settlement of Wincobank, which had been deserted[99]. Doncaster is also known to have had a Roman fort, known as the Danum of the Antonine Itinerary[100]. Archaeological evidence in the forms of trackways, enclosures and findspots recorded within the Portable Antiquities scheme show that the majority of Roman settlement occurred within the east of the county, within a 15 km radius from the Roman Road that led from Derby to Doncaster[101]. Chesterfield and Canklow are two settlements which developed along this road, along with the fort of Pentrich Camp[102]. Other settlement sites included smaller farmsteads scattered across the region[103].

9.3.41 During their time in the region, the Romans also exploited the area for mining lead and iron, and built roads to transport the materials across the region.

9.3.42 There are eight non-designated assets within the Site Boundary dating to the Roman period. Two of these are made up of coin hoards (HER 04256/01; 04481/01) scattered throughout W2 and W3; and three finds of pottery (HER 00993/01; 01004/01; 01005/01), all located within W2.

9.3.43 Firm evidence for settlement is present within W1, consisting of a Roman villa (HER 03023/01) and a Roman drain (HER 02566/01), similar to those found at the Roman fort of Doncaster. This Roman villa is of particular note, as this has already been partially excavated (HER 03023/01), however further information at this time is unavailable. A Roman road passes through W2, running from Catcliffe to Oldcotes (HER 04916).

9.3.44 Within the wider 1 km Study Area, there are a further 42 Roman non-designated assets identified. These include 21 Roman coin finds (HER MDR6309; MDR6310; 04466/01; 00905/01; 02105/01; 02106/01; 03253/01; 03276/01; 03761/01; 04321/01; 04442/01; 00908/01; 01000/01; 01084/01; 01094/01; 01198/01; 00930/01; 00827/01; 00912/01; 03552/01; 00999/01); eight pottery finds (HER 04483/01; 01007/01; 01044/01; 01046/01; 04235/01; 03293/01; 01006/01; 01055/01); and three brooch finds (HER 02565/01; 04448/01; 02104/01).

9.3.45 One asset of particular note located c. 180 m south of W2, is the presence of a Roman burial ground, where a small burial urn with human remains was found alongside 22 skulls and a collection of Roman coins (HER 00942/01). Its proximity to W2 may mean further investigation will be needed within the nearby fields to rule out any further human remains and burial areas.

9.3.46 Further signs of Roman habitation and activity within the wider historic landscape includes a multi-period earthwork, which has been dated to the Roman period during its earliest inception (HER 05065), midden deposits (HER 02564/01), a potential enclosure (HER 02137/01), and an ‘ancient’ culvert (HER 01017/01). Industrial activity is also present in the form of a site of Roman ironstone workings (HER 00911/01) and four Roman Roads; Chesterfield to Templeborough (HER 4918); Road to Ulley (HER 01052/01); Road to Clowne (HER MDR6185); and another road from Brough to Doncaster via Templeborough (HER 4914).

9.3.47 There is evidence of likely late Iron Age to Romano-British settlement, with presumed associated field systems, roman roads and finds across the Proposed Development and the wider historic landscape. Given this, there is a high potential for further remains from this period to survive within the Site Boundary.

Medieval (c. 410 AD – c. 1534 AD)

9.3.48 The early Medieval period of South Yorkshire is sparse in terms of historical records. However, it is known that the departure of the Romans led to the emergence of the kingdom of Elmet, which was then annexed by the Kingdom of Northumbria in AD 617. By the late 10th to early 11th century, the Kingdom of Northumbria had ceded to the Kingdom of Mercia, laying the foundations for the future unification of the Kingdom of England[104]. Archaeological evidence suggests that by the Norman Conquest, there was a large system of defence works present along the Don and Dearne Valleys, and present at Barnburgh, Conisbrough, Doncaster, Kexbrough, Masbrough, Mexborough, Sheffield, Sprotbrough, Stainborough and Worsbrough[105]

9.3.49 By AD 1066, there were a number of already established settlements in and around the Proposed Development, as recorded in the Domesday Book[106]. These include but are not limited to Braithwell, Hellaby, Aston, Wales, and Harthill, all located within the hundred of Strafforth. The majority of these were most likely agricultural with secular power frequently administered from castles during the earlier part of the period. Nearby, within Mexborough, Castle Hills motte and bailey castle (SM1013650) is one such example of this administration. In the 11th century, it belonged to Roger De Busli, Lord of Tickhill[107] where he also had a castle built[108]. He also had a castle built in Laughton-en-le-Morthen[109], where he had acquired the Manor after the Norman Conquest. Conisbrough Castle (SM1010828) was also a similar administration centre and was owned by the de Warennes until the 14th century when it passed into the hands of Edmund of Langley[110].

9.3.50 Monasteries and nunneries also punctuated the landscape with their large agricultural estates. Key examples of these monastic estates within the wider region of South Yorkshire include Roche Abbey[111], located in Maltby. Established in 1147, by the 13th century, it had become a self-sufficient community and owned land for farming and agriculture. At its peak, 50 monks and 100 lay brothers lived within the abbey and worked on farm granges and sheep pastures, showing the vast amount of land which was owned by monastic establishments.

9.3.51 Another example of monastic estates within the region would be Beauchief Abbey, located in Beauchief and established in 1176[112]. As well as owning land for farming, Beauchief also controlled iron smelting within the area, along with woodland industries and mineral extraction, and owned mills located along the River Sheaf[113].The later Medieval period of South Yorkshire saw an increase in manorial estates, leading to an increase in settlements nearby and bounded deer parks as well[114]. One Manor recorded in the Domesday book and within the 1 km Study Area is Todwick Manor[115] (SM1012202), located 584 m to the southwest of W2. It had 11 households, two freemen and five smallholders, and had an estate of six ploughlands, a 3 acre meadow, 0.5 leagues of woodland, 4 furlongs mixed measures and a church[116]. Its tenant-in-chief by 1086 was Count Robert of Mortain, who is known to have been the half-brother of King William the Conqueror[117,118]. This expansion in the countryside led to an expansion of towns, albeit these were a minority, with the majority of the population still rural[119].

9.3.52 There are 10 non-designated assets dated to the Medieval period within the Site Boundary, all of which are concentrated within W1 and W2. Four of these records relate to pottery assemblages (HER 02571/01; 00459/01; 02071/01; 02069/01;). One ridge and furrow earthwork is also present (HER 03362/01), along with two trackways and roads believed to have been used from the Medieval period onwards (HER 04364/01; 01578/01). Both W1 and W2 are also recorded to have

been used as deer parks (HER 02958/01; 05811). It is also believed that a plot of land within W2 was used as a site for the district assembly of Morthen to meet (HER 03742/01).

9.3.53 A further 69 non-designated Medieval are present within the 1 km study area, surrounding all three Whitestone parcels; these are further evidence for the populous activity occurring within and around the area during this time period. Further information on these can be found in **Appendix E.2.**

Post-Medieval (c. 1534 AD – c. 1900 AD)

9.3.54 The Post-Medieval period is seen as a time period of transition, with many changes occurring both in the rural countryside of the country and the bigger towns. The dissolution of the monasteries in AD 1534 and the split of the monarchy from the Catholic church led to a decrease of influence and assets for the many monasteries which had acquired land and estates within the country, and an increase of land ownership amongst the gentry and nobility[120]. The enclosure acts from the 17th to 19th century further changed the landscape of agriculture, by banning the open field system and introducing the use of enclosed land instead[121]. The majority of the area remained farmland throughout this period.

9.3.55 By the 19th century, new technological advances like the railway led to the industrial revolution in nearby towns, with Sheffield and Rotherham expanding to become some of the biggest steel makers and exporters in the world[122]. This expansion of industry within the larger towns was further encouraged by the large amount of natural resources within the wider countryside of South Yorkshire, which were mined and transported via new canal ways and rail lines into the bigger cities. Examples of this can be seen at Kiveton, where a railway line was built in AD 1845, which led to the Kiveton Park Colliery being established in AD 1846, which mined coal and utilised the new railway line for transport. Killamarsh is one such example of a town which expanded due to new technologies and industries, evidenced by the large amount of assets recorded within the HER data dating to the Post-Medieval period. These assets include canals (MDR9884; 6152), tramroads (MDR9883; 6312; 9887), colleries (MDR9880; 9881; 9882), letterboxes (MDR11115), and public buildings like schools (MDR12523; 12527). Conisborough's riverside location also helped its development and expansion, as new transport technologies meant a more efficient way to transport the mineral resources being mined and quarried at the time. This is seen through the HER data, where a number of industrial assets are recorded as having been established during the Post – Medieval period. These include a new mill (HER 06011), a new dam (HER 02786/01), and two new quarries (HER 03362/03; 04795). A brickyard (HER 04367/01) and new access shafts (HER 04368/01) were also built during this expansion.

9.3.56 Anston's location near a small river tributary also helped their growing industry, as they built two mills during the Post-Medieval (HER 05984; 05985). This industrial expansion and activity is evidenced within the 1 km Study Area. There are six non-designated assets dating to the Post-Medieval period within the Site Boundary itself, all of which are related to the industrial revolution and new technological advances. These include two mills (HER 05838; 05842) and features related to the Chesterfield Canal (HER 02451/01), all of which are located within W3. The remaining five assets are all located within W1, and include a dam (HER 02786/01), ventilation and access shafts (HER 04368/01),

two mineral extractive pits (HER 03362/03;04793), and a brickyard (HER 04367/01).

9.3.57 Within the wider 1 km Study Area, there is one Registered Park and Garden (Listing 1001365), 100 Listed Buildings (two Grade II* and 98 Grade II) dating to the Post-Medieval period, and a further 60 non-designated assets. These assets include a further two collieries (HER MDR9045; MDR9880), and a number of quarrying pits, mills and canal features, as well as a number of Listed farmhouses and their associated buildings, and buildings associated with the growth and expansion of nearby smaller towns.

9.3.58 The majority of non-designated assets also include new roads, buildings, further industrial activity and farmsteads.

Modern (c. 1900 AD – Present)

9.3.59 The Industrial revolution within the region continued into the Modern period and is considered to have continued up until AD 1913[123]. Whilst nearby larger towns, like Sheffield and Rotherham saw rapid expansion and settlement occur, the villages surrounding the Proposed Development developed at a steadier pace. Previously mentioned collieries like Kiveton continued to be used into the Modern period, with Kiveton in use up until 1994.

9.3.60 The majority of the area remained a mix of rural, small-scale industry and settlement, with smaller villages surrounding the area like Harthill and Woodall. The proximity of these villages to larger towns caused these smaller settlements to experience a number of bombings during World War Two, affecting a number of the population.

9.3.61 In-between World War One and World War Two and beyond, the South Yorkshire region experienced a period of expansion in both settlements, population and infrastructure, a pattern reflected within the rest of the country. These expansions can be seen in OS maps[124], when comparing maps from the 1920s to the 1940s.

9.3.62 This can be seen in towns like Rotherham post-World War One, along with Mexborough, most likely encouraged by their riverside location. By the late 1940s, smaller towns like Handsworth and Wickersley were also expanding rapidly, whilst smaller, steadier expansion can be seen on maps of towns like Todwick and Thurcroft. This was most likely due to their location within the eastern rural periphery of the River Don, whilst towns like Rotherham and Mexborough were a lot closer to the River Don.

9.3.63 Within the Site Boundary, there is one Modern non-designated asset. This is a heavy anti-aircraft battery (HER 04712) located within W2.

9.3.64 The surrounding 1 km Study Area includes a further six non-designated assets dating to the Modern period.

9.3.65 Five of these assets are also connected to World War Two military activity and comprise of two anti-aircraft batteries (HER 04691; 04711), two World War Two bombing decoys (HER 04724; 04665) and an anti-aircraft operations control room (HER 04686). The majority of these are located around W1, apart from the anti-aircraft operations control room (HER 04686) and the bombing decoy (HER 04724), which are located near W2.

9.3.66 The remaining modern asset within the 1 km Study Area includes an educational facility (MDR12522), built in 1927 by George Henry Widdows.

9.3.67 Given the baseline information there is a high potential for further remains relating to farming and agriculture from this period to survive within the Site Boundary. Isolated assets associated with industry and World War Two findspots may also be present.

Undated assets

9.3.68 There is one non-designated assets located within the Site Boundary, which consists of undated earthworks (HER 04365/01), whilst a further 20 are located within the 1 km Study Area. These 20 include further undated earthworks, cave sites, lithic and pottery assemblages.

9.3.69 Further information on these assets is listed in **Technical Appendix E.2** and can be seen in **Figures 9.2 – 9.4** and **9.6 – 9.8.**

Designated Assets

1 km Study Area

9.3.70 There are no designated assets within the Site Boundary.

9.3.71 Within the 1 km Study Area, there are 128 designated heritage assets, which encompasses the following:

- One Grade I Registered Park and Garden;
- Three Scheduled Monuments;
- 12 Conservation Areas; and
- 112 Listed Buildings (Three Grade I, six Grade II* and 103 Grade II).

9.3.72 Further information on these assets is listed in **Technical Appendix E.1** below and can be seen in **Figure 9.5.**

9.3.73 A further 25 assets from the local list were also considered for potential indirect effects. Out of these 25, one was considered at risk from adverse changes in setting resulting from the Proposed Development. This is listed in **Table 9.1** below. A list of the 25 Locally Listed assets can be found in **Technical Appendix E.3**.

3 km Study Area

9.3.74 Within the 3 km Study Area, there are 359 designated heritage assets, which encompasses the following:

- Three Registered Parks and Gardens (One Grade I, two Grade II);
- 20 Scheduled Monuments;
- 23 Conservation Areas; and
- 313 Listed Buildings (13 Grade I, 26 Grade II* and 274 Grade II).

9.3.75 Further information on these assets can be found in **Technical Appendix E.4** and can be seen in **Figure 9.9**.

Non-Designated Heritage Assets

The Site

9.3.76 There are 38 non-designated heritage assets located within the Site Boundary, ranging in date from the Prehistoric through to the Modern periods. These include a number of prehistoric flint assemblages, Roman coins and pottery, Medieval pottery and post-medieval and modern industrial sites. Further information on these assets can be found in **Technical Appendix E.2** and can be seen in **Figure 9.2 - 9.4**.

1 km Study Area

9.3.77 A further 255 non-designated assets are located within the 1 km Study Area, and range in date from the Prehistoric through to the Modern periods.

9.3.78 Further information on these assets can be found in **Technical Appendix E.2** and can be seen in **Figures 9.6 – 9.8**.

9.4 Potential Effects and Mitigation

9.4.1 The following potential impacts and their effects on cultural heritage and archaeology receptors may result from the Proposed Development without appropriate mitigation, and will be considered within the Cultural Heritage and Archaeology chapter of the EIA:

- Direct Effects: Ground disturbance, most likely to occur during construction, causing potential loss of whole or part of a buried heritage asset;
- Indirect Effects (Setting): A change in the setting of a heritage asset during construction, operation and decommissioning phases that may result in a loss of cultural significance; and
- Cumulative Effects: The interaction of impacts and effects to cultural heritage assets from the Proposed Development, in conjunction with other projects either consented but not yet built, or currently proposed but waiting for planning consent.

Direct Effects

9.4.2 Assets located within the Site are likely to be subject to Direct Effects as a result of the Proposed Development. There are 38 known heritage assets within the Site Boundary that may be subject to disturbance during the lifetime of the Proposed Development. These assets are provided in **Technical Appendix E** and can be seen on **Figures 9.2 – 9.4**.

9.4.3 Assets located within the cable route are likely to be subject to Direct Effects as a result of the Proposed Development. The cable route will be subject to the same level of assessment as the Proposed Development using both primary survey and secondary sources. Further archaeological site investigations will be undertaken to identify heritage assets which will have the potential to be impacted. The scope of any archaeological site investigation will be agreed with the archaeological advisors to the relevant LPA.

Indirect Effects (Setting)

9.4.4 Changes to setting may occur during the Construction Phase but are typically considered to peak during the Operational Phase of a Proposed Development, with the Proposed Development having maximum visual and experiential impact following the installation of all above ground infrastructure.

9.4.5 The Proposed Development will require the construction of buried electrical transmission cables. Following construction, there will be no, or very limited above ground infrastructure associated with the cable. Indirect Effects relating to Setting will be short lived during the construction phase. Given the above, Indirect Effects relating to Setting derived from the cable route have been scoped out of the assessment.

9.4.6 In relation to the Proposed Development and above ground infrastructure, there is a potential for Indirect Effects to setting to occur in relation to both designated and non-designated heritage assets located within the 3 km Setting Study Area and within the wider historic landscape, where an asset is sensitive to change to long distance views.

9.4.7 A list of the 231 designated assets within the 3 km Study Area can be found in **Appendix E.4** and can be seen in **Figure 9.9**. Of these 231 designated assets, 22 are considered most at risk to adverse changes in setting because of the Proposed Development. The final number of assets considered for assessment relating to changes in setting will be finalised following consultation with HE and SYAS.

Table 9.1 Heritage assets most at risk to adverse changes in setting

Designation	Reference	Name	Grade	Rationale	Buffer
Registered Parks and Gardens	1001365	Barlborough Hall	N/A	Proximity	1 km
Scheduled Monument	1012201	Blue Man's Bower moated site, Whiston	N/A	Proximity to substation	1 km
Scheduled Monument	1012202	Manor House moated site	N/A	Proximity	1 km
Scheduled Monument	1004788	Thorpe Salvin Old Hall	N/A	Proximity	3 km
Scheduled Monument	1010828	Conisbrough Castle	N/A	Potential visibility from tower	3 km
Conservation Area	N/A	Clifton	N/A	Proximity	1 km
Conservation Area	N/A	Ulley	N/A	Proximity	1 km
Conservation Area	N/A	Whiston	N/A	Potential visibility from Moorhouse Lane	3 km
Conservation Area	N/A	Aston	N/A	Potential visibility from the southeastern end	1 km

Designation	Reference	Name	Grade	Rationale	Buffer
Conservation Area	N/A	Barlborough	N/A	Proximity	1 km
Conservation Area	N/A	Brampton en le Morthen	N/A	Proximity	1 km
Conservation Area	N/A	Harthill	N/A	Proximity	1 km
Conservation Area	N/A	North Anston	N/A	Proximity	1 km
Conservation Area	N/A	Old Edlington	N/A	Proximity and potential visibility	3 km
Conservation Area	N/A	Wickersley	N/A	Proximity	1 km
Conservation Area	N/A	Laughton en le Morthen	N/A	Potential visibility from the western road of Church Cor	3 km
Conservation Area	N/A	Thorpe Salvin	N/A	Proximity	3 km
Listed Building	1108972	Balborough Hall	I	Proximity	3 km
Listed Building	1192747	Conisbrough Castle	I	Potential long distance views	3 km
Listed Building	1193267	Church Of All Saints	I	Potential long distance visibility due to being on a hill	3 km
Listed Building	1314667	Church Of St Peter	I	Proximity	3 km
Listed Building	1286372	Ruins Of Thorpe Salvin Hall	II*	Proximity	3 km
Listed Building	1314668	Gatehouse To Thorpe Salvin Hall	II*	Proximity	3 km
Listed Building	1314692	Thurcroft Hall	II*	Potential visibility due topography	3 km
Listed Building	1132736	Boston Castle	II	Potential visibility due to topography and on top of hill	3 km
Listed Building	1151909	Ha Ha Immediately To East Of Kiveton Hall	II	Proximity and potential visibility	3 km

Designation	Reference	Name	Grade	Rationale	Buffer
Listed Building	1151910	Section Of Wall Flanking South Side Of Drive To Kiveton Hall And Forming North Side Of Walled Garden To South West Of House	II	Proximity and potential visibility	3 km
Listed Building	1193008	Kiveton Hall	II	Proximity and potential visibility	3 km
Listed Building	1193019	Main Gate Piers To Kiveton Hall	II	Proximity and potential visibility	3 km
Listed Building	1286344	End Sections Of 2 Outbuildings At Kiveton Hall Farm Each Having Twin Oeil-De-Boeuf And Facing Kiveton Lane	II	Proximity and potential visibility	3 km
Locally Listed Asset	N/A	Edlington Wood, Edlington Historic Park & Garden	N/A	Topography and potential visibility	3 km

Cumulative Impacts

9.4.8 Cumulative Effects typically occur during the construction and operational phases of a project. There is the potential for cumulative impacts as a result of Direct and Indirect / Setting Impact interactions with other projects.

9.4.9 A list of projects which may generate cumulative impacts to heritage assets will be supplied to and agreed with HE, and relevant LPAs during the production of the Archaeology and Cultural Heritage ES chapter.

Approach to Mitigation

Direct Effects

9.4.10 Known archaeology, as identified within the Historic and Archaeological Baseline, will be avoided during design of the Proposed Development, where possible, within the limits of other on-site constraints. The assessment of Direct Impacts and Effects will consider the proximity of known heritage assets to areas of proposed ground disturbance, as well as the potential for groundworks to disturb previously unknown heritage assets.

9.4.11 Where it is not possible to avoid impacts through amending the layout and design of the Proposed Development, consultation will be undertaken with appropriate stakeholders to formulate a suitable mitigation strategy. Any mitigation strategy

would aim to reduce the magnitude of effect through archaeological recording in advance of or during construction. Mitigation may include archaeological excavation, watching brief, historic building recording, historic landscape recording, and the dissemination of the results of these works.

Indirect Effects

9.4.12 In the first instance mitigation of adverse impacts to Setting will be made by changes in layout and design of the Proposed Development, where this is possible within the limits of other constraints. Where changes to layout and design is not possible, consultation with HE and the relevant LPAs regarding setting impacts will be undertaken. Practical measures to reduce the impact will be developed, following specific guidance provided by Historic England.

9.5 Technical Scope and Approach to EIA

Proposed Scope of the EIA

9.5.1 **Table 9.2** below presents a summary of environmental effects to be scoped into the assessment

Table 9.2 Environmental Effects to be Scoped into the Assessment

Environmental Receptor or Effect	Rationale
Direct Effects to heritage Assets within the Site	Direct impacts to heritage assets as a result of the Proposed Development are considered possible and may have a significant impact if identified.
Indirect Effects to the setting of designated heritage assets	Additional assets beyond 3 km may be scoped in where: • They fall within the bare earth ZTV; • They have been requested for assessment by stakeholders; and / or, • They have the potential to be impacted by the Proposed Development.
Indirect Effects to the setting of non-designated heritage assets	Setting Impacts to locally listed non-designated heritage assets within the 3 km Study Area, with inclusion for assessment decided following consultation and sieving exercise. Additional assets beyond 3 km may be scoped in where: • They fall within the bare earth ZTV; • The asset is sensitive to changes in long distance views that contribute towards their significance; or • They have been requested for assessment by stakeholders.
Cumulative Effects	Additional projects beyond 3 km may be included for assessment where: • Bare earth ZTVs overlap; or

Environmental Receptor or Effect	Rationale
	• They have been requested for assessment by stakeholders;

9.5.2 **Table 9.3** below present a summary of environmental effects to be scoped out of the assessment.

Table 9.3 Environmental Effects to be Scoped out of the Assessment

Environmental Receptor or Effect	Rationale
Assessment of the direct effects to heritage assets outwith the Site Boundary, with the exception of designated assets such as bridges along transport routes.	Direct Effects to heritage assets outwith the Site Boundary are considered unlikely.
Indirect Effects to the setting heritage assets within the cable route	Significant Indirect Effects to setting are considered unlikely.

Methodology

9.5.3 This assessment will consist of a multi-staged and iterative approach to baseline data gathering, beginning with a heritage baseline.

9.5.4 The heritage baseline aims to:

- Identify all known cultural heritage assets within the Site Boundary and 1 km Study Area;
- Identify areas of high archaeological, geoarchaeological or paleoenvironmental potential within the Site Boundary;
- Identify the gaps in the baseline data and potential risks of encountering unknown features during construction of the Proposed Development; and
- Provide sufficient information to allow for an accurate assessment of Direct Impacts and Effects to be produced within the Archaeology and Cultural Heritage chapter.

9.5.5 The heritage baseline will be supplemented by further site investigation work, inclusive of, at the least, a walkover survey and geophysical survey of the land within the Site Boundary. The heritage baseline and results of initial site investigation works will be used to inform the scope of further site investigation works, needed to support the ES The scope and extent of pre-determination archaeological site investigation works will be agreed following consultation with SYAS.

9.5.6 The heritage baseline will also include the production of Geographical Information System (GIS) data packages that form the spatial framework for subsequent stages of the baseline data gathering programme. One of the key outputs of the heritage baseline is the production of a comprehensive gazetteer of known assets within the Site Boundary and 1 km Study Area. Each asset is assigned a unique identifying code, and their location, condition, extent, and likely date is described. This gazetteer is then updated throughout the subsequent phases of investigation and forms the basis of the impact assessment.

Walkover Survey

9.5.7 The historic baseline will be augmented by a walkover survey, within the Site, in order to:

- Assess and validate documentary data collected;
- Identify the extent and condition of any visible archaeological remains; and
- Determine whether previously unrecorded historic features are visible.

Geophysical Surveys

9.5.8 A programme of geophysical survey (detailed gradiometer survey) will be undertaken across all land parcels within the Site Boundary, where:

- Survey is physically possible,
- Land use and geology allow for the production of useful results; and
- Ground disturbance associated with the Proposed Development will, or is, likely to occur.

9.5.9 The geophysical survey of the Site will be carried out to ground truth secondary data sources as well as identify further unknown and undiscovered heritage assets within the Site. The results of the walkover and geophysical survey will, enhance the historic baseline.

Additional Surveys

9.5.10 The initial findings of the heritage baseline, walkover and geophysical survey will be discussed with SYAS. The results will be used to inform the scope and scale of further archaeological site investigations that will be needed to inform the ES Chapter.

9.5.11 Further intrusive survey is intended to provide sufficient information to allow for an accurate assessment of Direct Impacts and Effects associated with the Proposed Development.

9.5.12 Intrusive surveys can take the form of field walking, trial trenching, test pitting, metal detecting, geoarchaeological investigation (boreholes) and targeted excavation.

9.5.13 There is an assumption that a targeted programme of archaeological trial trenching will be needed to establish the nature, extent, character and significance of known heritage assets and geophysical anomalies. Where there is both high archaeological potential and proposed ground disturbance, trial trenches may be positioned to sample ‘blank’ areas with no known heritage assets to ground truth the heritage baseline and geophysical survey.

9.5.14 If there is potential for the Proposed Development to impact deposits of geoarchaeological or paleoenvironmental interest, or if there are sufficiently deep masking deposits such as alluvium or colluvium in valley bottoms or sides respectively, a geoarchaeological evaluation may be carried out.

Setting Assessment

9.5.15 Setting Impacts will be assessed in accordance with Historic England's 'Historic Environment Good Practice Advice in Planning Note 3: The Setting of Heritage Assets'[125]. In accordance with the latter, setting impacts are generally viewed as indirect effects resulting from the proposal causing change within the setting of a heritage asset that affects its cultural significance or the way in which it is understood, appreciated and experienced. Setting Impacts may also occur indirectly at some distance from the proposal, for example as a result of changes in traffic. Setting impacts may be permanent, reversible or temporary.

9.5.16 To aid in the assessment of Indirect Effects to Setting, reference will be made to the extent of the potential visual changes in setting as determined through the use of bare earth ZTV and LVIA viewpoints.

9.5.17 As part of the assessment of Indirect Effects to Setting, a sieving exercise will be undertaken to determine which heritage assets will be included within the detailed Setting Assessment. A table listing assets for inclusion within, or exclusion from, the assessment of Indirect Effects (Setting) will be provided to stakeholders along with a rationale for any decisions made. A detailed assessment of Indirect Effects (Setting) will form a standalone Technical Appendix to the Archaeology and Cultural Heritage ES chapter. The sieving exercise itself will form a standalone Technical Appendix to the ES chapter within which all designated and selected non-designated assets will be listed along with a rationale for inclusion and exclusion and a summary of predicted impacts and effects. For inclusion, assets will need to meet the following criteria:

- The asset must lie within the bare earth ZTV;
- The asset must have potential for views of the Proposed Development;
- An asset must derive part of its setting and therefore cultural significance, from either a historic relationship to the Site or through views from the asset, taking in the fields of the Proposed Development or views across the Site; and
- An asset's setting, and cultural significance, are partly derived from external views towards the asset, be that from wider landscape views or directly on the approach to that asset. The Proposed Development must have the potential to erode these views.

Assessment of Heritage Significance

9.5.18 Heritage assets are assessed in terms of their significance, following the requirement in NPPF paragraph 200[7], and taking account of Historic England's guidance on 'Managing Significance in Decision-Taking in the Historic Environment'[126].

9.5.19 Significance, in relation to heritage policy, is defined by the NPPF as '*the value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset's physical presence, but also from its setting*.'[7]

9.5.20 The NPPF glossary and the PPG state that an asset's significance derives from its heritage 'interests', which the latter defines as follows:

- Archaeological interest: *"As defined in the Glossary to the National Planning Policy Framework, there will be archaeological interest in a heritage asset if it*

holds, or potentially holds, evidence of past human activity worthy of expert investigation at some point."

- Architectural and artistic interest: *"These are interests in the design and general aesthetics of a place. They can arise from conscious design or fortuitously from the way the heritage asset has evolved. More specifically, architectural interest is an interest in the art or science of the design, construction, craftsmanship and decoration of buildings and structures of all types. Artistic interest is an interest in other human creative skills, like sculpture."*
- Historic interest: *"An interest in past lives and events (including pre-historic). Heritage assets can illustrate or be associated with them. Heritage assets with historic interest not only provide a material record of our nation's history but can also provide meaning for communities derived from their collective experience of a place and can symbolise wider values such as faith and cultural identity."*

9.5.21 Historic England's 'Statements of Heritage Significance: Analysing Significance in Heritage Assets', Historic England Advice Note 12 (2019)[127], also promotes the use of this terminology and methodology, both of which are therefore adopted for the purposes of this assessment. This approach allows for a detailed and justifiable determination of heritage significance and the interests from which that significance derives. In accordance with the NPPF and the PPG, the level of significance attributed to heritage assets is articulated as follows:

- Designated heritage assets of the highest significance, as identified in paragraph 206 of the NPPF, comprising Grade I and II* Listed buildings, Grade I and II* Registered Parks and Gardens, Scheduled Monuments, Protected Wreck Sites, World Heritage Sites and Registered Battlefields (and also including some Conservation Areas) and non-designated heritage assets of archaeological interest which are demonstrably of equivalent significance to Scheduled Monuments, as identified in footnote 72 of the NPPF (2024)[7];
- Designated heritage assets of less than the highest significance, as identified in paragraph 206 of the NPPF, comprising Grade II Listed buildings and Grade II Registered Parks and Gardens (and also some Conservation Areas); and
- Non-designated heritage assets, as defined within the PPG as "buildings, monuments, sites, places, areas or landscapes identified by plan-making bodies as having a degree of significance meriting consideration in planning decisions, but which do not meet the criteria for designated heritage assets".

Magnitude of Impact

9.5.22 Magnitude of impact is the predicted degree of change to the existing baseline environment during and/or following the construction of the Proposed Development. The methodology for predicting the degree of change that will be employed in this assessment moves away from the more traditional 'scalar', matrix-led approach. It instead adopts a descriptive, qualitative presentation of the changes to heritage significance that are predicted as a result of the Proposed Development, which directly reflects key concepts in current planning policy and heritage guidance and allows for a less constrained assessment of effects.

Significance of Effects

9.5.23 The process of carefully describing the level of heritage significance of each asset that may be affected by the Proposed Development and the interests from which that significance derives, combined with a prediction of the degree of change (magnitude) to this significance following the Proposed Development, will allow for an assessment of the overall effect of the Proposed Development upon the asset in question. In each case professional judgement will be employed to determine the likely significance of the effect. In reference to EIA regulations, where the Proposed Development is predicted to result in a substantial erosion of the significance of a heritage asset, this may be described as a significant effect.

Assessing Harm to Heritage Significance

9.5.24 Potential effects are discussed in terms of harm to heritage significance with reference to the NPPF (2023), as follows:

- Substantial harm or total loss;
- Being a level of harm that would "have such a serious impact on the significance of the asset that its significance was either vitiated altogether or very much reduced"; and
- Less than substantial harm.

9.5.25 Being any lesser level of harm than that defined above, recent case law has confirmed that this includes any level of harm (not considered substantial) regardless of its quantification, e.g. the finding of a 'negligible' level of harm must still be treated as less than substantial harm and be weighed in the balance under paragraph 208.

9.5.26 The PPG provides that the category of harm identified for any given asset be 'explicitly identified', and that the extent of that harm be 'clearly articulated'. For purposes of this assessment, this is done with reference to a 'scale', e.g. at the lower/upper end of the scale of less than substantial.

9.5.27 The NPPF does not provide that harm to non-designated heritage assets be categorised as 'substantial' or 'less than substantial', only that the scale of any harm or loss is articulated.

The High Court has clarified that 'preservation' does not mean no change; it specifically means no harm. This is echoed in Historic England's guidance on 'Managing Significance in Decision-Taking in the Historic Environment'[128], which states that "Change to heritage assets is inevitable but it is only harmful when significance is damaged". The assessment of anticipated effects presented in this chapter can thus be seen to have been undertaken in accordance with a robust methodology, formulated within the context of current best practice, the relevant policy provisions, and key professional guidance.

9.6 Assumptions, Limitation and Uncertainties

9.6.1 Although it is unlikely that the overall predicted impacts of the Proposed Development on cultural heritage resources will diverge from the assessment presented here, there are important limitations to the available data set that it is important to highlight:

- This assessment comprises a desk-based review of information taken from LPA datasets, as well as a variety of secondary sources. Whilst this information is assumed to be accurate, it does not constitute a complete record of the historic environment and does not preclude the potential for hitherto unidentified archaeological remains or deposits to be encountered within the Site. Undertaking the walkover survey and geophysical survey to support this chapter does not preclude the possibility that additional or subsurface archaeological remains survive within the Proposed Development;
- The bare earth ZTV and supporting visualisations used to support the assessment of Indirect Effects to Setting are assumed to be accurate and accurately reflect the visual presence of the Proposed Development in the surrounding landscape; and
- Although below ground impacts can be predicted, there is always potential for encountering previously unknown and unexpected remains. Even for known archaeological sites, however, there is always an element of uncertainty regarding the condition, extent and nature of the resource. The assessment of potential impacts may therefore need to be revised following further assessment and evaluation, and during the mitigation process itself.

10 GROUND CONDITIONS AND LAND QUALITY

10.1 Introduction

10.1.1 This chapter of the Scoping Report identifies the land quality and ground conditions of the Site, the receptors of relevance to the Proposed Development and considers the potential effects from the construction, operation and maintenance, decommissioning, closure and restoration of the Proposed Development. Consideration is given to land that potentially contains contamination and areas of designated mineral resources. This chapter also sets out the proposed approach that will be taken in the assessment, together with a summary of information that is currently available.

10.2 Topic-Specific Legislation and Guidance

10.2.1 This scope of the Ground Conditions and Land Quality assessment section of the EIA has been developed in line with the following key legislation, policy and associated guidance:

- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017[129];
- The Environmental Protection Act 1990, and Part 2A of the Environmental Protection Act 1990 (and subsequent amendments)[130];
- EU Groundwater Directive (2006/118/EC) 2006[131];
- Water Resources Act 1991[132];
- The Water Act 2014[133];
- Environment Agency/ Defra Land Contamination Risk Management (LCRM) 2023[134];
- National Planning Policy Framework (NPPF)(2024)[7];
- NPPF planning practice guidance for Land affected by contamination (2019)[135];
- NPPF planning practice guidance for Land stability (2019)[136];
- NPPF planning practice guidance for Minerals (2014)[137];
- National Policy Statement for Renewable Energy Infrastructure (EN-3, November 2023)[5]; and
- Institute of Environmental Management & Assessment Land Soil in Environmental Impact Assessment (EIA) Guidance (2022)[138].

10.2.2 In addition to the national guidance, the Proposed Development will extend across land within both RBMC and CDC, both of which have Supplementary Planning Documents considered relevant to Ground Conditions and Land Quality:

- Rotherham local plan Supplementary Planning Document No. 11 Natural Environment (2021)[139];

- Development on Land Affected by Contamination, Technical Guidance for Developers, Landowners and Consultants. Yorkshire and Lincolnshire Pollution Advisory Group (2019)[140]; and
- Doncaster Local Plan (2021)[8] and Technical and Developer Requirements Supplementary Planning Document (Adopted by Doncaster 2023)[141].

10.3 Preliminary Baseline Conditions

Data Sources

10.3.1 The Environmental Statement (ES) will present detailed information on the Ground Conditions and Land Quality of the Proposed Development following the review and analysis of the data sources listed below.

10.3.2 The data sources used for the assessment are as follows:

- British Geological Survey (BGS) Solid and Drift Geology, 1:50,000 England and Wales;
- BGS GeoIndex Onshore interactive viewer[142];
- DEFRA's MAGIC Map[12];
- the Coal Authority Interactive Viewer[13] noting that the Coal Authority has been renamed the Mining Remediation Authority and is referred to as such from here on;
- Rotherham Local Plan Interactive Policies Map[143];
- Doncaster Local Plan Policies Map[144]; and
- Natural England's Agricultural Land Classification (ALC) Map[145].

10.3.3 ALC surveys will be undertaken to provide some of the baseline information. Considering the very large area of the Proposed Development, a proposed density of one ALC sample per two hectares, instead of the usual one hectare, is considered proportionate, subject to approval from Natural England.

10.3.4 Site-specific data may also need to be obtained for higher risk parts of the Site, such as from an environmental database (e.g., Landmark Envirocheck Report), Mining Remediation Authority reports or from data held by the Applicant once the search areas have been refined, later in the EIA and in advance of issuing the ES. A targeted walkover of areas of interest may be undertaken as part of the assessment if the desk-based review indicates that this is necessary. It is possible that certain parts of the Site which are deemed critical may have risks from potentially contaminated land or previous coal workings, and Phase 1 desktop assessments of these may recommend Phase 2 intrusive investigations. Phase 2 investigations would only be undertaken if the Phase 1 desk-based assessment identified credible risks, such as polluted soils or poor ground conditions due to previous land use, for example from coal mining, and if the Proposed Development infrastructure could not be relocated elsewhere.

Proposed Ground Conditions and Land Quality Study Area

10.3.5 The Study Area for this topic consists of the Site and a data search buffer of up to 100 m, based on professional judgement, to enable the identification of both on-

site and off-site sources of potential contamination and other factors that may influence the land quality and ground conditions at the Proposed Development.

10.3.6 The inclusion of relevant sensitive sources and receptors gives due consideration to the following;

- The nature of the Proposed Development (solar PV modules, buried cables and BESS) does not typically include occupied buildings, therefore the risk from ground gases (including radon) is considered low. Potential ground gas sources are therefore restricted to features located within or adjacent to the Site; and
- Historical pollution incidents classified as having a 'major' impact on land or water.

10.3.7 Other receptors considered within the Study Area will include:

- Human health (as residents, amenity users, in places of work or schools);
- Ecological habitats, including designated land;
- Livestock, property;
- Sub-surface services and foundations;
- Land as an agricultural resource;
- Mineral resources;
- All designated Principal and Secondary Aquifers, and especially any active groundwater and surface water abstractions; and
- All surface waters, including land drains.

Temporal Scope

10.3.8 Ground Conditions and Land Quality will be assessed for each of the Proposed Development phases, i.e. during construction, operation and decommissioning. The Proposed Development will be designed and operated in a manner to allow its ready decommissioning by dismantlement and removal of equipment and infrastructure and with recycling of materials maximised. The precise details of the decommissioning process some 60 years hence are not presently foreseeable. However, the impacts and effects of decommissioning are unlikely to be materially different or greater than those from construction and associated impacts are likely to be manageable to a similar extent as during construction. Therefore, it is proposed that decommissioning is scoped out of the ground conditions and land quality assessment of the ES.

Preliminary Baseline Conditions

10.3.9 The Proposed Development is located east of Sheffield, South Yorkshire, within the administrative areas of the CDC and RMBC. There are different bedrock geology and superficial sediments across the different land parcels, however the overarching geology remains reasonably consistent.

10.3.10 The bedrock geology comprises the Upper Carboniferous Pennine Middle and Upper Coal Measures of Sandstone, Mudstone and Siltstone (~ 315 – 307 Million years ago (Ma)); which includes the following Members:

- Mexborough Rock of Sandstone (~313 Ma);

- Ackworth Rock of Sandstone (~313 Ma);
- Dalton Rock of Sandstone (~313 Ma);
- Wickersley Rock of Sandstone (~313 Ma); and
- Ravenfield Rock of Sandstone (~313 Ma).

10.3.11 The Coal Measures are overlain in parts of the Site by the Middle to Upper Permian Cadeby Formation of Dolostone (273 – 251 Ma).

10.3.12 The bedrock is overlain in part by various superficial deposits, mapped as follows:

- Head and Alluvium of Clay, Silt, Sand and Gravel (~2.6 Ma – Present);
- Mid Pleistocene Till of Diamicton (770,000 – 129,000 years old); and
- Mid Pleistocene Glaciofluvial deposits of Sand and Gravel (770,000 – 129,000 years old).

10.3.13 The Proposed Development lies within an area of historical coal mining. As such, consideration must be made for the potential of historic coal mining infrastructure and the risks associated with development in terms of the ground conditions, chiefly contaminated land and geotechnical stability. Areas are also designated by the Mining Remediation Authority as being at 'high risk of development', meaning there are still coal resources present in those areas, and these represent potential future mineral resources. Open-source Information provided by the Mining Remediation Authority[13] identifies the following areas as containing, or within proximity of, historic coal mining activities:

- Land around the village of Woodall (W3,) contains an area of past shallow mine workings and surface mining. There are 14 recorded mine entries located within the Site. The land has also been designated as a high-risk area for development. Based on further research, it is likely that these workings relate to the West Kiverton and Kiverton Park Collieries. The Kiverton Park Colliery officially closed in 1994, and the land has since undergone remediation.
- Land in the western part of the Proposed Development, east of the village of Treeton, lies within an area of past surface mining as well as being considered an area of high risk for development. The Cable Corridor Options Search Area north of the M1 also passes over past surface mining areas and small belts designated as a high risk for development. There was no information available to further inform of the history of the coal mining in this area.
- Within the northernmost land parcels of the Proposed Development, west of the village of Clifton, there are three mine entries located on the edges of three fields. According to the Mining Remediation Authority, they are related to two areas of probable shallow coal mine workings and are also considered a high-risk area for development.

10.3.14 The Rotherham Local Plan Interactive Policies Map indicates that there are no designated Mineral Infrastructure Safeguarding Areas close to the Proposed Development. The Authority has designated a Surface Mineral and Waste Site (mapped as a clay pit and a historical landfill site) east of Hellaby that the Cable Corridor Options Area runs adjacent to and crosses the southernmost portion of.

10.3.15 The entirety of the RMBC is designated as a Shallow Coal Fire and Brick Clay Mineral Safeguarding Area, covering all of W2 and W3 and the Cable Corridor Options. Small, easternmost areas of W2 (west of Anston) also are in a Limestone Mineral Safeguarding Area, as are the Cable Corridor Options connecting W2 and

W3. The westernmost part of W2, at J38 of the M1, and the Cable Corridor Options leading to it are in a Sand and Gravel Mineral Safeguarding Area.

10.3.16 The Doncaster Local Plan Policies Map indicates that the CDC has designated Mineral Safeguarding Areas to prevent the sterilisation of sand, gravel and limestone resources, as well as for shallow coal resources, across most of the City. These cover much of the Doncaster area, including parts of W1 in the Conisbrough and Clifton area, where designated resources are Magnesian Limestone in a belt around the north and east of the Site, Sand and Gravel in a small area south of Conisbrough, and Shallow Coal across most of W1. The Cable Corridor Options Search Area south of W1 crosses the same Mineral Safeguarding areas up to the boundary with Rotheram.

10.3.17 The preliminary Radon Risk can also be assessed for the baseline conditions of the Proposed Development. The information regarding the potential radon risk has been taken from the open-source UK Maps of Radon, published by the UK Health Security Agency (UKHSA)[146]. The radon risk levels are broken down by areas of the Proposed Development as follows:

- In W3, close to the village of Woodall, there is a maximum radon risk potential of between 1-5%, with the most elevated levels in the very southern land parcels.
- In W2, north of the town of Aston and south of M1/M18 Junction 32, the Radon risk potential is predominantly low, with less than 1% of homes above the radon action level. There are some small parcels of the Proposed Development, adjacent to Todwick Road, which have raised maximum radon risk potential of between 1-3%.
- W1, located near the villages of Clifton and Ravenfield, has similar high levels of Radon risk potential as W3. Most of the land parcels have a maximum radon risk potential between 3-5%, while some parcels towards the south of this section have a maximum radon risk potential of between 1-3%.

Waste:

10.3.18 There are no permitted waste sites within the Site Boundary.

10.3.19 There are a number of historic landfill sites that are adjacent or within the Site Boundary. A historical landfill site east of Hellaby is adjacent to the Cable Corridor Options Area between W1 and W2, which also crosses the southernmost portion of historical landfill site. The Cable Corridor Options Area north of Hellaby, on the west side of the M18, crosses infilled land marked as historical landfill sites, probably infilled railway cuttings. For the W2 area, a small parcel of land north-east of Treeton also overlaps with land marked as a historical landfill site, as is a short stretch of infilled railway cutting west of Anston. Further south a small area of the Cable Corridor Options east of Kiverton Park crosses a historical landfill.

ALC

10.3.20 The baseline conditions for ALC have been estimated based on Natural England's Regional Agricultural Land Classification Maps[147]. It is important to note that Natural England's ALC plans are available at 1:250,000 scale showing the "provisional" ALC grading of land from the 1970s. As such, further ALC surveys will be undertaken to verify the ALC grading of the Proposed Development.

Current provisional ALC grades present at the Site (and shown on **Figure 3.9**) are as follows:

- The majority of the Proposed Development falls within Grade 3, meaning the agricultural land is good to moderate quality. The provisional regional ALC mapping does not differentiate between 3a and 3b, which can only be determined by field surveys.
- There are small parcels in the east and centre of W2 which are Grade 4, meaning the agricultural land is of poor quality.
- W1 varies more, with ALC grades ranging from 2 to 5 (very good to very poor quality) on the easternmost and westernmost Site Boundary.

10.4 Likely Significant Effects and Mitigation

10.4.1 Likely significant effects on Ground Conditions and Land Quality which may occur from the Proposed Development could include:

- In terms of the agricultural land classification, there is land of moderate to very good quality within the Site Boundary. Consequently, the Proposed Development has the potential to impact best and most versatile (BMV) quality land, which is ALC class 1, 2 and 3a. There is the potential that the Proposed Development could, in certain areas, either permanently or temporarily affect land quality by, for example, sealing the soil in certain areas or altering the land grade;
- The Proposed Development lies within an area of historic coal mining and there is the potential that there remains historic mining infrastructure within the Site Boundary. Such infrastructure, such as mine entries or infilled land, could create structural stability concerns and have the potential for historic contamination that could be remobilised during development;
- Remobilisation of contaminants may develop new or enhance existing pathways from sources of contamination in the ground to surrounding sensitive receptors (including controlled waters, such as groundwater and surface waters). Potential sources of contaminants includes historical landfills and land used historically for coal mining, and several areas of both types exist within the Proposed Development;
- The installation of cables within the Cable Corridor Options Area has the potential to act as a pathway for any contaminants that are in the ground from the sources potentially present, e.g. historic landfills. Installation of cables by horizontal drilling techniques, such as under surface waters or roads, uses pressurised drilling fluids which have the potential to escape into the sub-surface, or surface environment, if not properly managed;
- High voltage cables, proposed to be installed along some of the Cable Corridor Options Area, are known to generate heat. Recent changes to legislation (Environmental Permitting Regulations, amendments in 2023) extended the definition of pollution to include heat. Although no specific guidance for cables exists, thermal effects will be considered in the ES;
- Groundworks may impact the quality of the soil resource during construction and decommissioning from the trafficking of vehicles / plant and poor soil handling, which can cause damage to soil structure through compaction and smearing. These effects compromise the ability of the soil to perform functions, such as providing adequate water, air and nutrients to plant roots;

- Mineral Resources that are Safeguarded could be sterilised by the Proposed Development over the period of operation and until decommissioning has been completed. Whilst exploitation of shallow coal may be considered unlikely, subject to further studies of Mining Remediation Authority data, Doncaster Local Plan Policies indicate Sand and Gravel deposits in particular should be considered for extraction in advance of development where there is the potential for sterilisation;
- Exposure of construction workers to potential contamination;
- Introducing higher sensitivity receptors (end users); and
- Introduction of new potential contaminants to the environment.

10.4.2 Regarding the last point above, the Proposed Development itself will be designed and operated in a way that it will not itself act as a source of contamination to soil and groundwater. The measures to achieve this will be described in the outline Construction Environmental Management Plan (oCEMP), and outline Excavated Materials Management Plan (oEMMP), and Contaminated Land and construction and decommissioning methodology of the ES.

Mitigation

10.4.3 All the Proposed Development area is within Mineral Safeguard Areas. A description of anticipated mineral deposits likely to be present or affected within Safeguarding Areas will be informed by either desk studies, surveys or consultation with the Minerals Planning Authorities, and will form part of the ES chapter and associated appendices as required. Mitigation might include, for example, reduction in the area and amount of resource impacted, and extraction in advance of development where there is the potential for sterilisation, in consultation with the Minerals Planning Authority.

10.4.4 A Phase 1 environmental desk study will be undertaken across the Proposed Development considering potential sources of contamination (such as historic landfills), pathways and receptors and risk will be assessed on the likelihood and significance of such potential pollutant linkages between source and receptor. Where areas of coal working have been identified, risks will be assessed further by obtaining and assessing Mining Remediation Authority archived reports to define risk levels that may include ground instability.

10.4.5 Where risks of significant potential pollutant linkages or poor ground conditions are determined to be medium or high, and the Proposed Development infrastructure is deemed necessary and cannot be relocated, a ground investigation (Phase 2) will be carried out to determine risks from ground stability and / or contamination. The results of these will inform the geotechnical design and any ground preparation or other remedial works or measures required that may be needed to safely develop on these areas.

Outline Construction Environmental Management Plan

10.4.6 The oCEMP will describe the mitigation of potential adverse environmental impacts during the construction phase i.e. specific measures to mitigate identified impacts, such as dust suppression techniques, noise barriers, and proper waste management. The oCEMP will be prepared as part of the Development Consent Order (DCO) Application, and would be updated to a detailed CEMP prior to the commencement of works and secured by a Requirement of the DCO.

Outline Construction Excavated Materials Management Plan

10.4.7 An oEMMP will be developed to ensure the proper handling, storage, and disposal of excavated materials during the construction phase. The components help ensure that excavated materials are managed in an environmentally responsible and compliant manner throughout the construction process. The oEMMP will be prepared as part of the DCO Application and would be updated to a detailed EMMP prior to the commencement of works and secured by a Requirement of the DCO.

10.4.8 An oCEMP and oEMMP will be provided as part of the Application. The Contaminated Land and construction and decommissioning methodology will form part of the ES chapter and associated appendices as required.

10.5 Technical Scope and Approach to EIA

10.5.1 Ground Conditions and Land Quality assessment will be undertaken within the general approach to EIA described in **Chapter 6, Environmental Impact Assessment** above. Specifically, the technical scope will be in line with the approaches detailed in the IEMA and Soil in EIA Guidance (2022), taking into consideration soil function, land use and ecosystem service, as well as contaminated land and coal workings in assessing the soil and land value / sensitivity as a receptor to impacts from the Proposed Development. ALC surveys will be performed across the Site, and these will provide baseline information that will inform many aspects of this scope, such as soil types, agricultural land usage, micro-relief and chemical quality, as well as the ALC determination of BMV land.

10.5.2 The ALC surveys will be supplemented by Phase 1 desktop studies for the environmental setting that focus on areas with potentially contaminated land and former coal workings. Both these aspects are considered likely to require baseline information from commercial geodata sources and reports from the Mining Remediation Authority archives. These Phase 1 assessments will include conceptual site models for specific parts of the Site, as well as general conditions, and include a preliminary risk assessment of potential pollutant pathways, land stability and ground conditions. Conceptual site models will specify and assess the significance of sources (of contamination and heat), pathways (that transmit the contamination and heat) and receptors (such as controlled waters, humans and livestock) and potential pollutant linkages, in line with the approach in the Land Contamination Risk Management (2023) and the 2012 statutory guidance under Part 2A of the Environmental Protection Act (1990).

10.5.3 It is possible that this baseline, in certain areas, may require supplemental Phase 2 intrusive investigations to confirm, or otherwise, the presence of land pollution or coal working features that affect ground conditions, if they are deemed to be required for the Proposed Development.

10.5.4 The assessment of soil and land value / sensitivity will also take into account the baseline information and value assessments of other topic areas, including socio-economics, land use, tourism and recreation; landscape and visual; biodiversity and nature conservation; hydrology and hydrogeology; and cultural heritage and archaeology.

10.5.5 The soil and land value / sensitivity will then be placed in a matrix against the magnitude of each likely effect to determine significance, following the overall EIA approach described in **Chapter 6, Environmental Impact Assessment** of this

Scoping Report. Embedded mitigation for each effect will be briefly described and a residual (post-mitigation) impact significance will be determined.

10.5.6 The oCEMP and oEMMP will be developed to mitigate residual impacts rated moderate or higher significance for each of the construction, operation and decommissioning phases. This includes potential impacts from the disturbance of contaminated land, vehicle movements, erosion and run-off, materials handling, soil stockpiling and accidental spillages.

Proposed Scope of the EIA

10.5.7 **Table 10.1** sets out the elements of the Land Quality and Ground Conditions proposed to be scoped in or out of the EIA.

Table 10.1 Elements Proposed to be scoped in or out of the EIA

Potential Effect / Topic	Proposal for Assessment within EIA	Rationale for Scoping out of the EIA
Construction Phase		
Construction of solar arrays and subs-station on possible BMV land	Scoped In	
Construction of cables on possible BMV land	Scoped Out	Temporary effect mitigated by restoration of soils after installation
Construction within Mineral Safeguarding Areas	Scoped Out	Measures to mitigate impacts to minerals will be implemented, for example reduction in the area and amount of resource impacted, or extraction in advance of development where there is the potential for sterilisation, in consultation with the Minerals Planning Authority.
Contaminated Soil and Unstable Ground Conditions	Scoped Out	Phase 1 and, where required, Phase 2 Contaminated Land and Coal Mining Reports will ensure no potential significant effects are likely, and the measures detailed in the oCEMP and oEMMP will mitigate any residual effects.
Physical damage to soils	Scoped Out	Measures detailed in the oCEMP and oEMMP will mitigate any potential impacts.
Operational Phase		
Operation on possible BMV land	Scoped In	
Effects of cable heat during Operation	Scoped In	
Operation within Mineral Safeguarding Areas	Scoped Out	Mitigated during construction, in consultation with the Minerals Planning Authority.
Decommissioning Phase		

Potential Effect / Topic	Proposal for Assessment within EIA	Rationale for Scoping out of the EIA
Restoration of Soils and of possible BMV land	Scoped In	
Physical damage to soils	Scoped Out	Measures detailed in the oCEMP and oEMMP will mitigate any potential impacts.

10.6 Assumptions, Limitations and Uncertainties

Assumptions

10.6.1 The following assumptions are made for the ground conditions and land quality assessment:

- Data Availability: Assumes that sufficient and relevant data is available from previous studies, current and future Site investigations, and historical records;
- Baseline Conditions: Assumes that the current baseline conditions are accurately represented by the available data; and
- Regulatory Compliance: Assumes that all activities will comply with relevant regulations and guidelines.

Limitations

10.6.2 The following limitations are recognised for the land quality and ground conditions assessment:

- Temporal Constraints: Recognises that the data may only represent conditions at a specific point in time and may not account for seasonal variations or future changes;
- Access Restrictions: Notes any physical or logistical constraints that may limit access to certain areas of the Site for investigation; and
- Scope of Study: Defines the boundaries of the Study Area and the extent to which the findings can be generalised.

Uncertainties

10.6.3 The following uncertainties are recognised for the land quality and ground conditions assessment:

- Predictive Models: Highlights uncertainties associated with the use of predictive models and simulations to assess potential impacts;
- Future Conditions: Acknowledges uncertainties related to future changes in land use, climate, or regulatory requirements that could affect ground conditions and land quality;
- Natural Variability: Recognises the inherent variability in natural systems, which can lead to uncertainties in the assessment results; and

- Human Error: Considers the potential for human error in data collection, analysis, and interpretation.

10.6.4 These sections help to provide a transparent and realistic understanding of the potential limitations and uncertainties in the assessment, ensuring that decision-makers are aware of the factors that could influence the reliability of the findings.

11 WATER RESOURCES AND FLOOD RISK

11.1 Introduction

11.1.1 This chapter of the Scoping Report details the scope of the environmental assessment for water resources and flood risk. Specifically, the chapter presents the policy and legislative context, baseline conditions, potential effects and assessment methodology.

11.1.2 The potential effects of the Proposed Development have been identified through a technical review of the current design, construction, operational and decommissioning phases and how these effects interact with the water environment.

11.1.3 This chapter will consider the effects of the Proposed Development on:

- Surface watercourses and water bodies;
- Groundwater;
- Flood risk at the Site (from a range of sources);
- Flood risk elsewhere (from a range of sources); and
- Water abstractions and supplies.

11.2 Topic-Specific Legislation and Guidance

11.2.1 The key legislation, policy and guidance detailed in this section informs the scope of the water resources and flood risk chapter.

Legislation

Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (WFD)

11.2.2 The Water Environment (Framework Directive) (as implemented in England via the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017)[129] established a framework to protect the UK's water environments by preventing their deterioration and improving their quality. This is achieved through setting ecological targets and environmental objectives to ensure the protection, improvement, and sustainable use of all water environments.

Flood Directive 2007/60/EC

11.2.3 The Flood Directive[148] was transposed into the England and Wales legislation by the Flood Risk Regulations 2009 (revoked)[149], which set out the requirement for the EA and Lead Local Flood Authorities (LLFAs) to produce hazard maps and flood risk management for areas at significant potential risk of flooding.

The Water Act 2014

11.2.4 The Water Act 2014[133] introduced innovation and reform to the water industry to increase the resilience of water supply and resources to natural hazards.

The Environment Act 2021

11.2.5 The Environment Act 2021[27] introduced modifications to the Environment Act of 1990, specifically targeting Sections 170, 173, and 175. The Act introduces Environmental Improvement Plans and adopts a target-oriented approach for waterbodies, aligning with the objectives of the WFD.

The Environmental Targets (Water) (England) Regulations 2023

11.2.6 The Environmental Targets (Water) (England) Regulations 2023[150] set out long term targets concerning four aspects within the water priority domain outlined in Section 1 of the Environment Act 2021. These regulations outline the specific targets to be attained for each aspect and stipulate the deadline for achieving each target. The regulations include provisions to reduce:

- The levels of total nitrogen, total phosphorus and sediment entering freshwaters and coastal waters around England from agricultural land;
- The levels of total phosphorus discharged into freshwaters from relevant discharges from the sewerage systems of sewerage undertakers;
- The length of waters polluted by arsenic, cadmium, copper, lead, nickel and zinc from abandoned metal mines; and
- The amount of potable water supplied by water undertakers.

Flood and Water Management Act 2010

11.2.7 The objective of the Flood and Water Management Act 2010[151] is to enhance flood risk management and safeguard water supplies in England and Wales. The Act revised existing laws to provide improved protection against floods, promote sustainable water management, enhance public services, and secure water resources, especially in times of drought.

The Water Resources Act 1991 Section 85 (as amended by the Water Act 2003)

11.2.8 The Water Resources Act 1991[132] Section 85 (as amended by the Water Act 2003[152]) declared it is a criminal offence to cause or knowingly allow the entry of polluting, noxious, poisonous, or solid waste materials into regulated waters. The Water Act 2003 subsequently revised this Act, outlining regulatory measures for water abstraction, discharge into water bodies, water impoundment, and the safeguarding of water resources.

The Bathing Water Regulations 2013

11.2.9 The Bathing Water Regulations 2013[153] mandates monitoring and evaluation of bathing waters in England and Wales. It also necessitates informing the public about bathing water quality and beach management using bathing water profiles. Bathing Waters are designated as Protected Areas under the WFD.

The Land Drainage Act 1991

11.2.10 The Land Drainage Act 1991[154] assigns the responsibility of preserving watercourse flows to landowners and empowers local authorities to issue notices to ensure that necessary actions are taken for maintaining watercourse flow. Additionally, it serves as the legal framework granting Land Drainage Consenting powers to local authorities (now LLFAs) and Internal Drainage Boards for any activities that might impact flows in Ordinary Watercourses.

Conservation of Habitats and Species Regulations

11.2.11 The Conservation of Habitats and Species Regulations 2017[28] (as amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019)[29] incorporated the provisions of the Council Directive 92/43/EEC, which focuses on conserving natural habitats, wildlife, and flora (referred to as the Habitats Directive), into domestic law. The Habitats Regulations establish the structure for safeguarding Natura 2000 sites (now termed the national site network after amendments took effect on 31 December 2020) and specific flora and fauna identified as European Protected Species (EPS). The regulations outline the procedures related to the assessment of development.

11.2.12 It should be noted that this chapter assesses the potential effects of the Proposed Development on water resource supporting conservation and habitat sites, not the sites themselves, which will be assessed in the Biodiversity and Nature Conservation chapter of the ES (see **Chapter 7, Biodiversity and Nature Conservation**).

The Environmental Damage (Prevention and Remediation) Regulations 2017

11.2.13 The Environmental Damage (Prevention and Remediation) Regulations 2017[155] imposes obligations on operators to prevent and remedy significant environmental damage, particularly to biodiversity, water and land. It emphasises proactive measures in environmental planning to prevent damage and address remediation.

The Water Supply (Water Quality) Regulations 2016

11.2.14 The Water Supply (Water Quality) Regulations 2016[156] replace the Water Supply (Water Quality) Regulations of 2000 and 2010. The focus of these regulations is the quality of water provided in England by water undertakers and licensed water suppliers for domestic or food production purposes. They also address the disclosure of information concerning water quality.

The Private Water Supplies (England) (Amendment) Regulations 2018

11.2.15 The Private Water Supplies (England) (Amendment) Regulations 2018[157] impose an obligation on local authorities to oversee private water supplies in their jurisdiction and conduct monitoring to assess compliance with drinking water standards. A private water supply refers to any water source that serves one or more properties and is not provided by a water company.

Environmental Permitting (England and Wales) Regulations 2016 (as amended 2018)

11.2.16 Environmental Permitting (England and Wales) Regulations 2016 (as amended 2018)[158] stipulate the necessity of acquiring Flood Risk Activity Permits (FRAP) for activities carried out on or in close proximity to Main Rivers, flood defence structures, sea defences, or within a flood plain. Additionally, they mandate a specific substances assessment for any release of hazardous chemicals and elements into surface water.

The Groundwater (England and Wales) Regulations 2009

11.2.17 The Groundwater (England and Wales) Regulations 2009[159] (revoked) protect groundwater by controlling pollutants, setting out conditions for discharges, and monitoring pollution levels. They influence planning decisions, especially for activities that could contaminate groundwater sources.

The Flood Risk (England and Wales) Regulations 2009

11.2.18 The Flood Risk (England and Wales) Regulations 2009[160] (revoked) implement the EU Floods Directive and require flood risk assessments, mapping, and management plans. They are critical for guiding development in flood-prone areas and ensuring long-term flood risk mitigation in planning.

National Planning Policy

National Policy Statements

11.2.19 The NPSs outline the government's policy for delivering major energy infrastructure. The NPSs that are of relevance to the Proposed Development are:

- Overarching National Policy Statement for Energy (EN-1) (2024)[4]
  - Specific reference to Section 4.10, which outlines the requirement for applications to account for potential impacts of climate change and to incorporate suitable mitigation or adaption measures which account for potential impacts which are exacerbated due to climate change;
  - Specific reference to Section 5.16, which sets out the appropriate content of an Environmental Statement which includes an assessment of the existing status of, and impacts of the Proposed Development on water quality, water resources and physical characteristics;
  - Specific reference to Section 5.8, which relates to flood risk;
- National Policy Statement for Renewable Energy Infrastructure (EN-3) (2024)[5]; and
- National Policy Statement for Electricity Networks Infrastructure (EN-5)[6] - specific reference to paragraph 2.3.2, which states that applications should identify the vulnerability and resilience of the Proposed Development to flooding.

The National Planning Policy Framework7

11.2.20 The primary objectives of the NPPF (2024)[7] with specific reference to Section 14 in relation to flood risk, are to incorporate considerations of flood risk throughout the planning process, prevent unsuitable development in flood-prone zones and guide development away from high-risk areas. Where development in flood-prone areas is unavoidable, the NPPF aims to guarantee safety measures, preventing the increase of flood risk elsewhere and minimising the overall risk of flooding.

11.2.21 A Flood Risk Assessment (FRA) is mandatory for all proposals situated in Flood Zones 2 or 3, proposals of 1 hectare or greater in Flood Zone 1, proposals within an area of Flood Zone 1 which has critical drainage problems, and any scheme or change of use to a more vulnerable use in Flood Zone 1 which may be subject to other sources of flooding. The purpose of the FRA is to evaluate the potential impact of flooding on proposed developments and to gauge the flood risk to third parties associated with these proposals.

11.2.22 The NPPF requires the application of a risk-based flood risk sequential test to guide new developments towards areas with the lowest probability of flooding. Additionally, it aligns the flood risk vulnerability of a development proposal with the appropriate Flood Zones.

Local Planning Policy

City of Doncaster Council Local Plan 2015-20358

11.2.23 The City of Doncaster Council Local Plan 2015-2035 contains the following policies which are relevant to the water resources and flood risk of W1:

- Policy 26: Green Infrastructure (Strategic Policy);
- Policy 56: Drainage;
- Policy 57: Flood Risk Management;
- Policy 58: Low Carbon and Renewable Energy (Strategic Policy);
- Policy 60: Protecting and Enhancing Doncaster's Soil and Water Resources;
- Policy 31: Local Wildlife and Geological Sites;
- Policy 54: Pollution; and
- Policy 55: Contamination and Unstable Land.

Rotherham Local Plan Core Strategy 2013-20289

11.2.24 Rotherham Local Plan Core Strategy 2013-2028 contains the following policies which are relevant to water resources and flood risk:

- Policy CS 19: Green Infrastructure;
- Policy CS 24: Conserving and Enhancing the Water Environment;
- Policy CS 25: Dealing with Flood Risk;
- Policy CS 28: Sustainable Design; and
- Policy CS 30: Low Carbon and Renewable Energy Generation.

Wickersley Neighbourhood Plan 2021-202834

11.2.25 The Wickersley Neighbourhood Plan 2021-2028 contains Policy GS1: Biodiversity and Green Infrastructure, which is relevant to water resources and flood risk.

Dinnington Neighbourhood Plan 2016-202833

11.2.26 The Dinnington Neighbourhood Plan 2016-2028 contains Policy Bed 2: Design and Infrastructure, which is relevant to water resources and flood risk.

Maltby Neighbourhood Plan 2017-202835

11.2.27 The Maltby Neighbourhood Plan 2017-2028 contains Policy M9: Nature Conservation, which is relevant to water resources and flood risk.

National Guidance

- Construction Industry Research and Information Association (CIRIA) Control of Water Pollution from Construction Sites[161];
- CIRIA Development and flood risk: guidance to the construction industry, C624D[162];
- British Standard Code of Practice for Earthworks BS 6031 200928[163];
- CIRIA The SuDS Manual (C753)[164];
- CIRIA Environmental Good Practice on Site (C741)[165];
- Department of Communities and Local Government (DCLG) Planning practice guidance: flood risk and coastal change 2024[166];
- National Highways' Design Manual for Roads and Bridges (DMRB) LA 113 – Road drainage and the water environment, formerly HD45/09, Revision 1, 2020[167];
- DEFRA and EA Guidance for Pollution Prevention[168];
- National Flood and Coastal Erosion Risk Management Strategy 2022[169];
- EA Peak River flow climate change allowances by management catchment 2022[170];
- EA Peak rainfall climate change allowances by management catchment 2022[171];
- Discharges to surface water and groundwater: environment permits[172];
- EA guidance on applying for a water abstraction or impounding license[173]; and
- Inspectorate's Technical Advice Page for Scoping Solar Development[20].

Local Guidance

Doncaster Metropolitan Borough Council (MBC) Level 1 Strategic Flood Risk Assessment (SFRA) (2015)

11.2.25 The (former) Doncaster MBC (now renamed CDC) SFRA (2015)[174] outlines all sources of flood risk within the local authority area and makes use of the most up-

to-date flood risk datasets to assess the level of risk, at a strategic level to proposed development allocation sites identified by CDC.

South Yorkshire Interim Local Guidance for Sustainable Drainage Systems (SuDS)

11.2.26 The South Yorkshire Interim Local Guidance for Sustainable Drainage Systems (SuDS)[175] sets out the design standards required within development infrastructure to inform decision making and the design of SuDS. The guidance is intended for use by designers, consultants, developers and the planning authorities who are looking to develop SuDS designs within infrastructure developments in accordance with the local standards of the South Yorkshire LLFAs in conjunction with Non-Statutory Technical Standards.

RMBC Local Flood Risk Management Strategy (LFRMS) 2022

11.2.27 RMBC LFRMS (2022)[176] sets out how local flood risk in the borough will be managed. The LFRMS was originally produced in 2014 and is now updated considering the devasting floods of 2019 and recent changes from climate change.

RMBC Level 1 SFRA

11.2.28 The RMBC SFRA Level 1 (2008)[177] collates all known sources of flooding; river, surface water (local drainage), sewers and groundwater, that may affect existing and/or future development within the Borough. Delineates areas of 'low' to 'high' probability of flooding in the Borough, recommends appropriate land uses (in accordance with the Planning Policy Statement 25 (PPS25) Sequential Test), and recommends possible flood mitigation solutions that may be integrated into design by developers where flood risk has been identified as a potential constraint to future development, to minimise risk to life and property (in accordance with the PPS25 Exception Test).

RMBC Preliminary Flood Risk Assessment (PFRA) 2011 (addendum update 2017)

11.2.29 The RMBC PFRA[178] compiles a historical flood record and reviews predicted flood data based on local knowledge and historical data and uses it to identify flood risk areas which are areas where the risk of flooding is locally significant. The PFRA was subject to an addendum update (2017)[179],which states there are no changes to the assessment of risk since the PFRA published in 2011.

Doncaster MBC PFRA 2011 (addendum update 2017)

11.2.30 The Doncaster PFRA[180] collates all information on past and future floods and only considers flooding which is deemed to have significant consequences. The PFRA identifies and locates local flood risk. The PFRA was subject to an addendum update (2017)[181] which states there no changes to the assessment of risk since the PFRA published in 2011.

11.3 Preliminary Baseline Conditions

Data Sources

11.3.1 The ES will present detailed information on the water resources and flood risk of the Proposed Development following the review and analysis of the following data sources:

- OS maps;
- British Geological Survey (BGS) Online database (Borehole and Geology Mapping[182] and Groundwater Flooding[183]);
- EA Catchment Data Explorer[184];
- EA Flood Map for Planning[185];
- EA Long Term Flood Risk Map (including Surface Water Flood Risk Mapping and Reservoir Flood Risk Mapping)[186];
- EA Recorded Flood Outlines[187];
- EA Historic Flood Map[188];
- National Rivers Flow Archive[189];
- AIMS Spatial Flood Defences[190];
- EA Live Flood Map[191];
- UK Centre for Ecology and Hydrology Flood Estimation Web Service;
- RMBC Level 1 Strategic Flood Risk Assessment; and
- CDC Level 1 Strategic Flood Risk Assessment.

Proposed Water Resources and Flood Risk Study Area

11.3.2 The study area for water resources and flood risk, hereafter referred to as the 'Study Area' is shown for areas W1-3 on **Figures 11.1 - 11.3.**

11.3.3 The Study Area was determined by source-pathway-receptor (SPR) risk assessment i.e. considering the potential hydraulic connections to surface water features, including WFD surface water bodies, from construction activities and permanent features of the Proposed Development, as well as pollution impact pathways to the wider environment, and in particular high value receptors, such as designated sites.

11.3.4 Based on this assessment, a 1 km buffer from the Site is considered sufficient to capture all the receptors that could potentially be affected by impacts on surface water resources and flood risk arising from the construction, operation (and maintenance) and decommissioning of the Proposed Development.

Temporal Scope

11.3.5 The water resources and flood risk assessment will assess the potential impacts of the construction, operation and decommissioning of the Proposed Development. However, the temporal scope will primarily focus on the construction and decommissioning phases as this is the time during which potential impacts to the water environment may occur.

Preliminary Baseline Conditions

Surface Watercourses

11.3.5 The EA catchment data explorer shows the Site is within the Don and Rother management catchment and the Idle and Torne management catchment of the Humber River Basin District. A segment of W2 and a small segment of W1 and W3 are within in the Idle and Torne management catchment.

11.3.6 There are nine WFD designated watercourses within the Study Area, with the proximity of the watercourse from the Site and flow conditions detailed in **Table 11.1**.

11.3.7 There is a network of undesignated tributaries to the WFD designated watercourses within the Site and Study Area which typically comprise small streams and open surface water field drains, in addition to numerous ponds and standing surface waters. There are no designated WFD lakes within the Study Area.

Table 11.1 Summary of WFD Watercourses Classifications

Name	WFD ID	Direction and Distance from Site	Nearest National River Flow Archive (NRFA)/EA Gauge	Gauge Record	Average Flow (m^3/s)	Q95 Flow (m^3/s)	Peak Flow (m^3/s)
Hooton Brook	GB104027057430	Flows northwest from the boundary of W1 to the River Don.	No representative NRFA/EA Gauge.				
Kearsley Brook	GB104027057430	Flows through the Proposed Development along the boundary of W1 to its confluence with the River Don approximately 1 m north of W1.	No representative NRFA/EA Gauge.				
Oldcotes Dyke Catchment	GB104028058230	Flows northeast of W2 directly through the Cable Corridor Options from the south of the A631 to the west of the	Oldcotes Dyke NRFA Guage (ID 28047) at Blyth.	1970 to 2023.	0.72	0.26	

Name	WFD ID	Direction and Distance from Site	Nearest National River Flow Archive (NRFA)/EA Gauge	Gauge Record	Average Flow (m^3/s)	Q95 Flow (m^3/s)	Peak Flow (m^3/s)
		A634 to its confluence with the River Ryton approximately 13 km to the east of the village of Blyth.					
Anston Brook	GB104027057430	Flows directly through the Proposed Development to the southeast of W2, north of South Anston Town to its confluence with the River Ryton approximately 3 km southeast of W2.	No representative NRFA/EA Guage.				
Pigeon Bridge Brook	GB104027057730	Flows from the south of W2 and the A57 to the southwest	No representative NRFA/EA Guage.				

Name	WFD ID	Direction and Distance from Site	Nearest National River Flow Archive (NRFA)/EA Gauge	Gauge Record	Average Flow (m^3/s)	Q95 Flow (m^3/s)	Peak Flow (m^3/s)
		towards its confluence at the River Rother at Beighton approximately 3 km from W2.					
Ulley Brook	GB104027057740	Flows from east to west of W2 directly through the Proposed Development. The Ulley Brook flows along its course towards its confluence at the River Rother, south of the M1 and approximately 0.5 km from W2.	No representative NRFA/ EA Guage.				
River Rother, Doe Lea to Don	GB104027057772	Flows from north to south from the west	River Rother, Woodhouse Mill NRFA	1961 to 2023.	4.28	1.07	123.12, recorded on 26/06/2007

Name	WFD ID	Direction and Distance from Site	Nearest National River Flow Archive (NRFA)/EA Gauge	Gauge Record	Average Flow (m^3/s)	Q95 Flow (m^3/s)	Peak Flow (m^3/s)
		of W2 to the east of the A630; then flows southerly down to the southwest of W3 at Woodall towards its confluence outside the Study Area, where a separate WFD designation of the River Doe Lea begins.	Guage (ID 27025)				
Broad Bridge Dyke Catchment	GB104028058161	Flows from east to west as a tributary from Chesterfield Canal directly through the Cable Corridor Options to the south of the B6059 and briefly borders					

Name	WFD ID	Direction and Distance from Site	Nearest National River Flow Archive (NRFA)/EA Gauge	Gauge Record	Average Flow (m^3/s)	Q95 Flow (m^3/s)	Peak Flow (m^3/s)
		the northeast of W3.					
Chesterfield Canal, upper section	GB70410526	Flows from east to west and briefly borders the northeast of W3 Study Area, south of the B6059, and flows west directly through the Cable Corridor Options and Cable Corridor Options to the north of Thorpe Salvin Village.					

Waterbody Catchments

11.3.8 The Site is located within the following 14 WFD catchments, including:

- Hooton Brook from Source to River Don (ID GB104027057430);
- Don from River Rother to River Dearne (ID GB104027057452);
- Don from River Dearne to Mill Dyke (ID GB104027064242);
- Kearsley Bk (ID GB104027064244);
- Pigeon Bridge Brook from Source to River Rother (ID GB104027057730);
- Ulley Brook from Source to River Rother (ID GB104027057740);
- Rother, Doe Lea to Don (ID GB104027057772);
- Oldcotes Dyke Catchment (tributary of Ryton) (ID GB104028058230);
- Broad Bridge Dyke Catchment (tributary of Chesterfield Canal) (ID GB104028058161);
- Ryton from Chesterfield Canal to Anston Brook (ID GB104028058162);
- Anston Brook from Source to Ryton (ID GB104028058210);
- St Catherine's Well Stream from Source to Torne (ID GB104028058420);
- Ruddle (Paper Mill Dyke) from Source to Torne (ID GB104028058380); and
- Ryton from Anston Brook to Idle (ID GB104028058100).

11.3.9 The WFD Watercourses and WFD catchments within the Study Area are shown in **Figures 11.13 - 11.18**.

Water Quality

11.3.10 The ecological and chemical classification for each of the WFD designated watercourses within the Study Area have been sourced from the EA Catchment Data Explorer and is summarised in **Table 11.2**.

11.3.11 WFD watercourses are assigned an ecological status from high to bad (high, good, moderate, poor, bad), whether the watercourse is artificial or heavily modified by human activity (hydromorphological designation) and a chemical classification of good or failing based on 52 different chemical elements.

Table 11.2 Summary of WFD Watercourses Classifications

Watercourse	Ecological Classification	Hydromorphological Designation	Chemical Classification
Broad Bridge Dyke Catchment (tributary of Chesterfield Canal)	Poor	Not designated artificial or heavily modified	Fail
Anston Brook from Source to Ryton	Moderate	Not designated artificial or heavily modified	Fail

Watercourse	Ecological Classification	Hydromorphological Designation	Chemical Classification
Ulley Brook from Source to River Rother	Good	Heavily modified	Fail
Rother, Doe Lea to Don	Moderate	Heavily modified	Fail
Chesterfield Canal, upper section	Good	Artificial	Fail
Kearsley Bk	Moderate	Heavily modified	Fail
Hooton Brook from Source to River Don	Good	Heavily modified	Fail
Oldcotes Dyke Catchment (tributary of the River Ryton	Poor	Not designated artificial or heavily modified	Fail
Pigeon Bridge Brook from Source to River Rother	Poor	Not designated artificial or heavily modified	Fail

Flood Risk

11.3.12 The Flood Map for Planning shows that the Site is predominantly located in Flood Zone 1, land defined as having a river or sea flooding Annual Exceedance Probability (AEP) of less than 1 in 1,000 (0.1%). Areas of Flood Zone 2 (land with an AEP between 1.0% and 0.1%) and Flood Zone 3 (land with an AEP of 1.0% or higher from rivers or 0.5% from the sea) are present on land bordering the River Rother, River Don, River Ryton and tributary watercourses located within the Study Area. The watercourses associated with Flood Zone 2 and 3 within each section of the Site are:

- W1:
  - Hooton Brook; and
  - Kearsley Brook.
- W2:
  - Anston Brook; and
  - Ulley Brook.
- W3:
  - Broad Bridge Dyke Catchment;
  - Chesterfield Canal, upper section; and
  - Harthill Reservoir (adjacent to the Site Boundary).

11.3.13 Flood Zone 3b is defined as the functional floodplain and refers to land where water must flow or be stored during times of flood which typically has an AEP of 5%. It is designated by SFRAs developed by LLFAs. The Site is situated within the operational boundaries of two LLFAs, CDC and RMBC. Where detailed hydraulic modelling is not available LLFAs employ a precautionary approach where the extent of Flood Zone 3b is equal to the extent of Flood Zone 3a. The Doncaster MBC SFRA does not show any areas of the Site as being located within Flood Zone 3b based on the most recent, readily available river model modelled flood outlines for the borough from the EA and local knowledge. There is a paucity of data for areas within Flood Zone 3b in the RMBC SFRA. The EA have provided extracts of hydraulic modelling studies within the Study Area through the product data request process, with details on the models summarised in **Table 11.3.** The hydraulic modelling studies show that the only component of the Proposed Development within Flood Zone 3b are segments of the Cable Corridor Options within W2 which cross the River Rother to the east of the A630.

11.3.14 The flood zones at the Site are shown in **Figures 11.7 - 11.9**.

Table 11.3 Hydraulic Modelling Studies Provided by the EA

Watercourse	Study	Year	Model Type	Result Outputs
River Don	Middle and Lower Don	2018	1D-2D Linked	Flood extents, in channel levels
River Rother	Middle and Lower Don	2018	1D-2D Linked	Flood extents, in channel levels, floodplain depth grids

11.3.15 The EA Spatial Flood Defences show that the River Rother and River Don have flood defences running along the entirety of the banks of each watercourse within the Study Area. The flood defences consist of natural high ground and embankments along the River Rother, west of W2 and W3 and along the River Don, west and north of W1. The defences are managed and maintained by either the EA, private individuals, companies or charities.

11.3.16 The EA historic flood map shows the maximum extent of individual Recorded Flood Outlines from rivers, the sea and groundwater springs that meet a set criterion. The recorded flood events within the Study Area are located on land adjacent to the River Rother and Ulley Brook east of the A630 and south of the M1 in W2 in a segment of the Cable Corridor Options and the Proposed Development. The recorded historic flood extents at the Site are shown in **Figures 11.10 - 11.12**.

11.3.17 The EA Risk of Flooding from Surface Water dataset shows that the risk of surface water flooding across the Site is generally very low (an AEP of less than 0.1%), with isolated areas with low (0.1% to 1% AEP), medium (AEP of 1% to 3%) and high (AEP greater than 3.3%) which correlate to areas of low topography, the channels of watercourses and surface water ponds.

11.3.18 The CDC SFRA includes groundwater flooding susceptibility based on the BGS susceptibility to groundwater flooding dataset, which classifies land in a grid format by probability of more than or equal to 75%, less than 75% and more than

or equal to 50%, less than 50% and more than or equal to 25%, or less than 25%. This mapping shows that the Site is generally at low risk of groundwater flooding (probability of less than 25%) with areas of greater risk located in some areas across the Site, generally on land close to rivers. The RMBC SFRA states there are no recorded incidents of groundwater flooding within the Borough and that risk of flooding from groundwater sources is considered particularly low.

11.3.19 The EA Long Term Flood Risk Map indicates that within the Study Area, W2 is vulnerable to flooding on both a 'wet day' (where reservoir breach occurs if a river is already experiencing an extreme natural flood) and a 'dry day' (if reservoir flooding were to occur when river levels are at normal levels). The land adjacent to the River Rother and Ulley Brook, east of the A630, and south of the M1, in a segment of the Cable Corridor Options and the Proposed Development is shown as vulnerable to flooding from a reservoir breach on both a 'wet day' and 'dry day'. Areas of land adjacent to the A618 are shown to be vulnerable to flooding from a reservoir breach on a 'dry day'.

11.3.20 The EA Long Term Flood Risk Map shows that the area of land adjacent to the River Don east of the A630 is vulnerable to flooding from a reservoir breach on both a 'wet day' and 'dry day' in W1.

11.3.21 W3 is vulnerable to flooding from a reservoir breach on a 'wet day' and 'dry day' from areas adjacent to the Broad Bridge Dyke Catchment and standing surface waters north of the A618.

Water Supplies

11.3.22 There are no Drinking Water Safeguard Zones, Groundwater Drinking Water Safeguard Zones or Drinking Water Protected Areas within the Study Area.

11.3.23 Details on private water supplies and unlicensed abstractions will be obtained from the EA and Local Planning Authorities and presented in the Draft ES and ES.

Designated Sites

11.3.24 There are no designated sites within the Study Area (SSSI, SPA, SAC, NNR and / or environmentally sensitive areas).

Hydrogeology

11.3.25 The Site is predominantly located within the Don and Rother Millstone Grit and Coal Measures WFD Groundwater Body (ID GB40402G992300), with a small segment of W1 and the Study Area located within the Idle Torne – Magnesian Limestone WFD Groundwater Body (ID GB40401G300600). A very small segment of the Study Area in W1 is located within the Aire and Don Magnesian Limestone WFD Groundwater Body (ID GB40401G700900). All groundwater bodies within the Study Area have a WFD status of Poor.

11.3.26 A small segment within the Study Area of W2 either side of the A57 is located within Groundwater Source Protection Zone (GWSPZ) 3. The elements of the Proposed Development within this Study Area comprise a small parcel of PV Modules and a segment of the Cable Corridor Options. The GWSPZ within the Study Area are shown in **Figure 11.16 - 11.18**.

11.4 Potential Effects and Mitigation

Potential Effects

Construction and Decommissioning

11.4.1 During the construction and decommissioning of the Proposed Development there is the potential for impacts which affect the water environment to occur if unmitigated. It is assessed that the activities during the decommissioning phase will be similar in nature to those completed during construction. As such the construction and decommissioning phases would involve several processes that have the potential to impact water resources and flood risk if mitigation measures are not put in place:

- Reduction in surface water quality or quantity at surface watercourses and groundwater because of chemical pollution, increase in erosion or sedimentation or impediments to flow due to, for example, soil erosion, onsite spills, excavation works or insufficient sediment mitigation;
- Changes to groundwater interflow patterns from temporary works such as physical cut-offs or dewatering for foundations and hardstanding, affecting the groundwater body and leading to reduced function of or severance of flow;
- Reduced quality or quantity of supply for water supplies and abstractions due to changes in groundwater, near-surface or surface water flow because of chemical pollution, excavations or insufficient sediment mitigation;
- Increase in runoff and flood risk due to increased impermeable hardstanding, disruption in watercourse flow patterns (e.g., during the construction of culverts for access) and soil compaction during construction and decommissioning; and
- Cumulative effects if the potential effects arising from the Proposed Development are in combination with other relevant projects or activities.

Operation

11.4.2 During the operation of the Proposed Development activities are anticipated to be limited to ad-hoc maintenance to infrastructure and as such any potential impacts are anticipated to be of less significance than the construction and decommissioning phases. The potential impacts which may occur during the operation phase if mitigation measures are not put in place are:

- Increased risk of chemical pollution from contamination generated during the unlikely event of a battery fire within the BESS facility;
- Increase in runoff and flood risk due to increased impermeable hardstanding and soil compaction, and channelisation of surface water forming beneath the edge of PV Modules; and
- Reduction in surface water quality at surface watercourses because of chemical pollution from PV Modules and ancillary infrastructure and maintenance.

Mitigation

11.4.3 Embedded mitigation measures will be incorporated into the design layout and principles of the Proposed Development as part of the sequential design process. The mitigation measures relating to water resources and flood risk which will be embedded into the design and construction of the Proposed Development are detailed below.

Watercourse Buffers

11.4.4 During the construction of the Proposed Development buffers around watercourses will be implemented to protect watercourses from increased sediment loadings and contamination. The watercourse buffers during construction will include:

- 50 m buffer for construction excavations and major construction works, excluding watercourse crossings where required; and
- 10 m buffer for solar PV array installation from watercourses and waterbodies.

11.4.5 The Proposed Development will be subject to a sequential design process which will incorporate the following minimum buffer zones around watercourses, based on their scale from each bank of the watercourse, within which no infrastructure will be located (excluding fencing, watercourse crossings, and biodiversity and landscape measures where required):

- 10 m buffer around watercourses including EA designated Main Rivers, LLFA designated Ordinary Watercourses and other surface watercourses (e.g., open surface water drains and streams). Any infrastructure located within 8 m of an EA designated Main River will require a permit from the EA; and any infrastructure which may impede the flow or quality conditions of Ordinary Watercourses will require consent from the LLFA; and
- 10 m from any surface water ponds identified during the desk based and field-based assessments.

Construction Environmental Management Plan

11.4.6 An oCEMP will be produced as part of the ES as a Technical Appendix to provide a framework for which a final CEMP will be produced prior to the construction phase. The CEMP will incorporate specific measures based on the recommendations of the ES and best practice guidance to account for and minimise potential effects on the water resources and flood risk during construction. The measures to be implemented through the CEMP are likely to include:

- Drainage where construction vehicles are located and fuels are stored will be directed to an oil interceptor to prevent pollution in the event of any spillage;
- A construction phase surface water drainage system which will incorporate elements of SuDS to replicate natural drainage patterns, prevent increases in surface water runoff and store surface water along the drainage network through lagoons or attenuation ponds prior to discharge outlets;
- Access track swales and drainage ditches with outlets at specified intervals, to reduce the volume of water within a single channel and therefore reduce the potential of erosion;

- Best practice measures for chemical storage including oils, fuel and concrete will be put in place, including the implementation of a spill response procedure, bunding of construction compounds, the use of spill kits and absorbent pads, and the use of geotextile membranes in chemical storage areas;
- Best practice drainage and sediment management measures including the use of check dams, settlement lagoons and silt fencing and mats;
- Stockpiled material will be stored away from watercourses to reduce the potential of sediment transport into the wider water environment, with regular inspection to ensure erosion is not taking place;
- The establishment of a surface and groundwater monitoring program at locations on principal watercourses downstream of the Proposed Development and control points, which will be based on methodology and frequency agreed with the EA (if required); and
- Where HDD is required a drilling fluid breakout plan will be implemented.

Surface Water Drainage

11.4.7 An outline Surface Water Drainage Strategy (oSWDS) will be submitted as part of the Application to confirm the change in surface water runoff between the baseline conditions and after construction of the Proposed Development. The design principles set out in the oSWDS will be incorporated into the detailed drainage design which will be secured as a part of the DCO requirements.

11.4.8 The assessment will outline the attenuation requirements based on the calculated runoff rates. As solar PV modules sit on narrow footed frames it is proposed that solar PV modules will not contribute towards hardstanding areas within the Proposed Development, on the basis that suitable surface water management techniques typical of solar developments are implemented, which will be detailed within the assessment. Any new access tracks within the Proposed Development will be made up of a permeable aggregate (e.g., Type 2) and will therefore also not contribute to hardstanding areas. Where required geotextile membrane layers will be installed to secure the aggregate and prevent sinking which will help in preventing soil compaction. As such the oSWDS scope will focus on hardstanding areas associated with the ancillary infrastructure.

11.4.9 In the event of a fire within the BESS facility there is potential for fire suppression water containing chemical runoff from the infrastructure to enter the drainage system and downstream water environment. To protect the downstream water environment the oSWDS will detail measures to isolate and dispose of fire suppressant water in accordance with the requirements of the local Fire and Rescue Service, LLFA and any other appropriate consultees.

11.4.10 The LLFAs will be consulted to ascertain their own requirements for the SuDS design.

11.5 Technical Scope and Approach to EIA

Proposed Scope of the EIA

Effects relating to soils, ground conditions and contaminated land

11.5.11 Potential effects relating to soils, ground conditions and contaminated land are to be assessed within **Chapter 10, Ground Conditions and Land Quality** and are therefore not referred to in the water resources and flood risk chapter. Whilst there is potential for in-combination effects, acknowledging the nature of the Proposed Development and the embedded mitigation which will be in place to maintain ground conditions, any in-combination effects would not lead to a significant impact. Furthermore, in-combination effects will be assessed as part of the EIA.

Effects relating to ecological receptors

11.5.12 Potential effects relating to ecological receptors will be assessed within **Chapter 7, Biodiversity and Nature Conservation**. Potential effects on the water resources and flood risk may have secondary effects on ecological receptors, however the assessment of the potential effects on the hydrology and hydrogeology will capture the potential effects and provide mitigation measures where required.

Impacts on potable and wastewater supplies

11.5.13 Throughout all phases of the Proposed Development, it is anticipated that potable and wastewater will be sourced and disposed of using temporary measures without the need to connect to existing potable and wastewater networks. As there will be no connection to existing networks there will be no additional demand placed on the supply and receiving capacity of potable and water networks within the Study Area, and potential effects relating to potable and wastewater supplies are scoped out.

11.5.14 Details on the approach for storing and disposing of wastewater will be detailed within the ES.

11.5.15 **Table 11.4** sets out the elements of the water resources and flood risk assessment proposed to be scoped in or out of the EIA

Table 11.4 Elements Proposed to be scoped in or out of the Water Resources and Flood Risk Assessment

Potential Effect / Topic	Proposal for Assessment within EIA	Rationale for Scoping In or Out of the EIA
Construction Phase		
Soils, ground conditions and contaminated land	Scoped Out	Potential effects to be assessed in **Chapter 10, Ground Conditions and Land Quality**.
Ecological receptors	Scoped Out	Potential effects relating to ecological receptors will be assessed within

Potential Effect / Topic	Proposal for Assessment within EIA	Rationale for Scoping In or Out of the EIA
		Chapter 7, Biodiversity and Nature Conservation.
Potable and wastewater supplies	Scoped Out	As there will be no connection to existing networks there will be no additional demand placed on the supply and receiving capacity of potable and water networks within the Study Area.
Surface water and groundwater quality and quantity	Scoped In	Potential for a reduction in surface water quality or quantity at surface watercourses and groundwater due to chemical pollution, increase in erosion or sedimentation or impediments to flow.
Groundwater interflow patterns	Scoped In	Potential for changes to groundwater interflow patterns from temporary works such as physical cut-offs or dewatering for foundations and hardstanding, affecting the groundwater body and leading to reduced function of or severance of flow.
Quality or quantity of supply for water supplies and abstractions	Scoped In	Potential for reduced quality or quantity of supply for water supplies and abstractions due to changes in groundwater, near-surface or surface water flow because of chemical pollution, excavations or insufficient sediment mitigation.
Surface runoff and flood risk	Scoped In	Potential for increase in runoff and flood risk due to increased impermeable hardstanding, disruption in watercourse flow patterns.
Cumulative effects arising from effects in combination with other relevant projects or activities	Scoped In	Cumulative effects if the potential effects arising from the Proposed Development are in combination with other relevant projects or activities.

Potential Effect / Topic	Proposal for Assessment within EIA	Rationale for Scoping In or Out of the EIA
Operational Phase		
Soils, ground conditions and contaminated land	Scoped Out	Potential effects to be assessed in **Chapter 10, Ground Conditions and Land Quality**.
Ecological receptors	Scoped Out	Potential effects relating to ecological receptors will be assessed within **Chapter 7, Biodiversity and Nature Conservation.**
Potable and wastewater supplies	Scoped Out	As there will be no connection to existing networks there will be no additional demand placed on the supply and receiving capacity of potable and water networks within the Study Area.
Surface runoff and flood risk	Scoped In	Potential for increase in runoff and flood risk due to increased impermeable hardstanding and soil compaction, and channelisation of surface water forming beneath the edge of PV Modules.
Surface water quality at surface watercourses	Scoped In	Potential for reduction in surface water quality at surface watercourses because of chemical pollution from PV Modules and ancillary infrastructure and maintenance.
Chemical pollution from contamination generated during the unlikely event of a battery fire within the BESS facility	Scoped In	Potential for increased risk of chemical pollution from contamination generated during the unlikely event of a battery fire within the BESS facility.
Decommissioning Phase		
Soils, ground conditions and contaminated land	Scoped Out	Potential effects to be assessed in **Chapter 10, Ground Conditions and Land Quality**.
Ecological receptors	Scoped Out	Potential effects relating to ecological receptors will be assessed within **Chapter 7, Biodiversity and Nature Conservation.**

Potential Effect / Topic	Proposal for Assessment within EIA	Rationale for Scoping In or Out of the EIA
Potable and wastewater supplies	Scoped Out	As there will be no connection to existing networks there will be no additional demand placed on the supply and receiving capacity of potable and water networks within the Study Area.
Surface water and groundwater quality and quantity	Scoped In	As per construction phase.
Groundwater interflow patterns	Scoped In	As per construction phase.
Quality or quantity of supply for water supplies and abstractions	Scoped In	As per construction phase.
Surface runoff and flood risk	Scoped In	As per construction phase.
Cumulative effects arising from effects in combination with other relevant projects or activities	Scoped In	As per construction phase.

Desk Based Study Methodology

11.5.16 A desk-based study has been conducted to inform this chapter and will be expanded in future assessment. This will include groundwater supported resources and habitats, public and private water supplies, surface water flows, flooding, rainfall data and water quality data. A review of published geological maps, OS maps, aerial photographs and site-specific data such as site investigation data, habitat mapping, hydrogeological reports, digital terrain models and geological literature will also be completed.

Survey Methodology

11.5.2 A site-based survey will be conducted to:

- Verify the findings of desk-based studies;
- Identify and assess the key surface water characteristics and networks;
- Visually assess primary surface water catchments and verify private water supplies (where appropriate), and any other abstractions that could be affected by the Proposed Development; and
- Visit locations of any proposed watercourse crossings to prepare a schedule of potential watercourse crossings

11.5.3 The results of the site-based survey will be used to identify possible constraints and to inform the design of the Proposed Development.

Flood Risk Assessment

11.5.4 The NPPF requires all possible forms of flood risk to be considered within FRAs and lists six forms of flooding that should be assessed. As such an FRA will be completed as part of the ES as a Technical Appendix to the Water Resource and Flood Risk chapter. The FRA will assess the risk of flooding at the Site and the potential to increase flood risk elsewhere in relation to each of the different forms of flooding listed within the NPPF which are outlined in **Table 11.5.** Coastal flooding is not proposed to be assessed due to the Site not being located close to the coast.

Table 11.5 Forms of Flooding to be Assessed within the Flood Risk Assessment

Flood Source	Explanation
Fluvial	Watercourse flooding occurs where the water volumes and flows within a watercourse exceed the flow capacity of the channel of the watercourse. This can gradually or rapidly develop depending on the land use, topography, and climate within the catchment of the watercourse. Where land is protected by flood defences flooding can occur when defences are overtopped or breached.
Pluvial	Intense rainfall over land that has a limited capacity to absorb water or does not have sufficient surface water drainage infrastructure can lead to water to quickly run off the surface and result in localised flooding. Where there are areas of concentrated development and hardstanding, pluvial flooding is more likely to occur due to the reduction in porosity of underlying grounds.
Groundwater	Where the groundwater table exceeds the surface ground level. This is most likely to occur in areas that are underlain by permeable geology (known as aquifers).
Sewers	Where the capacity of a sewer system is exceeded by extreme rainfall and / or runoff or through blockage.
Artificial Waterbodies	Sources such as reservoirs, canals, and lakes. This form of flooding can occur through the infrastructure being overwhelmed or because of a failure.

11.5.5 In assessing flood risk to and from the Proposed Development, flood risk sources will be appraised and classed as the following:

- 'Negligible' (where little or no risk is identified);
- 'Low' (where theoretical risk is identified but mitigating factors may influence flood levels); and
- 'Moderate' to 'High' (where modelled levels or historical events show risk).

11.5.6 This approach will consider several factors when attributing the residual risk of flooding to the Proposed Development, including:

- Depth of flooding;
- Flooding extent / ingress into Site;
- Type of infrastructure affected; and

- Intervening structures / flood protection.

11.5.7 The FRA will assess the potential risk of flooding which accounts for increases in rainfall and river levels due to climate change. The climate change allowances to be applied will be the allowances for the Don and Rother and the Idle and Torne catchments (depending on the part of the Site being assessed) based on the DEFRA climate change allowances for peak rainfall and peak river flow. The Proposed Development is defined as Essential Infrastructure based on flood risk and coastal change guidance[192] and therefore the higher central climate change allowance will be applied for the appropriate design year dependent on the lifetime of the Proposed Development in accordance with EA FRA climate change allowances guidance[193].

11.5.8 Where localised and detailed flood modelling outputs are available and provided the Proposed Development will be designed to remain operational without resulting in an increase in flood risk elsewhere in a 1 in 100-year plus climate change event. Whilst the Main Rivers within the Site are anticipated to have been assessed within localised and detailed flood modelling studies it is anticipated that Flood Zones 2 and 3 around the smaller watercourses throughout the Site are derived from national scale JFLOW modelling data results. Acknowledging the raised nature and limited footprint of the PV Modules, it is proposed that the FRA will use the 1 in 1,000-year JFLOW extents and depths as a proxy for the 1 in 100-year plus climate change scenarios for flooding from watercourses which are not EA designated Main Rivers, and are not subject to localised flood modelling studies.

11.5.9 As part of the FRA the sequential design approach will be applied to locate infrastructure within Flood Zone 1 where feasible, however it is possible that some areas comprising infrastructure will be located within Flood Zone 2 and 3. Where it is not possible to locate infrastructure within Flood Zone 1, hydraulic modelling outputs will be obtained from the EA to identify flood extents and ensure infrastructure is not located within Flood Zone 3b where modelling results provide flood extents for a 1 in 20-year event.

11.5.10 Where PV Modules are in Flood Zone 2 and 3 the flood levels from either the localised hydraulic modelling studies provided from the EA or the 1 in 1,000-year JFLOW levels will be used to inform the maximum flood levels. The base of the PV Module will be approximately 0.8 to 1.0 m above ground level, with the base of PV Modules to be a minimum of 0.3 m above maximum 1 in 100-year (plus climate change) or the 1 in 1,000-year JFLOW flood levels at the location to account for discrepancies in hydraulic modelling. The PV Modules will be mounted on pile-driven narrow footings which will limit the footprint of the PV Modules and prevent any displacement of floodwater during a flooding event and therefore no fluvial floodplain compensatory storage is proposed.

11.5.11 All BESS and Substations will be located within Flood Zone 1.

11.5.12 Where infrastructure is located within Flood Zone 2 or 3 the FRA will include a suitable assessment to outline how the requirements of the sequential and exception test have been satisfied.

Surface Water Drainage Strategy

11.5.13 An oSWDS will be developed as part of the ES as a Technical Appendix to the water resources and flood risk chapter. The oSWDS will develop a drainage approach to ensure there is no significant increase in surface water runoff from

the Proposed Development in up to and including the 1 in 100-year (1%) scenario, including an appropriate allowance for climate change.

11.5.14 The oSWDS will incorporate SuDS principles into the design to ensure that runoff from hardstanding areas does not result in an increase in flood risk elsewhere, whilst also accounting for the design principles set out in national and local policy and guidance. This assessment will be for the BESS and Substation areas only, as for the PV Arrays, there is likely to be no hardstanding (as discussed below). Inverter areas are assumed to be negligible.

11.5.15 PV Modules will be installed on metal frames and driven into the ground to limit the footprint of the PV Modules. The installation of PV Modules does not result in an increase in hardstanding surfaces at ground level, with the superficial cover of the areas comprising PV Modules to remain the same as the existing baseline. As such the oSWDS will outline a separate drainage approach for PV Modules from the hardstanding areas associated with ancillary infrastructure (e.g. BESS, substation).

11.5.16 There is potential for rainwater to run along the face of PV Modules and concentrate beneath driplines, leading to channelisation and compaction of soils which can lead to flow routes for surface water during extreme rainfall. The PV Modules will be designed to include intermittent gaps between each panel on an array which allows surface water to drip off in different locations, with the angle which panels are fixed (typically at approximately 20 degrees) limiting the velocities at which water will run off the panel face. To promote the interception of surface water along flow routes within the Study Area, an appropriate seeded vegetation will be provided below and between rows of PV Modules to slow flow along existing routes and promote the interception of surface water during the operation of the Proposed Development, rather than a drainage approach which will directly drain from beneath the panels to an attenuation structure or watercourse.

11.5.17 The oSWDS will establish surface water interception and discharge measures for hardstanding areas in accordance with local and national best practice SuDS guidance and policy which will prevent an increase in surface water runoff and provide protection to the receiving water environment.

11.5.18 Prior to the production of the oSWDS a consultation workshop will be held with the LLFAs to agree on a methodology including attenuation and interception measures, design return periods, discharge rates, climate change allowances and design layouts.

WFD Assessment

11.5.19 Due to the presence of WFD designated waterbodies within the Study Area a WFD Assessment will be completed as part of the ES which will determine the potential for any non-compliance of the Proposed Development with WFD objectives and inform the impact assessment within the ES. This assessment will include a review and examination of potential effects on the relevant WFD parameters and depending on the outcomes a more detailed assessment may be required which will be confirmed in consultation with the EA.

Assessments of Effects Methodology

11.5.20 The approach for the assessment has been developed based on a source-pathway-receptor methodology, where the sensitivity of the water resources and

flood risk receptors and the magnitude of potential change (impact) upon those receptors is identified within the Study Area.

Receptors

11.5.21 The water resources and flood risk receptors which have the potential to be impacted by the Proposed Development and which will be assessed within the Draft ES and ES are:

- Surface watercourses and water bodies;
- Groundwater;
- Flood risk at the Site (from a range of sources);
- Flood risk elsewhere (from a range of sources); and
- Water abstractions and supplies.

Sensitivity of receptors

11.5.22 The significance of an effect is defined by the magnitude of the impact and the overall value (or importance) and sensitivity (to the impact) of the receiving water feature or receptor.

11.5.23 The sensitivity of the baseline receptors to impacts, together with the value (or importance) of environmental features on, or near to, the study area, has been assessed in line with best practice guidance, legislation, and statutory designations.

11.5.24 The framework used to assign an overall value to each of the baseline receptors is detailed in **Table 11.6**.

Table 11.6 Framework for Determining Sensitivity of Receptors

Sensitivity of Receptor	Definition
High	The receptor is of national importance with limited ability to absorb change without fundamentally altering its present character. The receptor is of local scale and of high environmental value and rarity, or is of national or regional scale and of moderate / medium environmental value and rarity.
Medium	The receptor is of regional importance with limited ability to absorb change without fundamentally altering its present character. The receptor is of local scale and of medium environmental value and rarity, or is of national or regional scale and of low environmental value and rarity.
Low	The receptor is of local importance and scale, tolerant of change without detriment to its character and is of low environmental value and rarity.
Negligible	The receptor is resistant to change and is of little environmental value.

Magnitude of Impact

11.5.25 The magnitude of potential impacts will be identified through consideration of the activities associated with the Proposed Development, the degree of change to baseline conditions it affects, and the duration and reversibility of a resultant effect, in accordance with best practice guidance and legislation.

11.5.26 The criteria for assessing the magnitude of an impact are presented in **Table 11.7.** If an impact falls into two different categories, the assessment will be undertaken using the greater of the two categories.

Table 11.7 Framework for Determining Magnitude of Impact

Magnitude of Impact	Definition
High	A short or long-term major shift in hydrochemistry or hydrological conditions sufficient to negatively change the ecology of the receptor. This change will equate to a downgrading of an EA water quality classification by two classes e.g. from 'High' to 'Moderate'. A sufficient material increases in the probability of flooding onsite and offsite, adding to the area of land which requires protection by flood prevention measures or affecting the ability of the functional flood plain to attenuate the effects of flooding by storing flood water (in accordance with NPPF 2023 paragraphs 165 to 175)7; and The yield of existing supplies may be lost or major long-term or short-term reduction in quantity and / or deterioration in quality.
Medium	A short or long-term non-fundamental change to the hydrochemistry or hydrological environment, resulting in a change in ecological status. This change will equate to a downgrading of an EA water quality classification by one class e.g. from 'High' to 'Good.' A moderate increase in the probability of flooding onsite and offsite, adding to the area of land which requires protection by flood prevention measures or affecting the ability of the functional flood plain to attenuate the effects of flooding by storing flood water. The yield of existing supplies may be reduced or quality slightly deteriorated. Fundamental negative changes to local habitats may occur, resulting in impaired functionality.
Low	A detectable non-detrimental change to the baseline hydrochemistry or hydrological environment. This change will not result in a downgrading of the Environment Agency water quality classification. A marginal increase in the probability of flooding onsite and offsite, adding to the area of land which requires protection by flood prevention measures or affecting the ability of the functional flood plain to attenuate the effects of flooding by storing flood water (in accordance with NPPF paragraphs 155 to 165)[7]; and / or A detectable but non-material effect on the receptor such that the functionality of the receptor will not be affected in the medium or long term.
Negligible	A barely distinguishable or no change from baseline conditions.

Magnitude of Impact	Definition
	No perceptible changes to the baseline hydrochemistry or hydrological environment. No change to the EA water quality classification. No increase in the probability of flooding onsite and offsite; and / or A slight or negligible change from baseline condition of geological resources; change hardly discernible, approximating to a situation of 'no change' in geological condition.

Significance of Effect

11.5.27 The significance of effect can be either significant (major or moderate effects) or not significant (minor or negligible effects) in EIA terms. The significance of effect will be defined using the definition matrix detailed in **Table 11.8** and is a product of the receptor's sensitivity and magnitude of impact

Table 11.8 Framework for Significance of Effect

Magnitude of Impact	Sensitivity of Receptor			
	High	**Medium**	**Low**	**Negligible**
High	Major	Major	Minor	Minor
Medium	Major	Major	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

11.6 Assumptions, Limitations and Uncertainties

11.6.1 The following assumptions are made for the water resources and flood risk assessment:

- Baseline conditions: Assumes that the current baseline conditions are accurately represented by the available data;
- Regulatory compliance: Assumes that all activities will comply with relevant regulations;
- Data availability: Assumes that sufficient and relevant data is available from previous studies, current and future Site investigations and historical records;
- The flood risk receptors which will be assessed in the draft ES, ES and FRA will include the Proposed Development itself and other land, property and infrastructure which has the potential to be at an increased risk of flooding because of the Proposed Development;
- The need for hydraulic modelling will be agreed with the EA and undertaken as part of the Draft ES and ES through the production of the FRA; and
- A walkover survey will be completed to ground truth the desk-based study.

11.6.2 The following limitations are recognised for the water resources and flood risk assessment:

- Access restrictions: Notes any physical or logistical constraints that may limit access to certain areas of the Site for investigation;
- Scope of study: Defines the boundaries of the Study Area and the extent to which findings can be generalised;
- Temporal constraints: Recognises that the data may only represent conditions at a specific point in time and may not account for seasonal variations or future changes; and
- At the time of writing the method for wastewater discharge and management is not yet confirmed.

12 CLIMATE CHANGE AND GREENHOUSE GAS ASSESSMENT

12.1 Introduction

12.1.1 This chapter sets out the scope to assess the potential effects of Greenhouse Gases (GHGs) emitted as a result of the Proposed Development on climate change, and the resilience of the Proposed Development to projected future climate conditions. The chapter considers the need for assessment across the Proposed Development lifecycle through construction, operation, and decommissioning phases where relevant.

12.1.2 The Proposed Development is considered a Nationally Significant Infrastructure Project (NSIP). The Infrastructure Planning (EIA) Regulations apply to NSIPs. To align with the requirements of the EIA Regulations and Institute of Environmental Management and Assessment (IEMA) Guidance for assessing climate mitigation[194] and adaptation[195] in EIAs, consideration has been given within this chapter to the following two aspects of the climate change assessment:

- GHG impact assessment, analysing the impact of GHG emissions arising from the Proposed Development on the climate over its construction, operation and decommissioning phases; and
- Climate Change Resilience Review (CCRR), analysing the resilience of the Proposed Development to climate change impacts.

12.1.3 IEMA guidance for assessing climate adaptation[195] recommends that the potential effects of projected future climate conditions be considered for sensitive receptors identified by other topics. This is referred to as an In-Combination Climate Change Impact (ICCI) assessment. The need to conduct the ICCI assessment will be determined after climate projections have been obtained for the CCRR. The scope of the ICCI assessment will be determined through a review of future climate projections with topic specialists, which will determine whether any potential effects on sensitive receptors are likely to be modified by future climate change projections.

12.2 Topic-Specific Legislation and Guidance

12.2.1 The EIA Regulations relevant to climate state that the EIA must *"identify, describe and assess in an appropriate manner... the direct and indirect significant effects of the proposed development on... climate"*[2].

12.2.2 Alongside this overarching guidance, legislation, planning policy and guidance relating to climate change, and pertinent to the Proposed Development includes:

Legislation

United Nations Framework Convention on Climate Change 1992[196]

12.2.3 The United Nations Framework Convention on Climate Change 1992 is an international treaty that acknowledges climate change and its adverse effects as a common cause of human concern. It requires all parties to comply to general commitments that consider climate change and control, reduce, or prevent anthropogenic emissions of greenhouse gases. This includes the development of technologies to reduce greenhouse gas emissions.

12.2.4 As a developed country, the UK is required to adopt national policies and take corresponding measures on the mitigation of climate change, by limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse gas sinks and reservoirs. The UK must also demonstrate that it is taking the lead in modifying longer-term trends in anthropogenic emissions, with an aim to return to earlier levels of emissions of carbon dioxide and other greenhouse gases not controlled by the Montreal Protocol[197].

Paris Agreement 2015[198]

12.2.5 The Paris Agreement 2015 is a global accord aimed at strengthening the response to the threat of climate change, within the context of sustainable development and poverty eradication. It sets global temperature goals to limit global warming to 1.5°C above pre-industrial levels and sets out requisites for countries to achieve this goal. This includes requirements for countries to create Nationally Determined Contributions (please see the UK Nationally Determined Contribution below), mitigate greenhouse gas emissions, adapt to climate change and develop technology for implementing the mitigation and adaptation to climate change.

United Kingdom of Great Britain and Northern Ireland's 2035 Nationally Determined Contribution 2025[199]

12.2.6 The United Kingdom of Great Britain and Northern Ireland's 2035 Nationally Determined Contribution 2025 sets out the UK's national goals to achieve the commitments of the Paris Agreement and limit global warming to 1.5°C above pre-industrial levels. In the contribution, the UK's 2035 target is set to reduce economy-wide GHG emissions by at least 81% on 1990 levels. One of the five national missions of the government is to make Britain a clean energy superpower with a significant focus on supporting clean energy installation.

Climate Change Act 2008[200] as amended by the Climate Change Act (2050 Target Amendment) Order 2019[201]

12.2.7 The Climate Change Act 2008 is a significant piece of legislation in the UK aimed at addressing climate change. It sets a legally binding target to reduce the UK's greenhouse gas emissions by 100% from 1990 levels by 2050. This target was strengthened by the Climate Change Act (2050 Target Amendment) Order 2019, which amended the original Act to legally commit the UK to achieving net zero emissions by 2050, replacing the previous target of an 80% reduction. The Act also introduced a system of carbon budgeting, which sets limits on the total amount of greenhouse gases the UK can emit over five-year periods. Additionally,

it established the Committee on Climate Change, an independent body to advise the government on emissions targets and report on progress.

Carbon Budget Orders 2009[202], 2011, 2016, and 2021

12.2.8 Carbon Budget Orders are statutory instruments that set the specific carbon budgets for the UK for the periods 2008-2012, 2013-2017, 2018-2022, 2023-2027, 2028-2032 and 2033-2037. These budgets cap the maximum level of the net UK carbon emissions for each five-year period, ensuring that the UK stays on track to meet its long-term emissions reduction targets.

The Infrastructure Planning (EIA) Regulations 2017[1]

12.2.9 The EIA Regulations require nationally significant infrastructure projects to assess both their impact on climate change and their vulnerability to climate risks. This includes evaluating greenhouse gas emissions, resilience to extreme weather, cumulative climate impacts, and necessary mitigation measures. Developers must integrate climate risk assessments into EIAs, ensuring projects are designed to be both low-carbon and climate-resilient. Decision-makers must consider these factors before granting development consent, with ongoing monitoring to ensure compliance. Where Environmental Impact Assessments are required, EIA Regulations provide general guidance relevant to climate state that the EIA must "*identify, describe and assess in an appropriate manner... the direct and indirect significant effects of the Proposed Development on... climate*"[2].

National Planning Policy

12.2.10 National Policy Statements (NPSs) are the primary policy basis for NSIP development. The following NPSs are relevant to the Proposed Development, with respect to climate change:

- Overarching National Policy Statement for Energy (EN-1)[4] –
  - Section 4.9 particularly paragraphs 4.9.3, 4.9.13 - 4.9.17, in relation to climate impacts and adaptation in response to climate projections. This section states that projects subject to these regulations must ensure that new energy infrastructure is designed to be resilient to both current and projected climate change impacts, such as flooding, heatwaves, and storms. They must incorporate nature-based solutions where possible, assess risks under multiple climate scenarios, and adhere to government guidelines and industry standards for climate adaptation. Safety-critical infrastructure must be planned using a risk-averse approach, with adaptation measures in place to address potential long-term climate challenges;
  - Section 5.3 in relation to greenhouse gas emissions. This section declares the importance of energy infrastructure development and the consideration of GHG emissions in the construction, operation and decommissioning of energy infrastructure. It states that '*all proposals for energy infrastructure projects should include a GHG assessment as a part of their ES*'. The GHG assessment should include "*a whole-life GHG assessment"* (including construction, operation and decommissioning)*, "an explanation of the steps… taken to drive down the climate change impacts"* at each stage*, "measurement of embodied GHG impact*" during

construction, evidence of prioritising the "*reduction in energy demand and consumption during operation"*, the reduction of operational emissions using the best available technology, calculation of operational energy consumption and associated carbon emissions, whether and how residual GHG emissions will be offset, and the level and impact of residual emissions. The section further emphasises the GHG assessment "*should be used to drive down GHG emissions at every stage of the proposed development*" and nature-based and technological offsetting or mitigation methods should be considered for reducing the emissions in the construction and decommissioning stage. Methods to offset and minimise emissions should be set out in a "*GHG Reduction Strategy secured under the development consent order*". This should consider the creation and preservation of natural carbon stores and sinks. This section emphasises the importance of showing GHG emissions have been evaluated across all development stages, and efforts have been made to minimise GHG emissions during construction and decommissioning; and

  - Section 5.8 in relation to climate projections, flood risk and the importance of relevant mitigation. This section specifies that the development of energy infrastructure projects must prioritise flood risk management by avoiding areas prone to flooding wherever possible and ensuring that infrastructure in such locations remains resilient and operational during floods. They must apply the Sequential and Exception Tests to demonstrate that projects in flood risk zones are essential, provide broader sustainability benefits, and do not increase flood risks elsewhere. Designs should incorporate flood-resilient materials, natural flood management techniques, and contingency plans to minimise disruption and ensure long-term safety in the face of climate change-induced flooding;

- National Policy Statement for Renewable Energy Infrastructure (EN-3)[5], paragraph 2.4.1-2.4.3 and 2.4.11 regarding climate change adaptation and resilience. These paragraphs clarify the sections of EN-1 that should be considered to ensure that "*renewable energy infrastructure is safe and resilient to climate change"*, including necessary actions to ensure the operation of the infrastructure and the inclusion of the resilience of the project to climate change in the project ES. Specifically for solar photovoltaic sites, the resilience of the plant in regard to increased risk of flooding and the impact of higher temperatures should be considered; and,
- EN-5[6] paragraph 2.3.2 - 2.3.3 regarding NPS EN-1 and the importance of climate change resilience. These paragraphs specify that proposed developments should assess their vulnerability to climate change impacts, particularly for infrastructure located in flood-prone areas. Key risks to address include flooding (especially for critical substations), wind and storm impacts on overhead lines, increased transmission losses due to higher temperatures, and earth movement from flooding or drought. The resilience of the project must be assessed in the ES, considering future climate change risks such as flooding, as outlined in EN-1[4].

12.2.11 The National Planning Policy Framework (NPPF)[7] may also be a material consideration in the determination of NSIP proposals:

- NPPF paragraphs 161-169 in relation to meeting the challenge of climate change. The paragraphs state that whilst planning applications will not need to demonstrate the "*overall need for renewable and low carbon energy*", when

considering climate change, developments should take a proactive approach to both mitigation and adaptation strategies. This includes planning for long-term implications such as flood risk, overheating, and water scarcity. The proposed development should be designed and located in ways that minimise vulnerability to climate impacts, which can involve implementing green infrastructure, sustainable drainage systems, and ensuring that buildings are energy-efficient to reduce their greenhouse gas emissions. It must "*comply with any development plan policies on local requirements for decentralised energy supply*" and "*take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption"*; and

- NPPF paragraphs 170-182 in relation to meeting the challenge of flood risk. The paragraphs state planning applications must "*apply a sequential, risk-based approach to the location of the development"*, to consider flood risk management. Development in high-risk flood areas should generally be avoided, but if necessary, it must be safe for its lifetime and not increase flood risk elsewhere. A sequential test should prioritise sites with lower flood risk, whereas the exception test can be applied when suitable sites are unavailable, demonstrating that the development provides broader sustainability benefits and remains safe without exacerbating flood risks. Site-specific flood risk assessments are essential, particularly in Flood Zones 2 and 3, to ensure vulnerable elements are located appropriately, incorporate sustainable drainage systems, manage residual risks, and establish safe escape routes. Overall, planning applications must integrate flood resilience measures and consider the implications of climate change while enhancing sustainability and water management.

12.2.12 The National planning policy context identified above requires the consideration of climate change resilience and GHG emissions as part of planning proposals. Climate projections should be analysed, and appropriate climate change adaptation measures considered throughout the design process. Specific climate change risks identified within these policies include flooding, drought, coastal change, rising temperatures and associated damage to property and people. For GHG emissions, emissions produced during the construction, operation and decommissioning phase should be considered as well as fulfilling all of the conditions of the GHG Assessment and considering GHG offset and mitigation methods.

National Guidance

Planning Practice Guidance, Climate Change[203].

12.2.13 This guidance advises local planning authorities on integrating climate change mitigation and adaptation measures into the planning process. It emphasises the importance of considering climate change impacts in Local Plans, ensuring developments are resilient to future climate risks, and promoting sustainable development practices. The guidance also highlights the statutory requirements for local authorities to include climate change policies in their Local Plans, in line with the Climate Change Act.

Institute of Environmental Management & Assessment (IEMA) Guide: Assessing Greenhouse Gas Emissions and Evaluating their Significance 2022[204]

12.2.14 This guidance is for GHG emissions assessments, mitigation and reporting in statutory and non-statutory EIA and addresses the changes in UK authorities as a result of the UK declaring a climate change emergency. It outlines processes for mitigation, screening, scoping, GHG emissions assessment methodology, significance and communications & reporting. The guidance emphasises the need to ensure GHG mitigation methods across the project work phases (planning, construction and operation stages) to ensure mitigation methods across the project lifecycle.

Institute of Environmental Management & Assessment (IEMA) Environmental Impact Assessment Guide to: Climate Change Resilience & Adaptation 2020195

12.2.15 This guidance provides a framework for integrating climate change resilience and adaptation into the EIA process. It outlines procedural steps and supporting guidance to ensure that climate change impacts are considered at all stages of project design and development, from initial scoping to post-implementation monitoring. The document emphasizes the importance of assessing both the project's vulnerability to climate change and its potential impacts on the environment under future climate scenarios.

Local Planning Policy

12.2.16 The Proposed Development covers two LPAs:

- RMBC; and
- CDC.

12.2.17 Local planning policies identify the need to consider and, where appropriate, mitigate GHG emissions associated with new development.

12.2.18 Both RMBC and CDC have supplementary documentation around receptors sensitive to climate change including air quality and emissions (Rotherham only) and flood risk (Doncaster only)[205,206]. This includes:

- Rotherham Local Plan Supplementary Planning Document No. 2: Air Quality and Emissions
- City of Doncaster Council Flood Risk Supplementary Planning Document
- City of Doncaster Council Technical & Developer Requirements Supplementary Planning Document

12.2.19 Additionally, both LPAs have declared climate emergencies and have GHG reduction targets set accordingly[207,208].

12.2.20 Where required, relevant Supplementary Planning Documents (SPD) and climate change specific documentation will be reviewed.

12.3 Preliminary Baseline Conditions

Data Sources

12.3.1 The ES will present detailed information on the GHG impact and climate change resilience of the Proposed Development following the review and analysis of data sources including, but not limited to:

- Climate data derived from the Intergovernmental Panel on Climate Change's (IPCC) Coupled Model Intercomparison Project Phase 6 (CMIP6);
- Physical climate risk results data from UK Climate Projections 2018 (UKCP8);
- Physical climate risk results data published by Local Planning Authorities, such as within Local Plans, or government agencies, such as the Environment Agency's (EA) Flood Risk Mapping;
- Data produced as a result of the EIA conducted for other environmental topics, such as flood modelling; and
- GHG inventory for phases relevant to this assessment, developed by the Applicant.

Proposed Study Area

GHG impact assessment

12.3.2 The environmental impact of GHG emissions is both a national and global concern. The GHG impact assessment Study Area encompasses all direct GHG emissions generated by activities within the Site during the construction, operation and decommissioning phases of the Proposed Development.

12.3.3 The potential significance of the Proposed Development's GHG emissions will be evaluated assuming displacement of equivalent existing fossil fuel generation. This will be considered against the reduction targets set by the Climate Change Act 2008 and the associated legally binding five-year carbon budgets.

Climate Change

12.3.4 The Study Area for the CCRR will be all the land within the Site for the Proposed Development. The Study Area does not extend to any infrastructure beyond the Site Boundary for the Proposed Development, i.e. energy supply or any National Grid owned assets.

Temporal Scope

12.3.5 The programme of the Proposed Development anticipates that, should the DCO Application be successful, construction could begin in 2027 and continue for an estimated 24 months.

12.3.6 The operation phase of the Proposed Development is expected to be 60 years from 2029. Therefore, the expected lifespan of the Proposed Development would be between approximately 2027-2089. Following this, the Proposed Development would be decommissioned.

GHG Impact Assessment

12.3.7 The GHG impact assessment will estimate GHG emissions generated during the construction, operation and decommissioning phases of the Proposed Development. **Table 12.1** details the potential likely sources of GHG emissions.

Table 12.1 Summary of Potential GHG Emissions Sources

Lifecycle Stage	Activity	Emission Source
Construction	Raw material use	The embodied GHG emissions associated with the extraction, manufacture and transport of materials and components.
	Transportation of materials	Emissions from diesel, petrol, or other fuels are used in construction vehicles to transport materials, components and wastes.
	Construction activities to build the Proposed Development.	Emissions from construction due to energy consumption, such as electricity and other fuels from plant, vehicles, and generators.
	Use of construction infrastructure e.g. a site office.	Emissions from energy consumption such as gas and electricity in temporary built infrastructure.
	Site workers and managers travel to and from the Site	Emissions from fuel use in vehicles by construction workers and visitors.
Operation	Maintenance of the Proposed Development.	Release of greenhouse gas emissions from energy consumption during maintenance operations. Emissions released by material sourcing, operation and manufacture will be considered, such as Sulphur Hexafluoride (SF_6). Waste generation as a result of ongoing Site maintenance will release emissions on a periodic basis.
	Travel to the Proposed Development for maintenance purposes.	Release of emissions from vehicles used to travel to the Proposed Development for maintenance operations
	Generation of renewable electricity	Displace the use of fossil fuels and reduce the carbon intensity of the National Grid, lowering emissions at the national level.
Decommissioning	On-site decommissioning activities	Consumption of energy on-site for decommissioning purposes.
	Transportation and disposal of waste materials	Release of emissions from transportation of waste.

Climate Change Resilience Review

12.3.8 The CCRR will consider future climate conditions projected for the baseline, 2030, 2050, and 2080. This aligns with best available data for climate projections and is sufficient to identify potential effects throughout the construction, operational, maintenance and decommissioning phases of the Proposed Development.

Preliminary Baseline conditions

GHG Impact Assessment

12.3.9 The baseline for the GHG impact assessment constitutes the GHG emissions associated with the mix of electricity generators on the UK grid. This indicator represents the baseline case of equivalent emissions for the Proposed Development. By comparing the GHG emissions of the Proposed Development against the baseline the overall net impact of the Proposed Development on the climate can be assessed.

Climate Change

12.3.10 The Site primarily consists of open and cultivated land, in proximity to small parcels of managed ancient woodland and trees, mostly along field boundaries.

12.3.11 There are several small bodies of open water near the Site, such as the Firsby reservoir, Silwood Brook and Hooton Brook. These water features are approximately 1-3 km away from the Site Boundary and at similar elevation. The River Don flows nearby, and at its closest, is approximately 5-6 km from the Site Boundary. The EA has classified the region containing the Site and surrounding areas as “flood zone level 3”, defined as land that has a high probability of flooding from rivers and the sea. Despite heightened flood mitigation efforts by local councils and the EA, large parts of the River Don’s floodplain remain within a high-risk zone for flooding. The Site is adjacent to flood-prone areas and is potentially at risk from peripheral flooding.

12.3.12 The Proposed Development is located in a temperate climate region, with monthly mean temperatures ranging from 4.2°C in January to 16.5°C in July, with monthly precipitation averages ranging from 48.48 mm (January) to 73.08 mm (November) (Met Office observations). The baseline water stress level at the Site is classified as Low-Medium by the World Resource Institutes Water Risk Atlas[209].

12.4 Potential Effects and Mitigation

GHG Impact Assessment

12.4.1 For this assessment, any increase in GHG emissions compared to the baseline is considered to have a potential impact due to the climate's high sensitivity to rising GHG levels. This aligns with IEMA guidance, which emphasises that all GHG emissions can be significant.

12.4.2 The results of the GHG impact assessment and the comparison with suitable alternative generation capacity will then be evaluated against the IEMA significance criteria detailed in **Table 12.3**.

12.4.3 An outline Construction Environmental Management Plan (oCEMP) will be prepared and submitted as part of the DCO Application and secured through a requirement in the DCO. This will form the basis of the CEMP which will be produced and discharged under a requirement by the selected Principal Contractor to include best practice construction measures, such as low carbon design specifications such as energy-efficient lighting and durable construction materials to reduce maintenance and replacement cycles.

12.4.4 Any necessary mitigation measures will be outlined in the GHG impact assessment within the ES. These measures may address GHG emissions related to the construction, operation and decommissioning phases of the Proposed Development and would likely be included as part of the outline Operational Environmental Management Plan which would be submitted as part of the DCO Application and secured through a requirement in the DCO. Mitigation measures that may be relevant include:

- Construction emissions will be minimised by reducing transport emissions, prioritising low-carbon materials, and evolving these measures as the Proposed Development's design progresses; and
- Decommissioning emissions will be minimised through recycling of the Site infrastructure (including PV modules and other components).

12.4.5 The Proposed Development aims to significantly contribute to the UK's Net Zero target by decarbonising the electricity system.

Climate Change Resilience Review

12.4.6 The CCRR identifies the resilience of the Proposed Development to the potential effects of future climate change.

12.4.7 Potential effects resulting from future climate change will be considered in terms of the climate hazards to be modelled as part of this assessment. Climate hazards have been scoped in to, or out of, this assessment based on their potential to affect the operation of the Proposed Development.

12.4.8 The climate hazards to be considered in this assessment for the Proposed Development are detailed in **Table 12.2,** together with the rationale for scoping into, or out of, the CCRR.

12.4.9 The scoping of climate hazards in **Table 12.2** is determined by the review of the Proposed Development's preliminary baseline, alongside NSIP guidance. Specific NSIP guidance requires a review of drought risk, flooding, extreme rainfall and sea level rise, however, other types of climate and weather-related hazards deemed relevant to the Proposed Development should be considered upon review of the future climate projections in the ES.

Table 12.2 Climate Hazards Proposed to be Scoped in or out of the Climate Change Resilience Review

Climate Hazard	Scoped In/Out	Rationale for Scoping Conclusion
Sea level rise	Out	The Proposed Development is not located in an area that is susceptible to sea level rise.
Extreme heat	In	Increased temperatures are anticipated to occur within the Site area. This may result in the heat stress of materials and structures alongside adverse

Climate Hazard	Scoped In/Out	Rationale for Scoping Conclusion
		effects on surrounding environmental receptors and Site personnel.
Extreme rainfall	In	Extreme rainfall events are anticipated to increase in both frequency and intensity as a result of climate change. The Proposed Development may be vulnerable to changes in precipitation, for example, through land subsidence and damage to structures and drainage systems during periods of heavy rainfall.
Extreme winds	In	The Proposed Development may be vulnerable to changing wind patterns, for example, high winds and falling trees could damage structures and assets.
Coastal flooding	Out	The Proposed Development is not located in an area that is susceptible to coastal flooding.
Fluvial flooding	In	The Proposed Development is located in an area deemed to be of a high river flood risk by the EA. An increase in river flooding events and inundation depths could cause asset damage.
Pluvial flooding	In	Increased extreme rainfall may result in increased pluvial flooding. As the frequency of flooding events and inundation depths associated with such flooding events increase, the risk of asset related damage becomes greater.
Water stress and drought	In	As temperatures rise and the construction and operation of the Proposed Development commences, demand for water will likely increase whereas supply may reduce. This depends on a number of factors and should be considered in the resilience review. The Site lies on land with high groundwater vulnerability, and as temperatures rise and development commences this may lead to high water stress.
Wildfires	In	The Proposed Development is located within cultivated and open land, with small regions of managed ancient woodland. As temperatures rise, wildfire risk may increase. However, this risk is dependent on a number of climate parameters and should be taken forward to resilience review.

12.5 Technical Scope and Approach to EIA

Proposed Scope of the EIA

12.5.1 **Table 12.3** sets out the elements of the Climate Change assessment proposed to be scoped in or out of the EIA.

Table 12.3 Elements Proposed to be Scoped in or out of the EIA

Potential Effect / Topic	Proposal for Assessment within EIA	Rationale for Scoping out of the EIA
Construction Phase		
Climate Change Resilience Review	Scoped In	The temporal scope of climate models includes the construction phase.
GHG Impact Assessment	Scoped In	Construction activities will result in GHG emissions.
Operational Phase		
Climate Change Resilience Review	Scoped In	Climate effects will be the most pronounced during the operation phase of the Proposed Development.
GHG Impact Assessment	Scoped In	Activities during operation may result in GHG emissions, and renewable energy generation resulting from the Proposed Development will contribute to the overall reduction of GHG emissions from the electricity grid.
In-Combination Climate Impact	Scoping to be determined	Future climate change projections will be reviewed with topic specialists to determine whether there is a need to consider the effects of climate change on sensitive receptors identified.
Decommissioning Phase		
Climate Change Resilience Review	Scoped In	Despite the short duration of the decommissioning phase, the potential future intensity of climate hazards is likely to be greater over time.
GHG Impact Assessment	Scoped In	Activities associated with decommissioning may result in GHG emissions.

GHG Impact Assessment

12.5.2 The GHG impact assessment will estimate GHG emissions generated during the construction, operation and decommissioning phases of the Proposed Development.

12.5.3 In line with the World Business Council for Sustainable Development and World Resources Institute GHG Protocol guidelines[210], the GHG impact assessment will be reported as tonnes of carbon dioxide equivalent (tCO_2e) and will consider the seven Kyoto Protocol gases:

- Carbon dioxide (CO_2);
- Methane (CH_4);
- Nitrous oxide (N_2O);
- Sulphur hexafluoride (SF_6);

- Hydrofluorocarbons (HFCs);
- Perfluorocarbons (PFCs); and
- Nitrogen trifluoride (NF_3).

12.5.4 Expected GHG emissions arising from the construction, operation and decommissioning phases of the Proposed Development will be quantified using a calculation-based methodology as per the following equation, and aligned with the GHG Protocol:

12.5.5 $$Activity\ data\ x\ GHG\ emissions\ factors\ x\ GWP\ =\ GHG\ emissions$$

The Department for Energy Security and Net Zero's (DESNZ) most up to date emissions factors[211] will be used as the source data for calculating GHG emissions.

To understand the impact of the Proposed Development on the climate the GHG emissions intensity of the Proposed Development will be evaluated against alternative forms of generation including gas-fired combined cycle gas turbine (CCGT), hydro generation and biomass generation. These generators provide a useful comparison as they are the most likely alternative type of generator in the absence of the Proposed Development (by supporting the grid with renewable generation capacity and stability services).

The results of the GHG impact assessment and the comparison with suitable alternative capacity will be evaluated against the IEMA significance criteria as detailed in **Table 12.4**.

Table 12.4 Summary of Potential GHG Emissions Sources

Significance	Significance Criteria
Major adverse:	The project's GHG impacts are not mitigated or are only compliant with do-minimum standards set through regulation, and do not provide further reductions required by existing local and national policy for projects of this type. A project with major adverse effects is locking in emissions and does not make a meaningful contribution to the UK's trajectory towards net zero.
Moderate adverse:	The project's GHG impacts are partially mitigated and may partially meet the applicable existing and emerging policy requirements but would not fully contribute to decarbonisation in line with local and national policy goals for projects of this type. A project with moderate adverse effects falls short of fully contributing to the UK's trajectory towards net zero.
Minor adverse:	The project's GHG impacts would be fully consistent with applicable existing and emerging policy requirements and good practice design standards for projects of this type. A project with minor adverse effects is fully in line with measures necessary to achieve the UK's trajectory towards net zero.
Negligible:	The project's GHG impacts would be reduced through measures that go well beyond existing and emerging policy and design standards for projects of this type, such that radical decarbonisation or net zero is achieved well before 2050. A project with negligible effects provides GHG performance that is

Significance	Significance Criteria
	well 'ahead of the curve' for the trajectory towards net zero and has minimal residual emissions.
Beneficial:	The project's net GHG impacts are below zero and it causes a reduction in atmospheric GHG concentration, whether directly or indirectly, compared to the without-project baseline. A project with beneficial effects substantially exceeds net zero requirements with a positive climate impact.

Climate Change Resilience Review

12.5.6 The CCRR provides a mechanism to identify climate risks and integrate resilience measures into design and management plans for the Proposed Development, ensuring the long-term sustainability and safety under changing climate conditions. The CCRR will qualitatively assess the Proposed Development's resilience[212] to climate change following a methodology derived from the Equator Principles (EP4) and IEMA Guidance.

12.5.7 The CCRR will identify potential climate hazards and risks to the Proposed Development, analyse the risks using global climate models across time horizons appropriate to the design lifetime of the Proposed Development, and consider at least two climate scenarios.

12.5.8 The intensity of future climate hazards will be qualitatively evaluated to determine whether it could present a potentially significant impact to the Proposed Development. Where potentially significant impacts are identified, adaptation and resilience measures will be recommended to implement within the design of the Proposed Development.

12.5.9 A more detailed methodology will be provided in the ES. This will be completed in liaison with the Proposed Development's design team and the other environmental disciplines by considering the climate projections for the geographical location and timeframe of the Proposed Development. A statement will be provided within the ES to describe how the Proposed Development will be adapted to improve its resilience to future climate conditions.

12.6 Assumptions and Limitations

12.6.1 Assumptions and limitations of the CCRR and GHG impact assessment include:

- Where detailed information is not available regarding energy use, assumptions will be made based on industry approximations and professional good practice;
- All assumptions and limitations, including any exclusions, together with assumptions for choices and criteria leading to exclusion of input and output data will be documented as part of the assessment;
- All physical climate change related assessments will be carried out as a qualitative desk-based study;
- This assessment uses modelled global climate hazard datasets using best available data. There is inherent uncertainty within these models and

projections are not a prediction of future climate conditions, and therefore may not be fully representative of the local hazard conditions;

- The Site level assessment of physical risk results data does not consider the potential effects of climate change on the Proposed Development originating from beyond the Site Boundary. For highly localised hazards (e.g. flooding) this can sometimes produce a lower-than-expected risk score as even though the exact site location may not have a flooding result, the surrounding area may have projected flooding results, which would impact an asset. Where this is the case, narrative commentary on impacts in the surrounding area will be captured within the narrative of the report; and,
- The physical risk results follow the standard approach used by the main climate risk models, whereby the results are specific to each climate hazard and do not consider risk interconnectivity (e.g. between extreme heat and wildfires), each hazard is analysed separately.

13 AIR QUALITY

13.1 Introduction

13.1.1 This chapter identifies the potential effects on ambient air quality from construction, operation and, where relevant, decommissioning activities of the Proposed Development.

13.1.2 During the construction phase the principal pollutants of interest are dust and particulate matter (as PM_{10} and $PM_{2.5}$) due to construction activities and nitrogen dioxide (NO_2) from construction traffic. During the operational phase there are not anticipated to be emissions of interest, noting that traffic emissions are considered to be negligible for air quality due to the low number of traffic movements. There are no combustion sources predicted as part of the operational phase and therefore no assessment is anticipated for this aspect.

13.2 Topic-Specific Legislation and Guidance

13.2.1 The scope of the air quality assessment for the EIA has been developed in line with the following key legislation, policy and associated guidance.

Legislation

The Air Quality Standards Regulations 2010[213]

13.2.2 The Air Quality Standards Regulations, implemented in the UK in 2010, were designed to comply with European Union directives (EU Directive 2008/50/EC) aimed at improving air quality across Europe. These regulations set legally binding limits for various pollutants, such as nitrogen dioxide, particulate matter, and sulphur dioxide, in ambient air. These regulations prescribe the 'relevant period' (referred to in Part IV of the Environment Act 1995) that local authorities must consider in their review of the future quality of air within their jurisdiction. The regulations also set out the air quality objectives to be achieved by the end of the 'relevant period'.

Policy

National Policy Statements

13.2.3 DESNZ has published NPSs related to the energy sector, including an overarching policy for energy (EN-1)[4] and a statement specifically related to renewables (EN-3)[5]. These NPSs outline the aspects of an air quality assessment required for large energy schemes including for the construction, operation and decommissioning stages. These NPSs were used to inform the air quality impact assessment methodology for the Proposed Development.

13.2.4 Section 5.2 in EN-1[4] discusses the aspects that should be considered when assessing air quality for energy projects including reference to the relevant legal limits and potential impacts.

13.2.5 Paragraph 5.2.3 of EN-1[4] states that:

- *"...It is important that energy infrastructure schemes consider not just how a scheme may impact statutory air quality limits, objectives or targets but also measures to mitigate all emissions in order to minimise human exposure to air pollution, especially for those who are more susceptible to the impacts of poor air quality."*

13.2.6 Paragraph 5.2.4 of EN-1[4] indicates that the Environmental Statement accompanying applications should describe:

- *"Existing air quality concentrations and the relative change in air quality from existing levels*;
- *Any significant air quality effects, mitigation action taken and any residual effects, distinguishing between the project stages and taking account of any significant emissions from any road traffic generated by the project;…"*

13.2.7 In EN-3[5], air quality impacts and assessment relating to solar photovoltaic installations are not mentioned explicitly. However, reference is made to EN-1 and Section 3 indicates that impacts from construction, including traffic and transport, should be considered during assessment.

National Planning Policy Framework 2024 (NPPF)[7]

13.2.8 Chapter 15 Paragraph 187.e of the NPPF notes that planning decisions should be made with consideration of:

- *"Preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans …"*

13.2.9 In dealing specifically with air quality the NPPF Chapter 15, Paragraph 199 states that:

- *"Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan."*

Air Quality Strategy for England, Scotland, Wales and Northern Ireland[214]

13.2.10 The government's policy on air quality within the UK is set out in the Air Quality Strategy for England, Scotland, Wales and Northern Ireland published in July 2007 ('the Strategy'), pursuant to the requirements of Part IV of the Environment Act 1995. The Strategy sets out a framework for reducing hazards to health from air pollution and ensuring that international commitments are met in the UK. The

Strategy is designed to be an evolving process that is monitored and regularly reviewed. The Strategy sets standards and objectives for ten main air pollutants to protect health, vegetation and ecosystems.

Local Air Quality Management (LAQM)

13.2.11 Part IV of the Environment Act 1995 also requires local authorities to periodically 'Review and Assess' the quality of air within their administrative area. The reviews must consider the present and future of air quality and whether any air quality objectives prescribed in regulations are being achieved or are likely to be achieved in the future.

13.2.12 Where any of the prescribed air quality objectives are not likely to be achieved the authority concerned must designate that part an Air Quality Management Area (AQMA).

13.2.13 For each AQMA, the local authority has a duty to draw up an Air Quality Action Plan setting out the measures the authority intends to introduce to deliver improvements in local air quality in pursuit of the air quality objectives. Local authorities are not statutorily obliged to meet the objectives; however, they must show that they are working towards them.

13.2.14 DEFRA has published technical guidance for use by local authorities in their Review and Assessment work. This guidance (known as LAQM TG(22)[215]) was used where appropriate in this assessment.

Guidance

Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust From Demolition and Construction, Version 2.2[216].

13.2.15 This guidance outlines the procedures for assessing and mitigating dust impacts from demolition and construction activities. It includes steps for screening the need for detailed assessments, evaluating the risk of dust impacts, and implementing site-specific mitigation measures.

IAQM Land-Use Planning and Development Control: Planning for Air Quality[217].

13.2.16 This guidance, developed in collaboration with Environmental Protection UK, offers a framework for considering air quality within land-use planning and development control processes. It covers the role of the planning regime, the links between air quality and health, and the procedures for undertaking air quality assessments.

13.2.17 The Air Quality Standards of relevance for this assessment are set out in **Table 13.1**.

Table 13.1 UK Air Quality Standards

Applicability	Pollutant	Averaging Period	Assessment Criterion ($\mu g/m^3$)	Percentile
	PM_{10}	Annual Mean	40	n/a

Applicability	Pollutant	Averaging Period	Assessment Criterion ($\mu g/m^3$)	Percentile
Sensitive Human Receptor		24 hour, <36 exceedances yearly	50	90.14th
	NO_2	Annual, mean	40	n/a
		1-hour, <18 exceedances yearly	200	99.79th
Ecological Receptor	Nitrogen oxide (NO_x)	Annual	30	n/a
		Daily (24 hr mean)	75/200*	100th

n/a = not applicable

*200 $\mu g/m^3$ is applicable where ozone is below the Accumulated Over a Threshold (AOT) 40[218] critical level and sulphur dioxide is below the lower critical level to 10 $\mu g/m^3$. The AOT40 is calculated from the sum of the differences between hourly ozone concentration and 40 parts per billion (ppb) for each hour when the concentration exceeds 40 ppb during a relevant growing season, e.g. for forest and crops.

13.2.18 The assessment criteria to determine impacts from construction activities are described in the IAQM guidance.

13.3 Preliminary Baseline Conditions

Data Sources

13.3.1 The ES will present detailed information on the existing air quality in the area of the Proposed Development following the review and analysis of the following data sources:

- DEFRA online interactive monitoring networks map[219,220];
- DEFRA's online UK Ambient Air Quality Interactive Map[221];
- DEFRA's online Air Quality Management Area Interactive Map[222]; and
- Local authority monitoring data[223]

Proposed Air Quality Study Area

Air Quality Assessment

13.3.2 The Study Area for the air quality assessment will be based on activities within 250 m of the Site Boundary of the Proposed Development. All sections of the Proposed Development (the Site and Cable Corridor Options) will be considered in the assessment, and will utilise the same Study Area and methodologies.

Construction Dust Assessment

13.3.3 For the construction dust assessment, the following distances (as specified by the IAQM guidance[224]) will be analysed:

13.3.4 A 'human receptor' within:

- 250 m of the Site Boundary; or
- 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the Site entrance(s).

13.3.5 An 'ecological receptor' within:

- 50 m of the Site Boundary; and / or
- 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the Site entrance(s).

Temporal Scope

13.3.6 The air quality assessment will consider the construction and decommissioning phases of the Proposed Development. Air quality impacts during operation are proposed to be scoped out. Significant effects are not expected to be experienced in any phases of the Proposed Development. **Table 13.2** includes topics of the air quality assessment proposed to be scoped 'in' or 'out' of the assessment.

Preliminary Baseline Conditions

13.3.7 The Proposed Development is in a predominantly rural area. Key sensitivities on air quality from the Proposed Development are:

- Construction and Decommissioning Phases:
  - Potential dust nuisance for residential areas within 250 m from construction activities and 50 m from construction access routes;
  - Potential PM_{10} / $PM_{2.5}$ health impacts for sensitive receptors (schools, hospitals, nurseries, care homes, residential areas) within 250 m from construction activities and 50 m from construction access routes; and
  - Potential NO_x and by association NO_2 impacts associated with construction traffic within 200 m of roads used by construction traffic.

13.3.8 The sensitivity of human receptors within the radius of potential impacts from dust raising activities is to be considered high for all types of receptors (residential areas, schools, hospitals etc.) within the framework of the dust impact assessment as per IAQM construction dust guidance[224].

13.3.9 For other types of impact, residential areas are considered to be of medium sensitivity. High sensitivity applies to hospitals and schools.

13.3.10 There are a large number of human receptors located within 250 m of the Site Boundary on all sides (roughly 1,200). These are mainly located in surrounding residential areas including Treeton, Ulley, Aston, South Anston, North Anston, Harthill, Hardwick and Woodall. These also include various isolated residential properties that are located in the area (none of these are located inside the Site Boundary itself).

13.3.11 There are no nationally designated statutory ecological receptors within 250 m of the Site Boundary, with the nearest being Crabtree Wood Site of SSSI roughly 900 m away. Within 250 m of the Site Boundary, there is one locally designated statutory ecological site, which is Firsby Reservoir LNR, three non-statutory locally designated sites (Brampton Common LWS – on-site; Ulley Country Park LWS – adjacent to the Site; and Killmarsh Pond LWS – 10 m north), and one proposed

non-statutory locally designated site, Pebley Oaks Lane Proposed LWS – 100 m south.

13.3.12 The Proposed Development is partly located within the Rotherham AQMA 1 – Part 1 (NO_2) at the northwest section of the Site. Rotherham AQMA 1 – Part 1 (NO_2) was declared for an exceedance of NO_2 in 2002 and covers the area around Brinsworth, Catcliffe and Upper Whiston. Only two sections of the Site, a total of 36.2 hectares (a very small proportion of the overall Site), are located within the AQMA. The Proposed Development is also located approximately 3.5 km east of the Sheffield Citywide AQMA. It is possible that traffic accessing the Site will have to travel through these AQMAs. Other AQMAs within 10 km of the Site are the Rotherham AQMA 1 – Part 2, Rotherham AQMA 2 – Part 4 and the Rotherham AQMA Rawmarsh 2016. While it is unlikely that any traffic accessing the Site would be above the screening thresholds at these more distant AQMAs, they will be considered in the assessment.

13.3.13 Preliminary analysis of the UK DEFRA 2024 background maps (based on 2021)[225] for the Site (taken as an average of various points due to the size of the Proposed Development's footprint) shows the following results:

- Annual mean PM_{10} level 14.5 µg/m^3;
- Annual mean NO_x level 14.8 µg/m^3; and
- Annual mean NO_2 level 11.2 µg/m^3.

13.3.14 The closest local authority monitoring for NO_2 occurs with diffusion tubes in the nearby village of Brinsworth, which is at the closest point approximately 500 m away from the Site Boundary[226]:

- RDT52 Grange Farm Close (roadside): 24.5 µg/m^3 annual mean in 2022; and
- RDT49 Brinsworth Howarth School Gate (roadside): 25.0 µg/m^3 annual mean in 2022.

13.3.15 It is likely that traffic associated with the Proposed Development would avoid areas such as Brinsworth.

13.3.16 The baseline NO_2 values taken from local monitoring within the AQMA closest to the Site are approximately 61 - 63% of the NO_2 annual mean standard. This is low compared with expected levels within an AQMA as an AQMA is usually declared when high levels of a pollutant are measured in the area. This AQMA was declared in 2002 and the local air quality appears to have improved since this time. The local measurements were also a minimum of 500 m away from the Proposed Development but were set back from the main M1 trunk road possibly resulting in the lower levels.

13.3.17 There is no monitoring of PM_{10} in the RMBC District, however there is $PM_{2.5}$ monitoring taking place at St Ann's School, approximately 4 km from the Site Boundary:

- St Ann's School (urban background): 7.8 µg/m^3 annual mean in 2022.

13.3.18 The baseline values obtained from the DEFRA 2024 background maps and from local monitoring sites are below the air quality standards outlined in **Table 13.1**.

13.4 Potential Effects and Mitigation

Construction Phase

13.4.1 Construction of the Proposed Development has the potential to generate dust and PM_{10} / $PM_{2.5}$. These emissions have the potential to adversely impact on amenity due to dust deposition and health due to inhalation of PM_{10}. In addition, construction traffic travelling to and from the Site has the potential to generate NO_2 emissions which can adversely impact human and ecological health.

Operational Phase

13.4.2 Traffic travelling to and from the Site during the operational phase has the potential to generate NO_2 emissions which can adversely impact human and ecological health. However, traffic flows are expected to be sufficiently small, and therefore any potential effects are anticipated to be negligible.

13.4.3 As there are no potentially significant combustion sources as part of regular maintenance and operations on-site during the operational phase there is not anticipated to be any generation of NO_2 emissions as a result of on-site activities.

Decommissioning Phase

13.4.4 Decommissioning of the Proposed Development has the potential to generate dust and PM_{10} / $PM_{2.5}$. Impacts at the decommissioning phase will likely be of a similar magnitude and extent to the construction phase. In addition, traffic travelling to and from the Site due to decommissioning activities has the potential to generate NO_2 emissions which can adversely impact human and ecological health.

Mitigation

13.4.5 As part of the Proposed Development's design process, it is expected and considered best practice to reduce the potential for impacts due to emissions of dust from construction activities in line with the IAQM Guidance document[227]. Adhering to this guidance in general makes it possible to render these impacts negligible, or at worst minor.

13.4.6 Site traffic (for all phases of the Proposed Development) will be compared against the IAQM screening criteria for road traffic[228] and could potentially be screened out of the assessment if traffic numbers are below the criteria. Given that traffic flows are anticipated to be screened out, no mitigation would be required.

Likely Significant Effects to be Considered in the EIA

13.4.7 **Table 13.2** below is a tool aimed at delivering a proportionate approach to the EIA. In doing so it sets out a high-level assessment of all potential effects, significant or not, and where appropriate notes actions, including baseline data acquisition, for significant effects to be scoped in. The basis for scoping out certain effects is presented in the table.

13.4.8 As decommissioning will be approximately 60 years post the start of operation, it will not be addressed to the same level of detail as the other phases and in

general it is assumed that the environmental effects from decommissioning will be no worse than those that occur during construction.

Table 13.2 Likely Effects – Air Quality

Proposed Development Activity and Impact	Embedded Mitigation Measures	Likely Significance of Effect	Proposed Approach to Assessment (Scoped Out, Scoped In)	Further Baseline Data Requirements
Construction works associated with dust raising activities (earthworks, traffic on unpaved areas, construction works). This may have an effect on human and ecological receptors sensitive to dust and PM_{10} / $PM_{2.5}$.	In line with IAQM guidance.	Minor at most. Embedded mitigation, for example as set out by IAQM, is designed to reduce impact levels to negligible or at worst minor impacts, considering distance to and sensitivity of receptors.	Scoped In	None
Construction related traffic will be associated with emissions of dust and exhaust gases which may affect human and ecological receptors.	None required	Not significant. The maximum increase of Heavy-Duty Vehicles (HDV), Low-Duty Vehicles (LDV), and Annual Average Daily Traffic (AADT) movements over any one route are expected to be less than the screening criteria outlined below (threshold as outlined in IAQM Guidance[229])	Scoped In (for screening assessment)	None
Operation of the Proposed Development.	Relevant emissions sources from the Proposed Development (such as maintenance activities) are likely to be so	Not significant. The traffic associated with regular maintenance and operation of the Proposed Development is expected to be sufficiently small as	Scoped Out	None

Proposed Development Activity and Impact	Embedded Mitigation Measures	Likely Significance of Effect	Proposed Approach to Assessment (Scoped Out, Scoped In)	Further Baseline Data Requirements
	small as to be negligible	to scope out, and there are no combustion sources on-site as part of regular operation and maintenance (as per Paragraphs 13.4.2 and 13.4.3)		
Decommissioning activities will generally be the reverse of the construction sequence, involving similar types and numbers of vessels and equipment.	In line with IAQM guidance	Minor at most. Embedded mitigation, for example as set out by the IAQM, is designed to reduce impact levels to negligible or at worst minor impacts, considering distance to and sensitivity of receptors.	Scoped In (for screening assessment)	None
Cumulative impacts from construction / decommissioning activities	In line with IAQM guidance.	Not significant	Scoped In	None

13.5 Technical Scope and Approach to EIA

Baseline

13.5.1 Baseline air quality data (PM_{10} and $PM_{2.5}$) will be sourced from:

- National or local monitoring networks;
- Modelling undertaken by local authorities, where available; and
- National modelling outputs (background mapping, Air Pollution Information System (APIS)).

13.5.2 No baseline surveys will be undertaken.

Construction / Decommissioning Dust Assessment

13.5.3 Impacts from construction / decommissioning activities will be assessed semi-quantitatively using the methodology described in the IAQM guidance[230]. It is anticipated that all impacts will be mitigated to not significant through implementation of measures, to be detailed within an oCEMP, which will be submitted with the Application. The oCEMP would be updated to a detailed CEMP prior to the commencement of works and secured by a Requirement of the DCO.

Construction Traffic Screening

13.5.4 The significance of the expected impact of traffic emissions depends on the areas affected by increased traffic resulting from the Proposed Development. A staged screening process will be used to determine whether there are any roads where expected construction traffic flows could potentially result in a significant impact on air quality or require a detailed modelling assessment based on expected traffic routing. The screening is based on the screening criteria set out in the IAQM planning guidance[231]. The criteria are as follows:

- Outside an AQMA: a change in Heavy Duty Vehicles >100 HDVs/Day
- Outside an AQMA: a change in Light Duty Vehicles >500 LDVs/Day
- Inside / adjacent to an AQMA: a change in Heavy Duty Vehicles >25 HDVs/day
- Inside / adjacent to an AQMA: a change in Light Duty Vehicles >100 LDVs/day.

13.5.5 Where those criteria are exceeded, a detailed modelling assessment of air quality impacts would be necessary. Due to the size and nature of the Proposed Development and the locations of the nearby AQMAs, it is anticipated that construction and decommissioning traffic impacts will be screened out of the assessment. This will be detailed in the Draft ES when traffic flow data for the Proposed Development are available.

Cumulative Assessment

13.5.6 Cumulative impacts relating to the Proposed Development will be assessed qualitatively for the scoped in aspects of the air quality assessment. This will be detailed in the Draft ES.

Proposed Scope of the EIA

13.5.7 **Table 13.3** sets out the elements of the air quality assessment proposed to be scoped in or out of the EIA

Table 13.3 Elements Proposed to be scoped in or out of the EIA

Potential Effect / Topic	Proposal for Assessment within EIA	Rationale for Scoping out of the EIA
Construction Phase		
Construction Dust	Scoped In	

Potential Effect / Topic	Proposal for Assessment within EIA	Rationale for Scoping out of the EIA
Construction Traffic	Scoped In (for screening assessment)	
Operational Phase		
Impacts from routine maintenance and operation	Scoped Out	There are no combustion sources on-site as part of regular operation and maintenance therefore no expected impacts.
Operational Traffic	Scoped Out	The traffic associated with regular maintenance and operation of the Proposed Development is expected to be sufficiently small to scope out.
Decommissioning Phase		
Decommissioning Dust	Scoped In	
Decommissioning Traffic	Scoped In (for screening assessment)	

13.6 Assumptions, Limitation and Uncertainties

13.6.1 Although it is unlikely that the overall predicted impacts of the Proposed Development on air quality will diverge from the assessment presented, potential uncertainties are as follows:

- It is anticipated that construction traffic will be screened out using the IAQM criteria outlined above. However, in the unlikely scenario where the criteria are exceeded a full assessment may be required with additional scope. This would potentially include air quality traffic emissions modelling and inputs from the traffic and transport specialists.

14 TRAFFIC AND TRANSPORT

14.1 Introduction

14.1.1 This chapter defines the proposed methodology and approach to be undertaken for the transport and traffic assessment that will be included within the ES.

14.1.2 The traffic and transport chapter of the ES will evaluate the effect of the Proposed Development on traffic and transportation resource within the Study Area. Vehicle movement to the Proposed Development will consist of abnormal load vehicles (ALVs), HGVs, LGVs and cars.

14.1.3 The EIA will identify potential effects from increased road traffic arising from the construction, operation and decommissioning of the Proposed Development. The significance of these effects will be assessed against recognised guidelines. Where required, appropriate mitigation measures will be proposed to reduce these effects.

14.2 Topic-Specific Legislation and Guidance

14.2.1 The scope of the traffic and transport assessment will, where relevant, be undertaken in accordance with (but not limited to) the following key legislation, policy and associated guidance.

National Planning Policy

14.2.2 The energy NPSs, EN-1, EN-3, and EN-5, outline the government's policy for delivering major energy infrastructure. The NPSs that are of relevance to the Proposed Development are discussed in the sections below.

Overarching National Policy Statement for Energy (EN-1) (2023)4

14.2.3 Details of specific key policies within EN-1 that are considered relevant to traffic and transport include:

- Paragraph 5.14.5, which states "if a project is likely to have significant transport implications, the applicant ES should include a transport appraisal";
- Paragraph 5.14.6, which states "applicant should consult National Highways and Highway Authorities on assessment and mitigation";
- Paragraph 5.14.11, which states that "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; and*

– *Reroute to use parts of the network that are less busy*."

National Policy Statement for Renewable Energy Infrastructure Energy (EN-3) (2024)5

14.2.4 Details of specific key policies within EN-3 that are considered relevant to traffic and transport include:

- Paragraph 3.10.111, which states that *"Modern solar farms are large sites that are mainly comprised of small structures that can be transported separately and constructed on-site, with developers designating a compound on-site for the delivery and assemblage of the necessary components";*
- Paragraph 3.10.114, which states that *"Applicants should assess the various potential routes to the site for delivery of materials and components where the source of the materials is known at the time of application, and select the route that is most appropriate";*
- Paragraph 3.10.115, which states that *"Where the exact location of the source of construction materials, such as crushed stone or concrete is not known at the time of application, applicants should assessment the worst-case impact of additional vehicles on the likely potential routes"*;
- Paragraph 3.10.116, which states that *"Applicants should ensure all sections of roads and bridges on the proposed delivery route can accommodate the weight and volume of the loads and widths of the vehicles. Although unlikely, where modifications to road and / or bridges are required, these should be identified, and potential effects addressed in the ES";* and
- Paragraph 3.10.117, which states that *"Where a cumulative impact is likely because multiple energy infrastructure developments are proposed to use a common port and / or access route and pass through the same towns and villages, applicants should include a cumulative transport assessment as part of the ES. This should consider the impacts of abnormal traffic movements relating to the Proposed Development in question in combination with those from any other relevant development. Consultation with relevant local highway authority is likely to be necessary."*

National Policy Statement for Electricity Networks Infrastructure (EN-5) (2024)[6]

14.2.5 Details of specific key policies within EN-5 that are considered relevant to traffic and transport include:

- Paragraph 2.9.19 states that states that Applicants should *"…make the design of access roads, perimeter fencing, earth-shaping, planting and ancillary development an integral part of the site layout and design, so as to fit in with the surroundings."*

National Planning Policy Framework (2024)[7]

14.2.6 The NPPF 2024 is the over-arching national statement of the government's approach to planning. Whilst the NPPF is not directly applicable to NSIPs, as government policy, it may be considered relevant and important. The document contains several paragraphs outlining policies in relation to transport provision for new developments. Key among these are:

- Paragraph 116 states that *"Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe, taking into account all reasonable future scenarios."*
- Paragraph 118 states that *"All developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a vision-led transport statement or transport assessment so that the likely impacts of the proposal can be assessed and monitored."*

Local Planning Policy

CDC Doncaster Local Plan 2015-2035[8]

14.2.7 The Doncaster Local Plan 2015-2035 contains the following policies which are relevant to traffic and transport:

- Policy 12: Strategic Transport Network (Strategic Policy);
- Policy 13: Promoting Sustainable Transport in New Developments (Strategic Policy);
- Policy 16: Cycling in Doncaster;
- Policy 17: Walking in Doncaster;
- Policy 18: Development Affecting Public Rights of Way; and
- Policy 19: Access, Design and Layout of Public Rights of Way.

RMBC Local Plan 2013-2028[9]

14.2.8 The RMBC Local Plan Core Strategy 2013 - 2035 contains the following policies which are relevant to traffic and transport:

- Policy CS 3: Location of New Development – which establishes factors for consideration in new development, including access to public transport routes and the frequency of services;
- Policy CS 14: Accessible Places and Managing Demand for Travel – which sets out how accessibility will be promoted through the proximity of people to employment;
- Policy CS 15: Routes and the Strategic Road Network – which sets out how RMBC will ensure the key routes and motorway network provides efficient access between the main Rotherham Urban Area, Principal Settlements and the regional and national road network; and
- Policy CS 16: New Roads – which sets out how RMBC would ensure there will be no significant increase in the physical capacity of the highway network.

RMBC Transport Strategy 2016 - 2026[232]

14.2.9 This document outlines a comprehensive plan to improve transportation within the Borough, supporting economic growth, sustainability, connectivity and sustainable travel.

Guidance

Institute of Environmental Management and Assessment ("IEMA 2023") Guidelines for the Environmental Assessment of Road Traffic[233]

14.2.10 This document offers comprehensive guidelines for the assessment of traffic and movement associated with development projects which require an environmental impact assessment.

Department for Transport (DfT) publication "Design Manual for Roads Bridges (DMRB)[234]

14.2.11 The DMRB is a collection of standards, advice notes, and other documents that outline the design, assessment, and operation of road infrastructure in the UK.

Department for Transport (DfT) Circular 01/2022: The Strategic Road Network and the Delivery of Sustainable Development;[235]

14.2.12 This circular provides guidance on how to integrate sustainable development principles into the planning and operation of the strategic road network.

Planning Practice Guidance on Travel Plans, Transport Assessments and Transport Statement[236]

14.2.13 This guidance provides advice on how to assess and manage the transport impacts of developments, ensuring sustainable travel options are considered.

14.3 Preliminary Baseline Conditions

Data Sources

14.3.1 The ES will present detailed information on the traffic impacts and access requirements of the Proposed Development following the review and analysis of the following data sources and Site visits by competent experts:

- OS Mapping;
- Highway Boundary Information;
- Topographical Surveys;
- Road Traffic Collision (RTC) Data;
- Department for Transport Open-source Traffic Count Data;
- National Highways Open-source Traffic Count Data (WebTRIS)[237];
- CDC Public Rights of Way Map[238]; and
- RMBC Public Rights of Way Map[239].

Proposed Traffic and Transport Study Area

14.3.2 The Study Area for traffic and transport, hereafter referred to as the 'Study Area', has been defined based on those roads that are expected to experience

increased traffic flows associated with the construction of the Proposed Development. The current geographic scope has been determined through a review of other developments in the area, OS plans and an assessment of the potential origin locations of construction staff and supply locations for construction materials. The roads listed in Paragraph 14.3.10below are likely to be included in the Study Area.

14.3.3 An access and routing strategy is still under consideration at the time of submission of this Scoping Report and therefore the Study Area is yet to be finalised. Once these assessments have been completed, the Applicant will seek to confirm the extent of the Study Area in consultation with CDC, RMBC, and National Highways as appropriate, and further details will be provided in the ES.

Temporal Scope

14.3.4 The nature of the Proposed Development is such that the greatest impact is likely to occur during the construction phase, and this will be the focus of the traffic and transport ES chapter.

14.3.5 Vehicle movements generated during the operational phase of the Proposed Development will comprise activities associated with inspection, monitoring, and general Site up-keep. It is anticipated that such visits will occur once per week on average and be via a van or other similarly sized vehicle.

14.3.6 Due to the low numbers of vehicle movements anticipated, it is unlikely that the operation of the Proposed Development will have any significant effects on the road network. The Proposed Development is not intended to attract visitors, and therefore it is not anticipated to generate other types of trips other than for regular maintenance.

14.3.7 The effect of operational traffic is therefore expected to be negligible and therefore is proposed to be scoped out of the traffic and transport ES chapter.

14.3.8 Traffic and transport effects associated with decommissioning of the Proposed Development are expected to comprise the removal of all solar infrastructure including solar PV modules, mounting structures, cabling, and switching stations, and be similar to those anticipated for the construction phase. The infrastructure would be removed from the Site and recycled or disposed of in accordance with good practice and market conditions at that time, as discussed in Section 17.1 of this Scoping Report.

14.3.9 Traffic associated with decommissioning of the Proposed Development will be the same or less than that experienced during construction. It is not possible to accurately forecast the baseline environment including traffic flow levels 60 years into the future. For the above reasons, further work would be undertaken, and appropriate traffic management procedures agreed with the relevant authorities at the time of decommissioning, and therefore the decommissioning phase is proposed to be scoped out of the traffic and transport ES chapter.

Preliminary Baseline Conditions

14.3.10 Access points and access routes to the Proposed Development are still under review at the time of the submission of this Scoping Report. However, due to the size and non-contiguous nature of the Proposed Development, at least 25 access points would be required. Wherever possible, it is proposed to utilise or upgrade existing access roads and access points. This access strategy will continue to be

refined to ensure that each access considers an appropriate balance of operational safety whilst seeking to minimise the environmental impact of any upgrades necessary. The roads (including the Strategic Road Network) which are likely to be included in the Study Area are the M1, M18, A57, A618, A630, B6093, B6463, and several C Class / unclassified roads.

14.3.11 There are a number of PRoW which either cross the Site or pass close to the Site Boundary. It is acknowledged that the presence of construction plant and equipment in works areas adjacent to the PRoWs during the construction phase may temporarily reduce the amenity value of the paths. However, it is anticipated that these effects would be temporary and short-term.

14.3.12 It is not anticipated that any of these routes will require permanent closure as a result of the construction, operation, or decommissioning of the Proposed Development. However, some temporary diversions and user management may be required to ensure the safe and uninterrupted usage of these routes throughout construction.

14.3.13 An outline PRoW Management Plan will include additional details of specific routes that may be affected and set out any proposed mitigation required. This will be prepared and submitted with the Application.

14.3.14 A review of Sustrans' National Cycle Network (NCN) map indicates that a short section of the NCN Route 6 passes through the Site near Ulley and Woodall.

14.3.15 Further details on baseline conditions will be set out in detail in the ES.

Key Sensitivities

14.3.16 The following sensitive receptors have been identified and will be considered within the EIA:

- Motorised users of the surrounding highway network, including vehicle drivers and public transport users;
- Non-motorised users of the surrounding highway network, PRoW network, and non-designated public routes, including pedestrians, cyclists, equestrians and vulnerable groups; and
- Residents within settlements along the roads outlined above including Ulley, Hardwick, Woodall, and Clifton, among others.

14.4 Potential Effects and Mitigation

Potential Effects

14.4.1 In accordance with IEMA 2023 Guidelines, the following effects on traffic and transport receptors have the potential to result from the Proposed Development and shall be considered in the undertaking of further assessment:

- Severance of Communities;
- Non-motorised Delay;
- Non-motorised Amenity;
- Road Vehicle and Passenger Delay;
- Fear and intimidation on and by Road Users;

- Road User and Pedestrian Safety; and
- Hazardous and Large Loads (Abnormal Loads).

14.4.2 The IEMA 2023 Guidelines also necessitate the consideration of Noise and Vibration, Visual Impact, and Air Quality; the need to assess the impact of traffic on these effects is addressed in other chapters of this Scoping Report.

Approach to Mitigation

14.4.3 The traffic and transport ES chapter will provide details of standard mitigation where appropriate in the form of an outline Construction Traffic Management Plan (oCTMP). Additional mitigation may be included should the assessment reveal criteria that are significant following the application of standard mitigation measures.

14.4.4 It is anticipated that minor highway improvements may be required on constrained locations to reduce the impact of construction traffic. The assessment of routes from the strategic road network to the Site parcels will determine the feasibility of routes and where mitigation works may be required.

14.5 Technical Scope and Approach to EIA

Proposed Scope of the EIA

14.5.1 **Table 14.1** sets out the elements of the traffic and transport assessment proposed to be scoped in or out of the EIA

Table 14.1 Elements Proposed to be Scoped In or Out of the EIA

Potential Effect / Topic	Proposal for Assessment within EIA	Rationale for Scoping out of the EIA
Construction Phase	Scoped In	N/A
Operational Phase	Scoped Out	The potential impacts of operational traffic are expected to be negligible.
Decommissioning Phase	Scoped Out	Traffic associated with decommissioning of the Proposed Development will be the same or less than that experienced during construction. It is not possible to accurately forecast the baseline environment including traffic flow levels 60 years into the future. For this reason, prior to decommissioning of the Proposed Development, a traffic assessment will be undertaken, and appropriate traffic management procedures agreed with the relevant authorities at the time.

Baseline Survey Methodology

14.5.2 The main data considered fundamental to the assessment of traffic and transport effects will be traffic flow data and RTC accident data. RTC data will be obtained for the most recent five-year period ending in 2025 (where available), which will provide information on each collision, including severity as well as the factors that were attributed to the collision to determine whether the roads are safe around the Site and if there are any accident hotspots.

14.5.3 With respect to traffic flow data, baseline traffic data will be obtained through independent Automatic Traffic Counts (ATC) surveys of the road network within the Study Area and augmented with data from publicly available data sources where possible.

14.5.4 The timings and locations of the surveys will be agreed with RMBC, CDC and National Highways; however, the locations selected will provide a basis for the analysis and incorporate all routes within the Study Area close to potential sensitive receptors and routes along key strategic links to provide a robust baseline for assessment.

14.5.5 The traffic flow data collected will be used to assess the predicted impact on traffic flows resulting from the proposed construction traffic associated with the Proposed Development.

14.5.6 Further detail will be provided in the ES.

Assessment Criteria

14.5.7 The estimated construction traffic generation associated with the Proposed Development will be compared with baseline traffic flow data to determine the percentage increase in traffic. Road links on which potentially significant environmental effects are likely to occur will then be assessed based upon two criteria within the IEMA 2023 Guidelines. These are:

- Rule 1 - Road links where traffic flows are predicted to increase by more than 30% as a result of the Proposed Development (or where the number of heavy goods vehicles is predicted to increase by more than 30%) must be assessed; and
- Rule 2 - Road links of high sensitivity where traffic flows have increased by 10% or more.

14.5.8 Any change in traffic flow which is greater than the thresholds outlined above would be subject to further detailed assessment. It is acknowledged that in instances where traffic flow is lower than the IEMA Guidelines thresholds, the significance of the effects can be considered low or not significant with no further detailed assessments warranted. However, further consideration should be given to road user and pedestrian safety as well as driver delay effects even if the above thresholds are not exceeded.

14.5.9 Rules 1 and 2 are used as a screening tool to determine whether or not a full assessment of effects on routes within the Study Area is required as a result of intensification of road traffic. Therefore, it should be noted that an increase in total traffic or HGV levels of more than 30% (or 10% depending on the sensitivity of the area) does not necessarily equate to a significant effect in terms of the EIA Regulations.

14.5.10 The process for determining significance where Rules 1 or 2 are triggered is undertaken on a Site-specific basis and the framework for determining the magnitude of change in traffic flow as well as the methodology for assessing the significance of an effect is described in detail in the sections below.

Sensitivity of Receptors

14.5.11 The sensitivity of receptors, including the importance of environmental features on or near to the Site, will be assessed in line with best practice guidance, legislation, statutory designations and / or professional judgement. **Table 14.2** below details the framework for determining receptor sensitivity.

Table 14.2 Framework for Determining Sensitivity of Receptors

Sensitivity	Description
Very High	The receptor has no ability to absorb change without profoundly altering its present character, is of high strategic value, or of national importance, would include receptors such as populated areas where existing traffic levels are high and there is no capacity to absorb additional traffic flow on adjacent routes; and strategic nationally important routes with no capacity to absorb additional traffic flow.
High	The receptor has little ability to absorb change without fundamentally altering its present character, is of high strategic value, or of national importance. These would include receptors such as populated areas where existing traffic levels are high and there is little capacity to absorb additional traffic flows on adjacent routes. Accident hotspots would also be considered, as well as locations where pedestrian crossing facilities are informal, where a significant change in traffic flow level might induce significant pedestrian crossing delay, and where children / elderly people might regularly cross an informal or priority crossing.
Medium	Areas where the transport network has moderate capacity to change, without significantly altering its state. These would include routes with existing moderate traffic levels which have some additional traffic flow capacity, receptors such as populated areas where existing traffic levels are moderate and there is some capacity to absorb additional traffic flow on adjacent routes, slight accident hotspots where an increase in traffic flow may increase the likelihood or severity of accidents, locations where pedestrian crossing facilities are informal or substandard, and where a significant change in traffic flow level might induce a moderate pedestrian crossing delay.
Low	Areas where the transport network is tolerant to change without detriment to its state. These would include routes with existing low traffic levels which have additional traffic flow capacity, areas such as trunk road or A class roads constructed to accommodate significant HGV volumes, receptors such as populated areas where existing traffic levels are low and there is capacity to absorb additional traffic flow on adjacent routes,

Sensitivity	Description
	routes with a low level of historical accident data where a change in traffic flow or composition would have a low effect on the likelihood or severity of accidents, and locations where pedestrian crossing facilities are formal but priority, or pedestrian flows are sufficiently low that changes to traffic flow or composition are unlikely to cause a significant pedestrian delay.
Negligible	Areas where the transport network is tolerant to change without detriment to its state. These would include routes with existing low traffic levels which have a lot of additional traffic flow capacity, areas such as trunk road or A class roads constructed to accommodate significant HGV volumes, receptors such as populated areas where existing traffic levels are very low and there is capacity to absorb additional traffic flow on adjacent routes, routes with a very low level of historical accident data where a change in traffic flow or composition would have a negligible effect on the likelihood or severity of accidents, and locations where pedestrian crossing facilities are formal and controlled, or pedestrian flows are negligible (i.e. where there are no footways) such that changes to traffic flow or composition would not result in a change to pedestrian delay. This would also refer to receptors that are sufficiently distant from the affected roads and junctions.

Magnitude of Impact

14.5.12 The magnitude of potential change is a function of the existing volumes of traffic, the percentage increase and degree of change to baseline conditions predicted as a result of the Proposed Development, the duration and reversibility of an effect, together with professional judgement, best practice guidance (IEMA 2023) and relevant legislation.

14.5.13 The criteria for assessing the magnitude of change on receptors are presented in **Table 14.3** below.

Table 14.3 Framework for Determining the Magnitude of Change

Type of Impact	Magnitude of Change			
	Negligible	**Small**	**Medium**	**Large**
Severance	Change in total traffic flow of <30%	Change in total traffic flow of 31% to 60%	Change in total traffic flow of 61% to 90%	Change in total traffic flow of >91%
Non-Motorised User Amenity	Change in traffic flow (or HGV component) <50%	Change in traffic flow (or HGV component) of 51% to 100%	Change in traffic flow (or HGV component) of 101% to 150%	Change in traffic flow (or HGV component) of >151%

Type of Impact	Magnitude of Change			
Non-Motorised Delay (Pedestrian Delay)	Change in total traffic flow of <30%	Change in total traffic flow of 31% to 60%	Change in total traffic flow of 61% to 90%	Change in total traffic flow of >90%
Fear and Intimidation	No change in step changes	One step change in level, with <400 vehicles increase in average 18hr All Vehicle (AV) two-way all vehicle flow; and/or <500 HGV increase in total 18hr HGV flow	One step change in level, but with >400 vehicles increase in average 18hr AV two-way all vehicle flow; and/or >500 HGV increase in total 18hr HGV flow.	Two step changes in level
Road User and Pedestrian Safety	Magnitude of impact derived using professional judgment informed by the frequency and severity of collisions within the Study Area and the forecast increase in traffic.			
Road Vehicle Driver and Passenger Delay	Magnitude of impact derived in conjunction with a Transport Assessment / Statement and professional judgment informed by the increase in vehicle delay and whether a junction or highway link is at, or close to capacity, particularly on the weekday peak hour periods when baseline traffic flows are at their highest.			
Abnormal Loads	Defined by an assessment of the suitability of the access routes to accommodate abnormal load vehicles.			

Significance of Effect

14.5.14 The significance of effect is a product of the receptor's sensitivity and magnitude of impact. The significance of effect can be either significant (major or moderate effects) or not significant (minor or negligible effects) as outlined in **Chapter 6, Environmental Impact Assessment**

Cumulative Effects

14.5.15 In accordance with guidance, the assessment will consider the potential for any significant cumulative effects that may occur in combination with other consented, and / or in planning, traffic-generating developments that exist within the Study Area. Consultation will be undertaken with relevant authorities to establish where significant cumulative effects may occur, and with which developments.

14.5.16 Developments proposed to form the cumulative effects assessment are included in **Chapter 18, Cumulative Effects Assessment**.

Transport Assessment

14.5.17 A Transport Assessment (TA) will be prepared to support the EIA process. The TA and the EIA would utilise the same baseline data. However, the TA will be prepared in accordance with its own relevant guidance and best practice and will be subject to a separate scoping exercise with CDC, RMBC and National Highways. It will focus on the ability of the surrounding highway network to accommodate traffic associated with the Proposed Development.

Abnormal Load Route Assessment

14.5.18 An Abnormal Load Route Assessment (ALRA) will be undertaken to confirm that the proposed route can accommodate the abnormal load vehicles and that their transportation will not have any detrimental effect on the proposed haulage route. This will also identify any additional off-site improvement works which are required in order to make the route viable.

14.6 Assumptions, Limitation and Uncertainties

14.6.1 This Scoping Chapter is based on the baseline conditions and the Proposed Development's design information available at the time of writing, together with professional judgement. A full assessment will be carried out as part of the EIA, with further development and refinement following statutory consultation and as additional information becomes available. The EIA is an iterative process that will be continuously expanded and refined as survey data is collected, analysed, and reported, and as designs evolve. Further details will be presented within the Draft ES and the ES.

15 NOISE AND VIBRATION

15.1 Introduction

15.1.1 This chapter sets out the approach and scope of the noise and vibration assessment. It provides:

- A high-level description of the baseline environment;
- An outline of the relevant policy, legislation and guidance;
- Identification of the effects to be considered in the EIA; and
- Details of the proposed method and approach to assessing effects on noise sensitive receptors.

15.1.2 This chapter covers both the (short-term) effects during the construction phase and the (long-term) effects during the operational phase. The impact during the decommissioning phase is expected to be comparable to, and not exceed that of, the construction phase.

15.2 Topic-Specific Legislation and Guidance

15.2.1 This scope of the noise and vibration assessment has been developed in line with the key policy, legislation and associated guidance summarised in the following sections:

Legislation

Control of Pollution Act 1974 (CoPA)[240]

15.2.2 Requirements specific to noise and vibration are set out in Part III of the CoPA. Key sections are summarised below.

15.2.3 Section 60 provides details of possible conditions that Local Authorities may impose to control noise from construction sites, such as specifying:

- Permissible machinery;
- Hours of operation; and/or
- Maximum noise levels.

15.2.4 Section 61 relates to prior consent for construction work. Contractors can apply for prior approval from Local Authorities on noise management during construction. However, Local Authorities may attach conditions or limitations to their consent, as detailed above.

15.2.5 Section 68 refers to plant and machinery. Regulations may require noise-reducing devices on machinery or specify noise limits for industrial equipment.

Environmental Protection Act 1990 (EPA)130

15.2.6 The EPA specifies mandatory powers available to Local Authorities in respect of any noise that either constitutes or is likely to cause a statutory nuisance.

15.2.7 Section 79 of the EPA sets out matters that constitute a statutory nuisance, which include "*noise emitted from premises so as to be prejudicial to health or a nuisance*"; and "*noise that is prejudicial to health or a nuisance and is emitted from or caused by a vehicle, machinery or equipment in a street*". A duty is imposed on Local Authorities to carry out inspections to identify statutory nuisances, and to serve abatement notices against these.

15.2.8 Section 80 deals with summary proceedings for statutory nuisance.

National Policy

Overarching National Policy Statement for Energy (EN-1)4

15.2.9 The Overarching NPS for Energy (EN-1), hereafter referred to as 'EN-1', published in November 2023, outlines the criteria for "*good design*" in energy infrastructure. Section 4.7 emphasises how thoughtful design, including appropriate siting and technology choices, can mitigate adverse impacts like noise.

15.2.10 Section 5.12 discusses noise and vibration effects, referencing the aims of the Noise Policy Statement for England (NPSE) and good design principles to mitigate impacts on both human receptors and wildlife. The overall criteria that the Secretary of State will use to assess the proposals are set out in Section 5.12.17, and summarised below for convenience:

- Avoid significant adverse impacts on health and quality of life from noise;
- Mitigate and minimise other adverse impacts on health and quality of life from noise; and
- Where possible, contribute to improvements to health and quality of life through the effective management and control of noise.

15.2.11 EN-1 requires that noise and vibration assessments are carried out in accordance with relevant British Standards and other guidance. Examples include BS 4142 and BS 8233 for operational noise assessment, and BS 5228 for construction noise. Paragraph 5.12.6 of EN-1 also requires the following elements to be included in noise and vibration assessments:

- A description of the noise generating aspects of the development proposal leading to noise impacts, including the identification of any distinctive tonal characteristics, if the noise is impulsive, whether the noise contains particular high or low frequency content or any temporal characteristics of the noise;
- Identification of noise sensitive receptors and noise sensitive areas that may be affected;
- The characteristics of the existing noise environment;
- A prediction of how the noise environment will change with the proposed development;
  - In the shorter term, such as during the construction period;
  - In the longer term, during the operating life of the infrastructure; and
  - At particular times of the day, evening and night (and weekends) as appropriate, and at different times of year.

- An assessment of the effect of predicted changes in the noise environment on any noise-sensitive receptors, including an assessment of any likely impact on health and quality of life / well-being where appropriate, particularly among those disadvantaged by other factors who are often disproportionately affected by noise-sensitive areas;
- If likely to cause disturbance, an assessment of the effect of underwater or subterranean noise; and
- All reasonable steps taken to mitigate and minimise potential adverse effects on health and quality of life.

National Policy Statement for Renewable Energy Infrastructure (EN-3)5

15.2.12 The guidance in the NPS for Renewable Energy Infrastructure (EN-3) refers specifically to renewable energy sources, and references the general guidance provided in EN-1 with further considerations that are technology specific.

15.2.13 Section 2.10 acknowledges that many solar farms will be sited in areas served by minor roads and therefore noise and vibration from traffic on these road networks during the construction phase of solar farms will need to be considered as part of the assessment.

National Policy Statement for Electricity Networks Infrastructure (EN-5)[6]

15.2.14 The NPS for Electricity Networks Infrastructure (EN-5) provides advice to operators of the electricity transmission and distribution networks and sets out additional technology-specific considerations for noise and vibration.

15.2.15 Section 2.9 provides guidance on possible causes for changes to noise from high voltage transmission lines and substations. Assessment guidance is provided, stating that it may be appropriate to use “modelling tools” for the prediction of noise propagation over distance. It states that assessment should follow the principles of the relevant British Standards, quoting the example of BS 4142.

National Planning Policy Framework (NPPF)7

15.2.16 The NPPF was introduced in March 2012 and most recently revised in December 2024. The document sets out the government’s planning policies for England and how these are expected to be applied.

15.2.17 Applications for planning permission must be determined in accordance with a local planning authority’s development plan unless material considerations indicate otherwise. The development plan includes any local plan or neighbourhood plans which have been adopted for the area.

15.2.18 The planning system is required to enhance the natural and local environment. Consequently, the aim is to prevent both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by, unacceptable levels of noise pollution. The NPPF at paragraph 198 states that planning policies and decisions should aim to:

- Mitigate and reduce to a minimum potential adverse impact resulting from noise from new development – and avoid noise from giving rise to significant adverse impacts on health and quality of life; and

- Identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

15.2.19 With regards to 'adverse effects' and 'significant adverse effects' the NPPF refers to the NPSE Explanatory Note.

Noise Policy Statement for England 2010 (NPSE)[241]

15.2.20 Paragraph 1.6 of the NPSE sets out the long-term vision of the government's noise policy, as reproduced below:

"Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development."

15.2.21 The NPSE sets out aims that together with the vision should provide the necessary clarity and direction to enable decisions to be made regarding what is an acceptable noise burden to place on society:

- 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.

15.2.22 The explanatory note in the NPSE sets out the following concepts:

- No Observed Effect Level (NOEL) – the level below which there is no detectable effect on health and quality of life due to noise;
- Lowest Observed Adverse Effect Level (LOAEL) - the level above which adverse effects on health and quality of life can be detected; and
- Significant Observed Adverse Effect Level (SOAEL) - the level above which significant adverse effects on health and quality of life occur.

15.2.23 The NPSE recognises that it is not possible to have single objective noise-based measures that define the SOAEL and LOAEL that are applicable to all sources of noise in all situations. The levels are likely to be different for different noise sources, receptors and at different times of the day and night.

Local Policy

Doncaster Local Plan 2015-20358

15.2.24 Policy 54 from the CDC Local Plan document, adopted September 2021, is relevant to noise and vibration. The policy has been reproduced below.

"Policy 54: Pollution

Development proposals that are likely to cause pollution, or be exposed to pollution, will only be permitted where it can be demonstrated that pollution can be avoided, or where mitigation measures (such as those incorporated into the design and layout of development) will minimise significantly harmful impacts to acceptable levels that protect health, environmental quality and amenity. When determining planning applications, the agent of change principle will be applied, and particular consideration will be given to:

…

b) the presence of noise generating uses close to the site, and the potential noise likely to be generated by the proposed development. A Noise Assessment will be required to enable clear decision-making on any relevant planning application. Proposals will need to have regard to the standards identified in Appendix 11 to establish is the proposal is acceptable in noise impact terms."

15.2.25 Policy 54 refers to Appendix 11, which provides guidance on assessing noise from industrial sources. The guidance includes assigning specific noise thresholds to the Observed Effect Levels (see NPSE and PPGN above). The relevant guidance has been reproduced below.

"To ensure that the proposals are acceptable in noise terms development should comply with BS4142:2014 Method for Rating and Assessing Industrial and Commercial Sound. In determining the acceptability of development proposals the standards set out in Table 2 will be applied."

15.2.26 The noise thresholds and respective Observed Effect Levels are summarised below in **Table 15.1**.

Table 15.1 CDC BS 4142 Assessment Criteria and Thresholds (Table 2 in Local Plan)

BS 4142 Rating Level Threshold	Comparable Effect Level Threshold	Action Required Above this Level
Equal to baseline L_{90} level	No Observed Adverse Effect Level (NOAEL)	No specific measures required
Baseline level +5 dB	Lowest Observed Adverse Effect Level (LOAEL)	Mitigate and reduce to below +5 dB
Baseline level +10 dB	Significant Observed Adverse Effect Level (SOAEL)	Mitigate and reduce to below +5 dB, or avoid.

Rotherham Local Plan Adopted June 2018 – Sites and Policies9

15.2.27 Policy SP 52 from RMBC Local Plan document relates to noise and vibration. The policy has been reproduced below.

"Policy SP 52:

Development proposals that are likely to cause pollution, or be exposed to pollution, will only be permitted where it can be demonstrated that mitigation measures will minimise potential impacts to levels that protect health, environmental quality and amenity. When determining planning applications, particular consideration will be given to:

a) the detrimental impact on the amenity of the local area, including an assessment of the risks to public health

b) the presence of noise generating uses close to the site, and the potential noise likely to be generated by the proposed development. A Noise Assessment will be required to enable clear decision-making on any planning application…"

Noise Assessment Standards and Guidance

Planning Practice Guidance – Noise (2019) (PPGN)[242]

15.2.28 PPGN expands on the 'NOEL, LOAEL and SOAEL' concepts set out in the NPSE, and introduces UAEL (Unacceptable Adverse Effect Level). A summary of the advice is reproduced in **Table 15.2**.

Table 15.2 PPGN Guidance on Observed Adverse Effect Levels due to Noise

Response	Examples of Outcomes	Increasing Effect Level	Action
No Observed Adverse Effect Level			
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 measures required
Lowest Observed Adverse Effect Level			
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			
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	Unacceptable Adverse Effect	Prevent

	deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.		

BS 5228-1:2009+A1:2014 – Code of practice for noise and vibration control on construction and open sites – Part 1. Noise (BS 5228-1)[243]

15.2.29 BS 5228-1 refers to the need for the protection against noise for persons living and working in the vicinity of and those working on construction and open sites. It provides examples of noise control in respect of construction activities. Guidance on noise control targets and example criteria are provided. Methods of calculating the levels of noise resulting from construction activities are also provided along with sound data for various types of plant and equipment.

15.2.30 The standard discusses the importance of community relations, and states that early establishment and maintenance of these relations throughout site operations will go some way towards alleviating community concerns. In terms of neighbourhood nuisance, the following factors are likely to affect the acceptability of construction noise:

- Site location, relative to the noise sensitive premises;
- Existing ambient noise levels;
- Duration of site operations;
- Hours of work;
- The attitude of local residents to the site operator; and
- The characteristics of the noise produced.

15.2.31 Recommendations are made regarding the supervision, planning, preparation and execution of works, emphasising the need to consider noise at every stage of the operation. Measures to control noise are described, including:

- Control of noise at source by, for example:
  - Substitution of plant or activities by less noisy ones;
  - Modification of plant or equipment to reduce noise emissions;
- The use of noise enclosures;
- The siting of equipment and its method of use;
- Equipment maintenance; and
- Controlling the spread of noise, e.g. by increasing the distance between plant and noise-sensitive receptors or by the provision of acoustic screening.

BS 228-2:2009 + A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 2. Vibration (BS 5228-2)[244]

15.2.32 BS 5228-2 discusses construction vibration affecting human receptors and buildings. BS 5228-2 provides guidance on typical vibration levels, associated risks, empirical prediction methods, and mitigation strategies.

BS 4142:2014+A1:2019 – Methods for rating and assessing industrial and commercial sound (BS 4142)[245]

15.2.33 BS 4142 sets out a method for the assessment of sound of an industrial and / or commercial nature. The method described in BS 4142 uses outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling used for residential purposes.

BS 8233:2014 – Guidance on sound insulation and noise reduction for buildings (BS 8233)[246]

15.2.34 BS 8233 provides guidance for the control of noise in and around buildings. BS 8233 provides absolute thresholds for internal and external noise levels affecting various noise-sensitive uses, including residential, educational and commercial premises.

ISO 9613-2:2024 – Acoustics – Attenuation of sound during propagation outdoors. Part 2 (ISO 9613)[247]

15.2.35 ISO 9613 specifies the engineering method for calculating the attenuation of sound propagation outdoors in order to predict the levels of environmental noise at a distance. The methods set out in ISO 9613 are implemented as part of the calculation algorithms for industry-standard noise modelling applications, such as SoundPLAN and CadnaA.

Design Manual for Roads and Bridges – LA111 Noise and Vibration (DMRB)[248]

15.2.36 The DMRB issued by National Highways provides noise assessment guidance relating to the construction, operation and maintenance of infrastructure projects that have the potential to produce changes in noise and vibration levels in the surrounding environment due to new or changes to existing roads.

Calculation of Road Traffic Noise[249]

15.2.37 Calculation of Road Traffic Noise (hereafter referred to as CRTN) is a guidance document issued by the Department of Transport and it outlines standardized procedures for estimating noise levels generated by road traffic. The methodology incorporates several input variables, including traffic flow rates, average speeds, proportions of heavy goods vehicles, road surface types, site geometry, and the presence of acoustic barriers or absorptive ground surfaces. Using these parameters, the guidance enables predictions of $L_{A10,18hour}$ or $L_{A10,1hour}$ noise levels at specified receptor points, extending up to 300 meters from the roadway.

15.3 Preliminary Baseline Conditions

Data Sources

15.3.1 The ES will present information on the noise from the Proposed Development following the review and analysis of the following data sources:

- Satellite imagery and address data from the Ordnance Survey which will be used to identify baseline receptors and existing baseline noise sources;
- Data regarding noise emissions from construction and operational plant; and
- Construction traffic flow information.

Proposed Study Area

15.3.2 The Proposed Development is located within the administrative areas of the CDC and RMBC.

15.3.3 The Study Area will be refined as the design progresses to the Draft ES stage.

15.3.4 At this stage, based on experience of similar developments, the following areas have been assumed:

- An area extending 500 m from the Site Boundary for noise from daytime construction and decommissioning works within the Site, and during operation;
- An area extending 1 km from the Site Boundary for noise should construction and decommissioning works within the Site be required at night. This is to reflect the increased sensitivity to noise at night;
- An area extending 200 m from daytime construction work in support of the Cable Corridor Options, which has the potential to generate significant noise during the construction and decommissioning phases only;
- An area extending 200 m from construction work for vibration during construction and decommissioning (within the Site and along the Cable Corridor Options); and
- An area extending 500 m from construction work in support of the Cable Corridor Options, should nighttime works be required (e.g. trenchless crossings).

15.3.5 The Study Areas are shown on **Figure 15.1**.

Temporal Scope

15.3.6 The potential noise and vibration effects during the construction and decommissioning are likely to occur during the Site preparation, plant installation, substation construction/decommissioning, and during installation of the underground cables. These effects are generally short-term and only last for the duration of the construction/decommissioning activity. Typically, the noisiest construction/decommissioning activities are carried out during the daytime, however there is potential for some night-time construction activities depending on the building programme.

15.3.7 Operational noise effects described in the scope are considered to be long-term and expected to occur throughout the lifetime of the Proposed Development.

Preliminary Baseline conditions

15.3.8 The surrounding land is mostly used for arable farming, woodland and residential. There are approximately 90 residential properties that surround the Site on all sides within 50 m, and are also located within the Site (although not included within the Site Boundary).

15.3.9 The nearest residential communities to W1 include Conisbrough, Clifton, Micklebring, Ravenfield, and Hooton Roberts. The nearest residential communities to W2 include Wickersley, Thurcroft, Brampton en le Morthen, Ulley, Treeton, Aughton, Aston, Todwick, and Anston. The nearest residential communities to W3 include Wales, Kiveton Park, Harthill, and Killamarsh. These areas are shown on **Figures 3.2 – 3.4**. Generally, the further the receptors are from the construction or operational activities, the less they would be affected as they would be exposed to less noise given the distance and possible screening provided by the intervening buildings and natural topography. The use of a representative selection of the closest receptors, likely to be the worst affected by noise from the Proposed Development, as noise monitoring and assessment locations would therefore be expected to result in a robust assessment of noise effects.

15.3.10 The baseline acoustic environment at the Site is also likely to consist of noise from transportation sources (i.e., road traffic and railway), as well as other typical rural environmental noise sources (i.e., farm machinery, wildlife etc.). Baseline levels are expected to be higher in areas close to main roads; especially the M1, M18 and A57.

15.3.11 Baseline noise levels will be quantified through on-site noise monitoring. This is discussed further in **Section 15.5.2.**

15.4 Potential Effects and Mitigation

15.4.1 An assessment of potentially significant noise and vibration sources associated with the Proposed Development will be included in the ES. The primary environmental concern is the potential for disturbance to nearby residents caused by noise during the construction, operation, and decommissioning of the Proposed Development. The findings from the noise and vibration assessment will inform the final design to ensure that impacts are minimised, and the ES will identify if mitigation is likely to be sufficient to avoid significant residual noise impacts.

Construction and Decommissioning Effects

15.4.2 During the construction and decommissioning phases, noise is expected primarily as a result of vehicles transporting materials, generators, and mobile equipment such as tracked excavators working on-site. Where practicable, construction and decommissioning activities will be carried out during the daytime, however, it may be necessary to carry out some activities throughout the nighttime (e.g., large concrete pours for substations, complex trenchless crossings etc.).

15.4.3 The noise and vibration effects during the decommissioning phase are expected to be comparable to, and not exceed that of the construction phase. As such, measures that are applicable to the construction phase will also apply to the decommissioning stage. A separate assessment for the decommissioning stage is therefore not considered necessary and is proposed to be scoped out of the ES.

15.4.4 Solar farm construction typically requires minimal excavations, and construction of the Proposed Development will be phased across the Site. The potential adverse effects of noise and vibration during construction are therefore likely only for short periods, e.g., when deliveries are made and when piles for the mounting structures are being installed.

15.4.5 Given the temporary nature and limited extent of such works, although construction noise may be audible at times, noise impacts from such activities will be controlled through the use of a Construction Environmental Management Plan (CEMP), which will implement Best Practicable Means (BPM) as defined by the CoPA and EPA, to minimise noise (including vibration) at neighbouring Noise Sensitive Receptors (NSRs). An assessment of construction noise effects will however be included in the ES.

15.4.6 Vibration during construction and decommissioning is likely to be limited to low levels as no substantial vibration generating activities are anticipated close to sensitive receptors. However, this cannot be confirmed at this stage given that details of the anticipated construction activities are not yet available. As such, it is reasonable to consider construction vibration effects in the ES.

15.4.7 There is potential for an increase in road traffic noise emissions during the construction stage, however, this will depend on the baseline traffic flows of the roads. Generally, traffic flows would need to be doubled (i.e., 100% increase) for there to be a noticeable difference in noise levels. It is therefore likely that any noticeable, and potentially significant, changes to traffic flows will be limited to smaller secondary roads (this was also acknowledged in EN-3 guidance as discussed previously). Road traffic will therefore be included in the ES (see **Chapter 14, Traffic and Transport**).

Operation Effects

15.4.8 The main sources of noise from solar infrastructure include field inverters and transformers and substations. Solar PV modules, which are expected to cover a large portion of the Site are not expected to generate significant noise emissions.

15.4.9 The field inverters and transformers may be either distributed or centralised. In the case of a distributed arrangement, ‘string’ inverters are located at the end of rows of solar modules, connecting to medium voltage (MV) transformer stations distributed around the Site.

15.4.10 In the case of a centralised arrangement, inverters and transformers serving the solar modules will be co-located in a smaller number of conversion units located around the Site.

15.4.11 The cooling fans for the field inverters and transformers will not normally operate during the night, but in summer will have a prolonged operation due to early sunrise/late sunset.

15.4.12 Substations may include noise generating equipment including transformers, filters and reactors.

15.4.13 The main sources of noise from the BESS include inverters and cooling equipment associated with the battery containers.

15.4.14 Regarding operational traffic, no permanent staff are anticipated to be stationed at the Site. Vehicle access will therefore be limited to occasional visits for maintenance etc. Increases in road traffic due to operation is therefore not expected to occur and have been scoped out of further assessment.

15.4.15 No significant vibration generating equipment will be required during operation. Therefore, an operational vibration assessment is scoped out.

Mitigation

Construction

15.4.16 BPM as defined by the CoPA will be implemented to minimise noise (including vibration) at neighbouring residential properties and other sensitive receptors. As part of BPM, mitigation measures will be applied following the guidance set out in Section 8 of BS 5228. BS 5228 describes measures to control noise at source, as detailed in **Section 0** above.

Operation

15.4.17 Appropriate mitigation will be considered during the EIA. Noise control measures such as choosing low noise versions of equipment, use of acoustic enclosures, noise barriers/bunding, siting equipment and positioning new buildings to provide screening will be considered, where necessary and practicable, as the design proceeds.

15.5 Technical Scope and Approach to EIA

Proposed Scope of the EIA

15.5.1 **Table 15.3** sets out the elements of the Noise and Vibration Assessments proposed to be scoped in or out of the EIA

Table 15.3 Elements Proposed to be Scoped in or out of the EIA

Potential Effect / Topic	Proposal for Assessment within EIA	Rationale for Scoping out of the EIA
Construction Phase		
Noise from construction activities e.g., ground excavation, road construction etc.)	Scoped In	-
Noise increases from construction traffic along some secondary roads[1]	Scoped In	-
Vibration from construction activities	Scoped In	-
Operational Phase		
Noise generated by fixed mechanical plant associated with the Solar Farm and Battery Energy Storage System.	Scoped In	-
Increases in road traffic noise during operation.	Scoped Out	See Paragraph 15.4.14
Vibration generated from equipment during operation.	Scoped Out	See Paragraph 15.4.15
Operational Noise from the cable corridor during operation.	Scoped Out	Operational noise from the cable corridor is not expected.

Decommissioning Phase		
Noise and vibration from plant and equipment used for the decommissioning phase.	Scoped Out	See Paragraph 15.4.3
Road traffic noise during decommissioning.	Scoped Out	Noise increases from road traffic noise are expected to be similar to those generated during the construction phase.

Note 1: Effects likely limited to minor roads, but effect included in the assessment as required by EN-3. See **Paragraphs 15.2.12-15.2.13** of this Scoping Report.

Baseline Monitoring

15.5.2 Baseline noise monitoring will be undertaken to quantify existing noise levels at a representative selection of the closest receptors which will be used to assess the effects of the Proposed Development. Appropriate noise metrics will be recorded to quantify the baseline levels for the operational noise assessment in accordance with BS 4142.

15.5.3 The construction assessment requires a knowledge of the day / evening / night baseline noise environment. Baseline noise levels to inform a construction assessment will make use of the same survey data collected for the operational assessment.

15.5.4 Meteorological data such as rain and wind speed and direction will also be measured during the survey. Baseline noise measurement locations will be chosen in consultation with the relevant Local Planning Authorities.

Prediction Methodologies

15.5.4 Noise from construction activities will be predicted in accordance with the guidance in BS 5228-1. Construction vibration will be assessed with reference to the guidance in BS 5228-2. Increases in road traffic noise will be predicted following the method set out in the Calculation of Road Traffic Noise. Noise level predictions for the operational phases will be carried out using SoundPLAN; an industry accepted application that implements the prediction method set out in ISO 9613.

Construction Noise Assessment

15.5.5 Construction noise will be assessed using BS 5228, with reference to the 'ABC method'. The ABC method defines thresholds at building facades based on the baseline noise levels at the NSRs. The baseline noise levels are rounded to the nearest 5 dB and compared against the thresholds set out in **Table 15.4** to produce construction noise criteria. The process for selecting the criteria is summarised below:

- Category A thresholds are used when ambient noise levels (rounded to the nearest 5 dB) are less than the Category A values;

- Category B thresholds are used when ambient noise levels (rounded to the nearest 5 dB) are the same as the Category A values; and
- Category C thresholds are used when ambient noise levels (rounded to the nearest 5 dB) are higher than the Category A values.

Table 15.4 ABC Method Construction Noise Effect Thresholds

Period	Assessment Category dB $L_{Aeq, T}$		
	A	B	C (SOAEL)[2]
Day			
Weekdays, 07:00-19:00 (12 Hour Period) Saturday, 07:00-13:00 (6 Hour Period)	>65	>70	>75
Evenings & Weekends			
Weekdays 19:00–23:00 (4 Hour Period) Saturdays 13:00-23:00 (10 Hour Period) Sundays 07:00-23:00 (16 Hour Period)	>55	>60	>65
Night			
Every day 23:00-07:00 (8 Hour Period)	>45	>50	>55

Note 1: All sound levels are defined at 1 m from the façade of the receptor.

Note 2: SOAEL during the daytime when the 75 dB $L_{Aeq,T}$ threshold is exceeded for one month or more.

15.5.6 Where forecast construction noise exceeds the relevant threshold, this would be an indicator of a potentially significant effect and will be adopted as the onset of a LOAEL.

15.5.7 For daytime, the widely used threshold of 75 dB LAeq,T (Category C) being exceeded for one month or more has been taken to be a SOAEL for construction noise. The threshold was originally set to avoid interference with normal speech indoors, with windows closed (Wilson, 1963). The daytime SOAEL and the corresponding SOAELs for the evening and night periods (shown in **Table 15.4**), indicate likely significant effects on health and quality of life at a receptor, assuming construction noise is dominant and of sufficient duration.

15.5.8 BS 5228-1 also advises that 'other project-specific factors' need to be considered in conjunction with the excess above the relevant threshold to decide on the significance of construction noise impact. This includes:

- The number of receptors affected;
- The sensitivity of the receptors to the noise; and
- The duration of the construction activity.

15.5.9 **Table 15.5** summarises the criteria for the magnitude and significance of potential construction noise effects.

Table 15.5 Magnitude and Significance of Construction Noise Effects

Exceedance of Criteria, dB	Magnitude of Predicted Impact	Other Project-specific Factors	Significance of Effect
5 or more below the criteria	Negligible	Factors which may influence significance of effects, e.g. duration of construction activity	Negligible
< 5 below, up to the criteria	Small		Minor
Up to 5 dB above the criteria	Medium		Moderate
> 5 above the criteria	Large		Major

15.5.10 Changes to road traffic flows during the construction phase will be assessed in accordance with DMRB. The criteria for the impact magnitudes are presented in **Table 15.6**, which is based on Table 3.17 from the DMRB.

Table 15.6 Magnitude of Impact from Construction Road Traffic

Increase in BNL[1] of Closest Public Road used for Construction Traffic (dB)	Magnitude of Predicted Impact
< 1	Negligible
≥1 to < 3	Minor
≥3 to < 5	Moderate
>5	Major

Note 1: Basic Noise Level (BNL) as calculated using the methodology set out in Appendix A of the DMRB.

15.5.11 The absolute noise level of the road traffic will also be considered where existing traffic flows are low. DMRB includes a level of 55 dB $L_{A10,18hrs}$ as the threshold of a LOAEL for daytime road traffic. Traffic noise levels below this would be considered Not Significant in EIA terms.

Construction Vibration Assessment

15.5.12 Construction vibration will be assessed following the guidance set out in BS 5228-2.

15.5.13 BS 5228-2 states that the threshold of human perception to vibration is between approximately 0.14 and 0.3 mm/s peak particle velocity (PPV). **Table 15.7** provides guidance on vibration effects on humans at different magnitudes.

Table 15.7 Guidance on Effects from Vibration

Vibration Level (PPV)	Effect
0.14 mm/s	Vibration might be just perceptible in the most sensitive situations for most vibration frequences associated with construction. At lower frequencies, people are less sensitive to vibration.

0.3 mm/s	Vibration might be just perceptible in residential environments.
1.0 mm/s	It is likely that vibration of this level in residential environments will cause complaint, but can be tolerated if prior warning and explanation has been given to residents.
10 mm/s	Vibration is likely to be intolerable for any more than a very brief exposure to this level in most building environments.

Note 1: Sourced from Table B.1 in BS 5228-2

15.5.14 1 mm/s PPV has been selected as the criterion for a Medium impact magnitude for this assessment. Vibration of this magnitude is well below the estimated thresholds at which vibration could cause building damage (BS 5228-2 indicates a minimum threshold of 15 mm/s PPV for cosmetic damage to residential and light framed structures).

15.5.15 As for noise, the significance of vibration effects will be considered in the context of factors such as the sensitivity of the receptor, and the duration and frequency of occurrence of the vibration.

15.5.16 **Table 15.8** summarises the criteria for the magnitude and significance of potential construction vibration effects

Table 15.8 Guidance on Effects from Vibration

Vibration Level (PPV)	Magnitude of Predicted Impact	Other Project-specific Factors	Significance of Effect in EIA Terms
0.14 mm/s	Negligible	Factors which may influence significance of effects, e.g. duration of construction activity	Not significant
0.3 mm/s	Small		Minor
1.0 mm/s	Medium		Moderate
10 mm/s	Large		Major

Note 1: Sourced from Table B.1 in BS 5228-2

Operational Noise Assessment

15.5.17 The potential for significant noise effects will be assessed according to BS 4142. The assessment process is summarised below.

Initial Assessment

15.5.18 BS 4142 includes an assessment of the difference between the background sound level (L_{A90}) and the rating level at the receptor. This is referred to as the 'initial assessment'.

15.5.19 The rating level ($L_{Ar,Tr}$) is equal to the specific sound (L_s) level plus any adjustment for characteristic features of the sound. BS 4142 states that "*Certain acoustic features can increase the significance of impact over that expected from a basic comparison between the specific sound level and the background sound level. Where such features are present at the assessment location, add a character correction to the specific sound level to obtain the rating level.*"

15.5.20 The following acoustic features are described in the standard:

- Tonality: up to a +6 dB penalty;
- Impulsivity: up to a +9 dB penalty (if necessary this can be summed with the tonality penalty);
- Intermittency: a +3 dB penalty; and
- Other sound characteristics (neither tonal nor impulsive but still distinctive): a +3 dB penalty.

Initial Assessment

15.5.21 Following the initial assessment, BS 4142 states that *"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. 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."*

15.5.22 Where the initial estimate of the impact needs to be modified due to the context, various pertinent factors need to be considered, including:

- The absolute level of sound;
- The character and level of the residual sound compared to the character and level of the specific sound; and
- The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions.

15.5.23 **Table 15.9** summarises the criteria for the magnitude and significance of potential effects. The CDC criteria (see **Table 15.1**) have also been included in **Table 15.9** and will be adopted for the assessment.

Table 15.9 Magnitude of Operation Noise Effects

Rating Level Compared to Representative Background Sound Level, dB	Magnitude of Predicted Impact	BS 4142 Assessment Outcomes	Factors which may affect Significance (from BS 4142)	CDC Criteria and Actions (ref. Table 15.1)	
<0	Negligible	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.	Where the initial estimate of the impact needs to be modified due to the context, take all pertinent factors into consideration, including: • The absolute level of sound; • The character and level of the residual sound compared to the character and level of the specific sound; and • The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions.	NOAEL	No specific measures required
≥0 to <5	Small				
≥5 to <10	Medium	Likely to be an indication of an adverse effect, depending on the context		LOAEL	Mitigate and reduce to below +5 dB
≥10	Large	Likely to be an indication of a significant adverse effect, depending on the context		SOAEL	Mitigate and reduce to below +5 dB, or avoid.

15.6 Limitations and Assumptions

15.6.1 The selection of noise monitoring locations and assessment receptors will be based on professional judgement and a desktop review of mapping and satellite imagery, with consultation to be carried out with the Local Planning Authorities.

15.6.2 The existing acoustic climate will be quantified through baseline noise monitoring of approximately seven days. It is assumed that the measured noise levels are representative of typical baseline conditions. Any atypical or transient sources of noise (e.g., seasonal activities, construction works, or temporary industrial operations) will be excluded from the assessment, where practicable.

15.6.3 In cases where detailed or site-specific data (e.g., operational schedules or sound power levels for certain machinery) are not available during the assessment, industry-standard values or data from similar developments will be used. This introduces a level of uncertainty, but it is considered acceptable within the scope of the assessment.

15.6.4 The effectiveness of any proposed noise mitigation measures will be assumed. The assessment will assume that all proposed mitigation measures will be implemented effectively. Any future changes to the design of the facility or the operational procedures that could alter noise emissions may require a reassessment.

16 SOCIO-ECONOMICS, LAND USE, TOURISM AND RECREATION

16.1 Introduction

16.1.1 This chapter of the Scoping Report presents an overview of the baseline environment for Socio-economics, Land Use, Tourism and Recreation. It also sets out the proposed scope and methodology for the assessment of likely significant effects associated with the Proposed Development, including the change in use of agricultural land.

16.2 Topic-Specific Legislation and Guidance

16.2.1 The scope of the Socio-economics, Land Use, Tourism and Recreation assessment has been developed in line with the following key legislation, relevant regional and local planning policy, and associated guidance:

- The Overarching National Policy Statement (NPS) for Energy (EN-1)[4] which sets out the national policy for energy infrastructure. The assessment will draw on the impacts listed in section 5.13 of the NPS, which set out the socio-economic impacts that should be considered. It will also draw on section 5.11 which sets out potential land use impacts;
- Paragraphs 2.10.29 - 2.10.34 and 2.10.41 - 2.10.45 of the NPS for Renewable Energy Infrastructure (EN-3)[5], which set out the impacts that should be considered on agricultural land and Public Rights of Way (PRoW) respectively;
- National Planning Policy Framework (NPPF) 2024[7], which sets out the government's planning policies for England, and provides a framework for sustainable development planning;
- HM Treasury, Build Back Better: Our Plan for Growth[250], which underlines the need for investment to meet net zero targets, and the opportunities for economic growth and job creation associated with low carbon goods and services;
- South Yorkshire Mayoral Combined Authority (SYMCA) Strategic Economic Plan[251], which focuses on creating a stronger, fairer and greener economy across South Yorkshire, recognising the opportunities created by clean energy and net zero;
- Doncaster Local Plan, 2015-2035[8], which sets out the vision and strategic policies for the local authority's growth and development over the period to 2035;
- Rotherham Local Plan Core Strategy, 2013-2028[9], which sets out the vision and strategic policies for the development of the borough over the period to 2028; and

- Wickersley Neighbourhood Plan[34], Maltby Neighbourhood Plan[35], and Dinnington Neighbourhood Plan[33], which establish local policy priorities. Education, employment and skills is a key strategy of the Dinnington Neighbourhood Plan.

16.3 Preliminary Baseline Conditions

Data Sources

16.3.1 The Environmental Statement (ES) will present detailed information on the Socio-economic, Land Use, Tourism and Recreation baseline of the Proposed Development following review and analysis of the following data sources:

- Natural England, Regional Agricultural Land Classification (ALC) maps;
- Office for National Statistics (ONS), Census 2021;
- ONS, Annual Population Survey (APS);
- ONS, Business Register and Employment Survey (BRES);
- ONS, Annual Survey of Hours and Earnings (ASHE);
- ONS, Business Demographics;
- ONS, Subregional Population Projections;
- Ministry of Housing, Communities and Local Government, English Indices of Deprivation, 2019; and
- Visit Britain Research and Insights, including value of tourism, accommodation stock and occupancy, and visitor attractions.

Proposed Socio-economics, Land Use, Tourism and Recreation Study Area

16.3.2 The Proposed Development is located within the local authority areas of CDC and RMBC. Some parts of the Proposed Development are close to the boundaries with the neighbouring local authority districts of Bolsover and North East Derbyshire, to the south, and Sheffield, to the west.

16.3.3 The assessment of the socio-economic impacts arising from the construction, operation and decommissioning of the Proposed Development will focus on a proposed Study Area comprising the local authority areas of CDC and RMBC, which is illustrated within **Figure 16.1**. Comparator data is provided for the region of Yorkshire and the Humber, and for England. The assessment for the ES will also take into account the proximity of the Proposed Development to neighbouring local authority areas, and the potential for effects to occur outside of this proposed Study Area.

16.3.4 The assessment for the ES will additionally define appropriate neighbourhood impact areas, where wider socio-economic and socio-cultural effects could be expected to occur. These will be identified based on the design and likely impacts of the Proposed Development and are likely to be at ward or Lower Super Output Area (LSOA) level.

16.3.5 The Study Area for direct impacts on land use, tourism and recreation receptors is the land within the DCO Limits for the Proposed Development, including the Cable

Corridors Options. For indirect impacts on tourism and recreation receptors, such as disruption to access or in-combination effects on amenity, the Study Area is a local impact area measured as 5 km from the DCO Limits, illustrated within **Figure 16.2**.

16.3.6 The assessment will also consider the impact of the temporary change of agricultural land use within the Site Boundary on food security at the UK level.

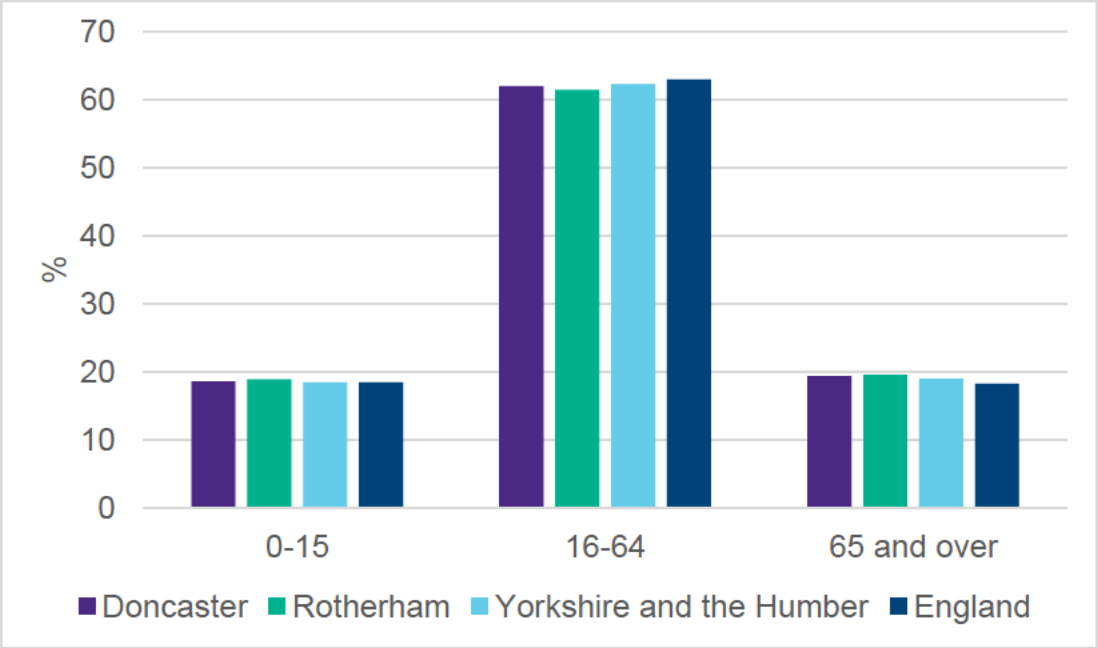
Temporal Scope

16.3.7 The assessment will consider the potential Socio-economics, Land Use, Tourism and Recreation effects arising during the construction, operation, and decommissioning phases of the Proposed Development. Effects will be assessed as either temporary or permanent. Any effects arising during construction and continuing into the operational phase of the Proposed Development, for example as a result of a temporary diversion of a PRoW or temporary loss of "Best and Most Versatile" (BMV) land, will be assessed as a construction effect rather than an operational effect.

Preliminary Baseline Conditions

16.3.5 At the time of the 2021 Census, the CDC local authority area (referred to hereafter as Doncaster) recorded a total population of 308,106 and the RMBC local authority area (referred to hereafter as Rotherham) recorded a total population of 265,806. **Plate 16.1** shows the population by age group. The age profile of both local authority areas is broadly similar to the regional (Yorkshire and the Humber) and national (England) averages, although the proportion of residents who are of working age is marginally lower and the proportion aged 65 and over is marginally higher.

Plate 16.1 Population by age profile (Source: ONS, Census 2021)



16.3.6 **Table 16.1** below uses data from the APS for the year to June 2024 and shows considerable variation within the Study Area: the rate of economic activity in

Doncaster (80.8%) is above the regional (75.4%) and national (78.7%) averages, while in Rotherham (69%) it is considerably lower than average. The high rate of economic activity in Doncaster is reflected in above average rates of both employment (77.1%) and unemployment (4.6%). The underlying data suggests that this reflects lower than average proportions of people of working age who are classed as retired or as students. In Rotherham, the employment rate is below average, at 65.5% compared with 73.1% for Yorkshire and the Humber and 75.7% for England, and the unemployment rate is above average, at 5% compared with 3% for Yorkshire and the Humber and 3.8% for England.

Table 16.1 Economic activity and employment (Source: ONS, Annual Population Survey, 2024)

	Doncaster	Rotherham	Yorkshire and the Humber	England
Economic activity rate (aged 16-64)	80.8%	69%	75.4%	78.7%
Economic inactivity rate (aged 16-64)	19.2%	31%	24.6%	21.3%
Employment rate (aged 16-64)	77.1%	65.5%	73.1%	75.7%
Unemployment rate (aged 16-64)	4.6%	5%	3%	3.8%

16.3.7 The 2019 English Indices of Deprivation show that Doncaster ranks as the 41st most deprived local authority district in England in terms of multiple deprivation, and Rotherham ranks as the 50th most deprived out of 317 local authorities[252]. In relation to the deprivation domain of employment, which uses data on claimants of out-of-work benefits, Doncaster ranks as the 34th most deprived district in England and Rotherham the 32nd. **Figure 16.3** shows multiple deprivation at LSOA[253] level, and indicates that there are concentrations of deprivation in central Doncaster, central Rotherham, and in areas including Maltby, Mexborough, Conisbrough, and New Edlington.

16.3.8 **Table 16.2** below shows data on employment by sector from the ONS BRES for 2023. The manufacturing, construction and motor trades sectors all employ a higher-than-average proportion of people in the Study Area. The transport and storage sector is an important employer in Doncaster, accounting for 13% of employees in the district, compared with 6.2% in Rotherham, 5.8% in Yorkshire and the Humber and 5.1% in England. Employment in sectors including information and communication; financial and insurance; property; professional, scientific and technical; and business administration and support is below average in both Doncaster and Rotherham.

Table 16.2 Employment by sector (Source: ONS, Business Register and Employment Survey, 2023)

	Doncaster	Rotherham	Yorkshire and the Humber	England
Agriculture, forestry and fishing	0.2%	0.2%	0.5%	0.5%

	Doncaster	Rotherham	Yorkshire and the Humber	England
Mining, quarrying and utilities	1%	1.3%	1.1%	1.1%
Manufacturing	8.4%	14.4%	10.9%	7.4%
Construction	6.9%	6.2%	4.9%	4.7%
Motor trades	3.4%	2.6%	2.2%	1.7%
Wholesale	3.4%	4.6%	4%	3.8%
Retail	9.2%	9.3%	8.4%	8.2%
Transport and storage	13%	6.2%	5.8%	5.1%
Accommodation and food services	6.1%	7.2%	7.6%	7.8%
Information and communication	1.3%	2.1%	2.6%	4.8%
Financial and insurance	1.9%	1.8%	2.9%	3.4%
Property	1%	0.6%	1.4%	1.9%
Professional, scientific and technical	5.3%	3.6%	7.1%	9.6%
Business administration and support services	6.9%	7.2%	8.3%	8.9%
Public administration and defence	4.6%	5.2%	4.8%	4.4%
Education	8.4%	9.3%	9.5%	8.6%
Health	16%	14.4%	14.3%	13.5%
Arts, entertainment, recreation and other	3.4%	3.6%	3.6%	4.5%

16.3.9 Employment in the accommodation and food services sector is below average in both Doncaster (6.1%) and Rotherham (7.2%), suggesting that tourism is less important to the economy within the Study Area than it is across the Yorkshire and the Humber region and England. Employment in the arts, entertainment, recreation and other sector is also below average.

16.3.10 **Table 16.3** shows tourism attractions located in Doncaster and Rotherham. Of these, Conisborough Castle and Roche Abbey are within approximately 5 km of the DCO Limits. Several Public Rights of Way (PRoW) and Country Parks fall within the Study Area, as seen in **Figure 16.4**.

Table 16.3 Tourism attractions (Source: Visit Britain, England Visitor Attractions Admissions 2023)

Receptor	Category	Local Authority	Visitor Numbers (2023)
Boston Park Farm	Farm	Doncaster	82,780
Brodsworth Hall and Gardens	Historic house	Doncaster	100,862
Conisborough Castle	Castle	Doncaster	29,774
South Yorkshire Aircraft Museum	Museum	Doncaster	22,403
Yorkshire Wildlife Park	Safari park	Doncaster	921,008
Roche Abbey	Historic Monument	Rotherham	7,033

16.3.11 Natural England (NE) Provisional ALC mapping shows that the majority of the land within the Site Boundary has a provisional ALC of mostly Grade 3, with a small portion classified as Grade 2. Further ALC surveys will be undertaken to confirm the grading of the land and to determine whether the Grade 3 land falls within the BMV Grade 3a subgrade. The results of these surveys will be further discussed in the ES. The provisional ALC for the area is shown on **Figure 3.9**.

16.4 Likely Significant Effects

16.4.1 Likely significant effects on Socio-economics, Land Use, Tourism and Recreation which may occur from the Proposed Development are likely to include:

- Employment and supply chain effects (construction and operation). The construction and operation of the Proposed Development will create jobs directly and in the supply chain which could have the potential for a significant positive effect.
- Gross Value Added (GVA) effects (construction and operation). The construction and operation of the Proposed Development will generate GVA in the local and national economy which could have the potential for a significant positive effect.
- Wider socio-economic effects (construction only). The construction of the Proposed Development could have wider and knock-on socio-economic effects including structural economic change or disruption to established local industries which could have the potential for significant positive or negative effects. Any changes arising during construction that would continue into the operational phase will be assessed as construction effects and are therefore proposed to be scoped out of the assessment for the operational phase.
- Socio-cultural effects (construction only). Changes to local demographics and the local environment associated with construction activity and the presence of an incoming construction workforce could result in increased demand for social infrastructure and changes in community identity and way of life. This could have the potential for significant negative effects. These impacts are not

expected to arise during the operational phase and are therefore proposed to be scoped out of the assessment for the operational phase.

- Land use effects (construction only). The construction of the Proposed Development will result in temporary changes in land use within the Site Boundary and Cable Corridor Options. The assessment will consider the impacts of any temporary loss of BMV land on the agricultural sector and on food security. Any changes arising during construction that would continue into the operational phase will be assessed as construction effects and are therefore proposed to be scoped out of the assessment for the operational phase.
- Direct effects on tourism and recreation receptors (construction only). Direct impacts on tourism and recreation receptors, such as any temporary diversion of PRoW could have the potential for significant negative effects. Any permanent changes arising during construction that would continue into the operational phase will be assessed as permanent construction effects, and are therefore proposed to be scoped out of the assessment for the operational phase.
- Indirect effects on tourism and recreation receptors (construction only). Indirect impacts on tourism and recreation receptors, such as in-combination effects on amenity for users of PRoW or sensitive visitor attractions, could have the potential for significant negative effects. Any permanent changes arising during construction that would continue into the operational phase will be assessed as permanent construction effects, and are therefore proposed to be scoped out of the assessment for the operational phase.
- Effects on tourism accommodation (construction only). There may be an increase in demand for tourist accommodation associated with the presence of an incoming construction workforce. This has the potential to result in significant positive or negative effects. Any requirement for worker accommodation during the operational phase is expected to be very small, and so this is proposed to be scoped out of the assessment for the operational phase.

16.4.2 Effects from decommissioning are expected to be comparable to, or less than, those arising during construction, and so are assessed as construction effects.

16.5 Technical Scope and Approach to EIA

16.5.1 Proposed Scope of the EIA

16.5.1 **Table 16.4** sets out the elements of the Socio-Economics, Land Use, Tourism and Recreation Assessment proposed to be scoped in or out of the EIA.

Table 16.4 Elements Proposed to be Scoped in or out of the EIA

Potential Effect / Topic	Proposal for Assessment within EIA	Rationale for Scoping out of the EIA
Construction Phase		
Employment and supply chain effects	Scoped In	The construction of the Proposed Development will create jobs directly and in the supply chain.
GVA effects	Scoped In	The construction of the Proposed Development will generate GVA in the local, regional and national economy.
Wider socio-economic effects, including on food security	Scoped In	The construction of the Proposed Development could have wider and knock-on socio-economic effects including structural economic change or disruption to established local industries.
Socio-cultural effects	Scoped In	Changes to local demographics and the local environment associated with construction activity and the presence of an incoming construction workforce could result in increased demand for social infrastructure and changes in community identity and way of life.
Land use effects	Scoped In	The construction of the Proposed Development will result in temporary changes in land use within the Site Boundary and Cable Corridor Options which could result in effects for the agricultural sector and food security.
Direct effects on tourism and recreation receptors	Scoped In	Construction activity could result in direct impacts on tourism and recreation receptors, such as temporary closures or diversions of PRoW.
Indirect effects on tourism and recreation receptors	Scoped In	Construction activity could result in indirect impacts on tourism and recreation receptors, such as in-combination effects on amenity for users of PRoW or sensitive visitor attractions.
Effects on tourism accommodation	Scoped In	There may be an increase in demand for tourist accommodation associated with the presence of an incoming construction workforce.
Operational Phase		

Potential Effect / Topic	Proposal for Assessment within EIA	Rationale for Scoping out of the EIA
Employment and supply chain effects	Scoped In	The operation of the Proposed Development will create jobs directly and in the supply chain.
GVA effects	Scoped In	The operation of the Proposed Development will generate GVA in the local, regional and national economy.
Wider socio-economic effects	Scoped Out	These impacts are not expected to arise during the operational phase.
Socio-cultural effects	Scoped Out	These impacts are not expected to arise during the operational phase.
Direct effects on tourism and recreation receptors	Scoped Out	These impacts are not expected to arise during the operational phase.
Indirect effects on tourism and recreation receptors	Scoped Out	These impacts are not expected to arise during the operational phase.
Effects on tourism accommodation	Scoped Out	Any requirement for worker accommodation during the operational phase is expected to be very small.

16.5.2 There is little published guidance for assessing the Socio-economic, Land Use, Tourism and Recreation effects of the Proposed Development. The assessment will therefore be based on professional judgement and established industry best practice, informed by relevant policy and legislation and the approach taken for other comparable developments. The methodology will draw on research and emerging policy and best practice around the implications of solar developments for food security and supply chains.

16.5.3 The significance of an effect is determined as a function of the sensitivity of the receptor and the magnitude of the impact. The criteria that will be used to determine the sensitivity of receptors are set out in **Table 16.5**.

Table 16.5 Criteria for determining sensitivity of receptor

Sensitivity of Receptor	Description
High	• The Proposed Development could be expected to have considerable effects. • There is no or low availability of labour and skills in the local workforce, for example as a result of very low unemployment rates. Therefore, the Proposed Development could lead to labour market pressures and distortions (e.g. skills and capacity shortages, import of labour, wage inflation). • The asset is of high socio-economic, tourism or recreational use value. It is of importance at a national or international level.

Sensitivity of Receptor	Description
	• The asset is highly sensitive to changes in its operating environment and has little capacity to absorb change without fundamentally altering its present character. • The receptor possesses priority in national socio-economic, land use or tourism and recreation policy or strategy.
Moderate	• The Proposed Development has the potential to have observable effects on existing baseline conditions. • The area has a constrained supply of labour and skills. Therefore, the Proposed Development may lead to labour market pressure and distortions. • The asset is of moderate socio-economic, tourism or recreational use value. It is of importance at a national or regional level. • The asset is sensitive to changes in its operating environment and has some capacity to absorb change without fundamentally altering its present character. • The receptor possesses priority in local socio-economic, land use or tourism and recreation policy or strategy.
Low	• The Proposed Development has the potential to have a small or short-term effect. • The asset is of moderate socio-economic, tourism or recreational value, and is of importance at a local level. • The asset is not sensitive to changes in its operating environment and can absorb change without fundamentally altering its present character. • The receptor is not identified as a priority in local socio-economic, land use, or tourism and recreation policy or strategy.
Negligible	• The Proposed Development is not expected to have any noticeable impact on the existing baseline. • The receptor is able to absorb change and is of little socio-economic, land use, tourism or recreational value.

16.5.4 The criteria that will be used for determining the magnitude of an impact are set out in **Table 16.6**.

Table 16.6 Criteria for determining magnitude of impact

Magnitude of Impact	Description
Major	• Total loss or major alteration (positive or negative) to a socio-economic, land use, tourism or recreation asset / receptor. • This could include: closure or severe effect upon the viability of a business, or permanent closure of a PRoW.

Magnitude of Impact	Description
Moderate	• Loss of or alteration to (positive or negative) one or more key elements of a socio-economic, land use, tourism or recreation asset's baseline value. • This could include: a moderate change to business revenues with potential job losses but no threat to the viability of the business, or temporary closure or moderate reduction in access to a PRoW.
Minor	• Slight alteration (positive or negative) to a socio-economic, land use, tourism or recreation asset / receptor. • This could include: a low change to business revenues with isolated job losses but no threat to the viability of the business, or low reduction in access to a PRoW.
Negligible	• Very little change from baseline conditions. Change barely distinguishable, approximating to a 'no change' situation.

16.5.5 The significance of effect is a product of the receptor's sensitivity and magnitude of impact. The significance of effect can be either significant (major or moderate effects) or not significant (minor or negligible effects), as outlined in **Chapter 6, Environmental Impact Assessment**.

16.6 Limitations and assumptions

16.6.1 Limitations and assumptions include the following:

- The baseline uses existing government data which is not always available at the required spatial levels for defined study areas.
- There is limited technical guidance to determine the scope and assessment of significance, and professional judgement will be used.

17 OTHER ENVIRONMENTAL TOPICS

17.1 Waste

Introduction

17.1.1 This section sets out the approach and scope of the waste assessment which will consider the quantities and types of waste produced during the construction, operational, and decommissioning phases of the Proposed Development. The assessment will identify likely effects and detail where these effects are to be assessed in appendices / annexes of the ES.

17.1.2 It is proposed that a waste chapter of the ES will be scoped out. Instead, the evaluation of waste will be addressed through the Site Waste Management Plan (SWMP) as part of the Construction Environmental Management Plan (CEMP). An oCEMP will be submitted as part of the Application, and this will updated to a detailed CEMP prior to the commencement of works and secured by a Requirement of the DCO.

Topic Specific Legislation, Policy, and Guidance

Legislation

Control of Pollution (Amendment) Act 1989[254]

17.1.3 The Control of Pollution (Amendment) Act 1989 aims to "*provide for the registration of carriers of controlled waste and to make further provision with respect to the powers exercisable in relation to vehicles shown to have been used for illegal waste disposal*". It is an offence for anyone who is not a registered carrier of controlled waste to transport any controlled waste to or from a place in Great Britain whether for profit or for business.

Waste Framework Directive (2008) Directive[255]

17.1.4 Article 3(1) of the Waste Framework Directive defines 'Waste' as: "*any substance or object which the holder discards or intends or is required to discard"*

17.1.5 Article 4 sets out the "waste hierarchy" which applies priority to waste prevention and management in the following order:

- *"Prevention;*
- *Preparing for re-use;*
- *Recycling;*
- *Other recovery (e.g. energy recovery); and*
- *Disposal."*

This hierarchy has been applied to legislation and policy published since 2008, and provides a framework for many local waste management plans.

Waste (England and Wales) Regulations (2011)[256]

17.1.6 The Waste (England and Wales) Regulations 2011 update earlier aspects of waste controls and emphasise the need for waste permits and authorisations for certain activities. The regulations aim to protect the environment and human health by preventing or reducing the generation of waste, reducing the adverse impacts of the generation and management of waste, and reducing the overall impacts of resource use.

17.1.7 The regulations implement the revised WFD (Waste Framework Directive) under the Duty of Care Regulations 1991, and require businesses to:

- Apply the waste management hierarchy when transferring waste and to include a declaration on their waste transfer note or consignment note;
- Require a new waste hierarchy permit condition and where appropriate a condition relating to the mixing of hazardous waste;
- Introduce a two-tier system for waste carrier and broker registration, which includes those who carry their own waste, and introduces a new concept of a waste dealer;
- Make amendments to hazardous waste controls and definition; and
- Exclude some categories of waste from waste controls, notably animal by-products, whilst including a small number of radioactive waste materials.

Waste (England and Wales) (Amendment) Regulations 2014[257]

17.1.8 These regulations amend the Waste (England and Wales) Regulations 2011, adding in regulation 29, a list of offences for the purposes of refusing registration of carriers, brokers and dealers of controlled waste. This amendment also added a new part (Part 10A) relating to the production of authority for transporting controlled waste, specifying how an authority to transport waste must be presented.

Controlled Waste (England and Wales) Regulations 2012[258]

17.1.9 Under these regulations, waste from construction or demolition works, including preparatory works, are to be classified as ‘Industrial’, and treated as household waste for the purposes of Section 34(2) and (2A) of the Act only.

The Hazardous Waste (England and Wales) Regulations 2005[259]

17.1.10 These regulations set out the regime for the control and tracking of hazardous waste in England and Wales. Under these regulations, a process of the registration of hazardous waste producers and a new system for recording the movement of hazardous waste was introduced.

17.1.11 Under the regulations, all industrial and commercial premises producing more than 500 kg of hazardous waste must notify their existence to the EA. In practice, the EA released updated guidance in this regard in April 2016 which withdrew the need for such notification.

17.1.12 Under the regulations, the movement of wastes is controlled by a documentation system which has to be completed whenever waste is removed from premises. From the waste producer’s perspective, a Consignment Note must be produced and completed before waste can be removed and the following information must be provided:

- A description of the waste;

- The process giving rise to the waste;
- The quantity of waste;
- The chemical (and / or biological) components and their concentrations;
- The hazard codes, the List of Waste (LoW) code;
- The container type;
- The locations of origin and destination of the waste; and
- The consignment notes with a unique number ('consignment note code').

Schedule 4 of the EIA Regulations[1];

17.1.13 Article 1(d) of Schedule 4[1] of the EIA Regulations requires an ES to consider the quantities and types of waste to be produced during the construction and operational phases of a Proposed Development. The design life of the Proposed Development is expected to be at least 60 years. After this period, the Proposed Development is likely to be decommissioned. Decommissioning is expected to take between 12 and 24 months and could be undertaken in phases. Therefore, waste generated during the decommissioning phase will also be considered.

Policy

National Policy Statements

17.1.14 NPSs are the primary policy basis for NSIP development.

17.1.15 NPS for Overarching Energy (EN-1)[4] is relevant to the Proposed Development in the context of waste management. NPS EN-1 acknowledges that all large infrastructure projects are likely to generate wastes but encourages the protection of human health and the environment by producing less waste and using it as a resource wherever possible. Section 5.15 of NPS EN-1 advocates the implementation of sustainable waste management practices, in line with the Waste Hierarchy (Waste Regulation, 2011)[260]. Where disposal is required, waste should be disposed in line with waste management regulations.

National Planning Policy for Waste[261]

17.1.16 The National Planning Policy for Waste (NPPW) provides the context for how local authorities should manage waste in their area and sets out considerations that must be taken into account during planning applications.

17.1.17 The NPPW also sets out detailed waste planning policies to ensure sustainable waste management, emphasises the need to minimise the amount of waste arising and supports the reuse and recycling of waste where possible.

Waste Management Plan for England 2021[262]

17.1.18 The Waste Management Plan (WMP) for England fulfils the requirements of the Waste (England and Wales) Regulations 2011 (as amended) for the WMP to be reviewed every six years. It provides an analysis of the current waste management situation in England and evaluates how it will support the implementation of the objectives and provisions of the Waste (England and Wales) Regulations 2011 (as amended). The Plan also provides an overview of the type, quantity and source of waste generated within England; existing waste collection schemes and major disposal and recovery installations; an assessment of the need for new collection schemes; and general waste management policies.

17.1.19 The 2021 Plan supersedes the previous WMP for England and includes changes to WMP requirements which have been made by the Waste (Circular Economy) (Amendment) Regulations 2020 where appropriate.

Barnsley, Doncaster and Rotherham Joint Waste Plan[263]

17.1.20 Barnsley Metropolitan Borough Council, CDC, and RMBC have developed the Joint Waste Plan to "*guide and manage future waste provision across the boroughs over the next 15 years"*

17.1.21 The key objective of the Joint Waste Plan is to "*manage waste in the following order of priority: prevention (reduction), re-use, recycling, recovery and landfill disposal"*, in line with the waste hierarchy.

Guidance

The Definition of Waste: Development Industry Code of Practice (DoW: CoP)[264]

17.1.22 This Code of Practice (CoP) serves the following purposes:

- It sets out good practice for the development industry to use when:
  - Assessing on a site-specific basis whether excavated materials are classified as waste or not;
  - Determining on a site-specific basis when treated excavated waste can cease to be waste for a particular use; and
  - It describes an auditable system to demonstrate that this CoP has been adhered to.

17.1.23 The EA will take account of this CoP in deciding whether to regulate the materials as waste. If materials are dealt with in accordance with the CoP the EA considers that those materials are unlikely to be waste if they are used for the purpose of land development. This may be because the materials were never discarded in the first place, or because they have been submitted to a recovery operation and have been completely recovered so that they have ceased to be waste.

IEMA Guide to Materials and Waste in Environmental Impact Assessment265.

17.1.24 The IEMA Guide to Material and Waste in EIA sets out guidance and significance criteria to assess the potential impacts on a development resulting from disposal of waste to landfill. The guidance advocates the use of one of two assessment methodologies, based on void capacity or landfill diversion. Assessment based on landfill void capacity is the recommended methodology for statutory EIAs.

Proposed Site Waste Management Study Area

17.1.25 The waste Study Area will focus on waste sources and the recycling / disposal of material within the Site Boundary and the recycling / disposal of material throughout the wider South Yorkshire region, specifically the RMBC and CDC districts. This will include areas where waste is generated, stored, and disposed of during all phases of the Proposed Development.

Potential Effects and Mitigation

17.1.26 At this stage, the exact quantities and types of waste likely to be generated during each phase (construction, operation and decommissioning) are unknown,

however types of wastes generated during each phase have been identified. The Proposed Development will quantify waste streams via the SWMP. Anticipated waste streams are as follows.

Construction

17.1.27 The types of wastes likely to be generated during construction of the Proposed Development could include:

- General waste from Site offices and welfare facilities;
- Waste chemicals, fuels, and oils;
- Waste metals;
- Wastewater from dewatering of excavations and cleaning activities;
- Packaging waste; and
- Waste from construction of fencing, access roads, and other supporting infrastructure.

Operation

17.1.28 During operation, waste generation is expected to be minimal as PV modules do not generate any waste as part of the energy production process. The requirement for material assets during the operational phase will be limited to maintenance and replacement components, as required. Operational wastes will be handled in accordance with relevant guidance and legislation, including the Special Waste Regulations, 1996[266].

Decommissioning

17.1.29 During decommissioning, the removal of any material assets and waste will be recycled or disposed of in accordance with good practice and market conditions at that time. If items can be recycled, this will be the first-choice option. An oDEMP will be submitted in support of the Application, which will set out how the waste will be managed and detail opportunities for re-use and recycling.

Technical Scope and Approach to EIA

17.1.30 The Proposed Development will comply with all relevant waste legislation in relation to waste handling, storage, transport, and disposal (e.g. The Waste Framework Directive). Given the mitigation measures to be implemented, and requirement to comply with relevant waste legislation, no significant waste impacts are expected during either construction, operation or decommissioning, therefore the need for a waste chapter is proposed to be scoped out of the ES. Instead, the evaluation of waste will be addressed through the SWMP as part of the oCEMP that would include the following:

- Best practice measures;
- Demonstration of adherence to the waste hierarchy;
- Expected quantities and types of waste to be produced; and
- Appropriate monitoring measures to ensure compliance.

17.1.31 Details of the commitment to provide a waste management plan will be included within the can be found in **Appendix C – Commitments Register**.

17.2 Glint and Glare

Introduction

17.2.1 Glint and glare is defined as the reflection of sunlight which may cause harm, discomfort or distraction to sensitive receptors. Glints are momentary flashes of bright light, whilst glare is a continuous source of bright light[267]. The assessment of glint and glare will be relevant to the Proposed Development due to the solar PV modules causing potential for flashes and glare in daylight hours. The ES will cover the findings of the glint and glare assessment in the landscape and visual chapter, with the full assessment included as a Technical Appendix.

17.2.2 There is an absence of published guidance for a methodological approach to glint and glare assessment. However, guidance for Renewable and Low Carbon Energy[268] states:

"*Particular factors a local planning authority will need to consider include… the effect on landscape of glint and glare and on neighbouring uses and aircraft safety*"

17.2.3 In addition to aircraft, glint and glare receptors include road users, residential dwellings, railways and PRoW users.

Assessment Scope

17.2.4 The glint and glare assessment will solely focus on the operational phase of the Proposed Development, as this will be the only phase of the Proposed Development where the solar PV array will be present in its entirety across the Site.

17.2.5 Results and recommendations from this assessment will influence the design of the Proposed Development, to reduce any potential glint and glare impacts on likely receptors.

17.2.6 There are two Study Areas proposed for the glint and glare assessment to identify potential receptors recognised within the Guidance for Renewable and Low Carbon Energy (2015). These are as follows:

- 30 km Study Area for active aviation receptors; and
- 1 km Study Area for ground receptors (road users, residential dwellings, railways and PRoW users).

Potential Impacts on Aviation

17.2.7 The active aviation receptors within the 30 km Study Area of the Proposed Development are:

- Three Counties Flying School Airstrip (approximately 5 km east);
- Coal Aston Airstrip (approximately 9 km southwest);
- Doncaster Sheffield Airport (approximately 12 km east);
- Retford (Gamistone) Airport (approximately 21 km southeast);

- Derbyshire and Lancashire Gliding Club Airstrip (approximately 29 km southwest); and
- Birds Edge Airstrip (approximately 29 km northwest).

17.2.8 The impacts on aviation receptors will be further investigated in the glint and glare assessment, which will be presented in the ES. Potential for significant effects on aviation receptors are only anticipated during operation; therefore, it is proposed that glint and glare effects during the construction and decommissioning phases are scoped out of the EIA.

Potential Impacts on Ground Receptors

17.2.9 Glint and glare impacts on ground receptors from solar developments are most often experienced when the sun is low in the sky, such as immediately following sunrise and preceding sunset. Therefore, receptors are most likely to the west and east of the Proposed Development, and not to the north or south.

17.2.10 Residential areas within 1 km of the Proposed Development which are likely to be receptors of glint and glare impacts include:

- W1 – Clifton, Conisbrough, Hooton Roberts, Old Ravenfield, and Micklebring;
- W2 - Wickersley, Aston, Aughton, Treeton, Thurcroft, Brampton en le Morthen, Laughton Common, North Anston, South Anston, Todwick, Ulley, and Upper Whiston; and
- W3 – Woodall, Harthill, Highmoor, Kiveton Park, and Wales.

17.2.11 Measures to reduce impacts on residential receptors will be implemented within the LVIA and via the oLBMP, which will illustrate methods and locations of visual screening. Through the iterative design process, mitigation measures should be sufficient to negate any potential significant glint and glare effects on residential receptors.

17.2.12 There are several roads running immediately east or west of the Proposed Development. Namely, the A630, M18, M1, A120, B6463, A57 and A618 as well as other minor roads which could be receptors of glint and glare impacts. The LVIA and oLBMP will also consider road receptors, and sufficient mitigation would be implemented to negate glint and glare impacts.

17.2.13 Potential impacts will also be considered for train drivers and any signals and safety equipment regarding the Sheffield to Lincoln Railway Line, the Midland Main Line, and the South Yorkshire Joint Railway which run within 1 km of the Proposed Development.

17.2.14 There are also several PRoWs that cross the Site (listed in **Section 3.2**) and are present within 1 km. The residential and recreational receptors will be considered within the LVIA and RVAA, as well as the glint and glare assessment presented in the ES.

17.2.15 Potential for significant adverse effects on ground receptors are only anticipated during operation, therefore it is proposed that the construction and decommissioning phases are scoped out of the assessment.

Mitigation Approach

17.2.16 Recommended mitigation measures arising from the glint and glare assessment and LVIA will be incorporated into the design of the Proposed Development.

Should there be any areas of the Proposed Development where adverse impacts cannot be mitigated against, it may be necessary to remove panelled areas from the design.

17.3 Telecommunications and Utilities

17.3.1 The Proposed Development will not interfere with above-ground telecommunications but has the potential to adversely impact underground utilities. Standard practice involves consulting with relevant utilities and telecommunications providers, such as those for water, gas, and electricity, to identify any existing infrastructure constraints.

17.3.2 Consultation with relevant utilities and telecommunications providers will be carried out alongside a desk-based assessment to inform the design process. The design of the Proposed Development will incorporate necessary protective measures to safeguard any existing infrastructure which may be impacted by the Proposed Development.

17.3.3 The Proposed Development will capture these relevant measures, removing the requirement for a telecommunications and utilities chapter in the ES. Therefore, the topic is proposed to be scoped out of the EIA but will be accounted for in the protective measures incorporated into the Application.

17.4 Major Accidents and Disasters

Introduction

17.4.1 This section sets out the approach and scope of the assessment of major accidents and disasters, which will consider the vulnerability of the Proposed Development to such risks. The assessment will also identify likely effects of the Proposed Development on the risk of major accidents and disasters.

Topic-Specific Legislation and Guidance

17.4.2 The scope of the major accidents and disasters assessment section of the EIA has been developed in line with the following key legislation, policy, and associated guidance:

- Article 8 of Schedule 4[1] of the EIA Regulations; and
- Major Accidents and Disasters in EIA: An IEMA Primer[269].

17.4.3 Article 8 of Schedule 4[1] of the EIA Regulations requires an ES to consider the vulnerability of a development to the risk of major accidents and / or disasters.

17.4.4 ‘Major Accidents and Disasters in EIA: An IEMA Primer’ provides guidance on the consideration of major accidents and disasters. It has been structured around a typical assessment approach and offers a proportionate method for considering major accidents and / or disasters through screening, scoping and assessment. This guidance defines Major Accidents and Disasters as follows:

- ‘Major Accidents’ are events *“that threaten immediate or delayed serious environmental effects to human health, welfare and / or the environment and require the use of resources beyond those of the client or its appointed representatives to manage. Whilst malicious intent is not accidental, the*

outcome (e.g. train derailment) may be the same and therefore many mitigation measures will apply to both deliberate and accidental events"; and

- A 'Disaster' *"may be a natural hazard (e.g. earthquake) or a man-made/external hazard (e.g. act of terrorism) with the potential to cause an event or situation that meets the definition of a major accident".*

Potential Effects and Mitigation

17.4.5 Following the IEMA guidance, potential hazards that meet the following criteria have been scoped out of the EIA:

- The Proposed Development is not vulnerable to the hazard or does not have the potential to cause the hazard;
- The hazard is not likely to result in effects that lead to fatality, multiple fatalities, permanent injury, widespread / irreversible harm or damage i.e. the hazard will not result in a major accident and / or disaster;
- There is no potential pathway or receptor in terms of EIA regulations;
- It is a workplace hazard that will only impact the workers directly involved i.e. fall from height or misuse of tools. These are an occupational health and safety incident that is not included within an EIA and instead managed through compliance of the Management of Health and Safety at Work Regulations and non-safety-related legislation, detailed as follows:
  - Health and Safety at Work etc. Act 1974[270];
  - The Management of Health and Safety at Work Regulations 1999[271];
  - The Workplace (Health, Safety and Welfare) Regulations 1992[272]; and
  - Construction (Design and Management) (CDM) 2015 Regulations[273].

17.4.6 Significant effects in relation to the risk of major accidents and disasters are not anticipated given the nature, scale and location of the Proposed Development. The risk of major accidents and disasters will be considered throughout the design process of the Proposed Development. This will include siting the potentially hazardous equipment, such as the BESS and grid infrastructure, at a suitable distance from sensitive receptors.

17.4.7 The construction, operation and decommissioning phases of the Proposed Development have the potential to give rise to major accidents and / or disaster. **Table 17.1** presents a list of possible major accidents and disasters that will require consideration as the Proposed Development design progresses. This list of possible major accidents and disasters will continuously be reviewed with the design team during the design process to ensure the risks are understood and addressed through design where appropriate.

Table 17.1 Major Accidents or Disasters Considered Possible at this Stage

Major Accident and / or Disaster	Potential Receptor	Comments
Flooding	Property and people in areas of increased flood risk	The vulnerability of the Proposed Development to flooding, and its potential to exacerbate flooding, will be covered in the Flood Risk Assessment, and reported in the ES, as described in **Chapter 11,**

Major Accident and / or Disaster	Potential Receptor	Comments
		Water Resources and Flood Risk of this Scoping Report. It will cover any flood risk to the Proposed Development and any increased flood risk caused by the Proposed Development.
Fire	Local residents, habitats and species	There is a potential fire risk associated with the BESS. This will be managed by monitoring and control systems, cooling systems and fire suppression systems, which will form part of the BESS, and which is designed to regulate temperatures to safe conditions to minimise the risk of fire. In addition, the BESS and associated grid infrastructure will be sited a suitable distance from sensitive receptors in accordance with BESS standards. An outline Battery Safety Management Plan (oBSMP) will be developed in consultation with the local fire and rescue service and submitted in support of the Application to account for the potential safety risks and the relevant mitigation and management procedures.
Road Accidents	Road users	The risk of road collisions and accidents will be addressed in the Traffic and Transport Assessment of the ES, as described in **Chapter 14 Traffic and Transport** of this Scoping Report.
Aircraft Disaster	Pilots and Aircraft	The potential for glint and glare to affect aircraft will be considered within the glint and glare assessment, which will form a Technical Appendix to the ES (refer to **Section 17.2**). If any risks are identified, mitigation will be considered and, where necessary, incorporated into the Proposed Development's design.
Rail Disaster	Train Drivers and Trains	The potential for glint and glare to affect trains will be considered within the glint and glare assessment which as stated above, will form a Technical Appendix to the ES (refer to **Section 17.2**). If any risks are identified, mitigation will be considered and, where necessary, incorporated into the Proposed Development's design.
Utilities failure (gas, electricity, water, sewage, oil, communications)	Employees and local residents	The Proposed Development has the potential to affect existing utility infrastructure below ground. The Proposed Development does not include infrastructure of a height that would affect existing overhead utilities. To identify any existing infrastructure constraints, both consultation and a desk-based study will be undertaken. It is known

Major Accident and / or Disaster	Potential Receptor	Comments
		that there are overhead electricity lines located within the Site.
Plant disease	Habitats and species	New planting may be susceptible to biosecurity issues, such as the increased prevalence of pests and diseases, due to climate change. The planting design and oLBMP will take account of and manage biosecurity risks.

17.4.8 During all phases of the Proposed Development (e.g. construction, operation and decommissioning), measures will be implemented in accordance with health and safety legislation, regulations, and industry guidance to ensure that risks are suitably controlled and managed, and minimise risks to human and environmental receptors. The appropriate measures and controls in line with relevant legislation and guidance will be included in the oCEMP, and oOEMP which will be provided as part of the Application.

Technical Scope and Approach to EIA

17.4.9 Where design mitigation is unable to remove the potential interaction between a major accident or disaster and a particular technical topic, as described in **Table 17.1** the potential effects resulting from major accidents or disasters will be reported within the ES.

17.4.10 Due to the nature of the Proposed Development, it has been determined that a standalone major accidents and disasters chapter is not required for the ES. Instead, assessment of major accidents and disasters will be the reported within the Other Environmental Topics chapter of the ES.

17.5 Electromagnetic Fields

17.5.1 Electromagnetic fields (EMFs) are generated by the flow of electricity, for example along electrical cables. NPS EN-5 highlights that electrical fields are eliminated by placing cables underground, however underground cables still generate magnetic fields.

17.5.2 The Inspectorate's Technical Advice for Scoping Solar Development[20] states "*Where proposed cables are over 132 kV, an EMF assessment should be provided in an appendix to the Environmental Statement. This should include the location, routing and voltages of any cables over 132 kV and a risk assessment to any human and ecological sensitive receptors within the ZoI.*"

17.5.3 Although the voltage of underground cables to be used for the Proposed Development is unknown at this stage, the Proposed Development could include underground cables with a voltage greater than 132 kV. Consequently, in line with Inspectorate Guidance, it is proposed that a separate chapter for EMFs is scoped out of the ES, and instead an EMF assessment will be submitted as a Technical Appendix to the ES.

17.6 Human Health

17.6.1 It is proposed that consideration of the potential effects to human health as a result of the Proposed Development will be covered through the findings of the following technical assessments undertaken as part of the EIA process:

- Air Quality;
- Traffic and Transport; and
- Noise and Vibration.

17.6.2 Consideration will also be given to the potential effects of the Proposed Development on mental health, through the consideration of the results of the RVAA, LVIA, and the chapters listed above, along with the cumulative effects assessment (detailed in **Chapter 18, Cumulative Effects**).

17.6.3 Each of these chapters within this Scoping Report and subsequent Draft ES and ES will consider the potential effects to human health within their own assessments. It is therefore proposed to scope out a standalone chapter on human health as part of either the Draft ES or ES.

17.7 Population

17.7.1 The requirement to consider population in UK EIA practice was introduced via the 2017 update to the EIA Regulations, with impacts on population taken to refer to socio-economic impacts. As such, the effects of the Proposed Development on population will be assessed within **Chapter 16, Socio-economic and Land Use** of the ES. As such, it is proposed to scope out the requirement for a standalone population chapter as part of either the Draft ES or ES.

18 CUMULATIVE EFFECTS

18.1 Approach to Cumulative Effects Assessment

18.1.1 Cumulative effects are defined as those of which the impacts (beneficial or adverse, direct and indirect, long-term and short-term impacts) arise from a range of activities throughout an area or region, where each individual effect may not be significant if taken in isolation. According to Schedule 4[1] of the EIA Regulations, the ES must assess the potential cumulative effects of the Proposed Development on receptors.

18.1.2 Inspectorate advice on cumulative effects assessment (relevant to Nationally Significant Infrastructure Projects)[274] emphasises the importance of considering cumulative effects in the context of the EU EIA Directive, the EIA Regulations and NPS EN-1[4].

18.1.3 The Cumulative Effects Assessment (CEA) for the Proposed Development will be undertaken in line with the four-staged approach set out in the Inspectorate's advice note, as follows:

- Stage 1: Establish the Proposed Development's ZoI and identify a list of other developments within it.
- Stage 2: Identify a shortlist of other developments for CEA based on their potential to have similar effects to those of the Proposed Development on the same receptors.
- Stage 3: Information gathering.
- Stage 4: Cumulative Effects Assessment.

Effect Interactions

18.1.4 The EIA will predict both beneficial and adverse effects during the construction, operation, and decommissioning of the Proposed Development. These effects are classified as negligible, minor, moderate, or major. It is theoretically possible for multiple effects on a single receptor or receptor group to interact or combine, resulting in a significantly combined overall effect.

18.1.5 IEMA recognises two types of cumulative effects for assessment[275], which are:

- Intra-project effects - These effects occur where a single receptor is affected by more than one source of effect arising from different aspects of the project. An example of an intra-project effect would be where a local resident is affected by dust, noise and traffic disruption during the construction of a scheme, with the result being a greater nuisance than each individual effect alone; and,
- Inter-project effects – These effects occur because of a number of developments, which individually might not be significant, but when considered together could create a significant cumulative effect on a shared receptor and will include developments separate from and related to the Proposed Development.

18.1.6 The intra-project and inter-project effects will be incorporated to stage 4 CEA. The outcome of stages 1-4 will be included as a cumulative effects chapter of the ES.

18.1.7 The ES will use the following methodology to assess cumulative effects and interactions:

- Monitoring Residual Effects:

  This involves tracking the remaining effects identified as Significant for each individual section (W1-3) after mitigation measures have been applied.

- Assessing Inter-Cumulative Effects:

  This level assesses how the Proposed Development as a whole interacts with other identified cumulative developments in the area.

- Assessing Intra-Cumulative Effects:

  This level looks at the interactions between the different sections (W1-3) within the Proposed Development and compares these interactions against the inter-cumulative effects identified in the previous level.

18.1.8 The assessment is completed in stages to ensure that both the internal interactions within the Proposed Development and the external interactions with other developments are thoroughly evaluated. This aids in understanding the overall impact of the Proposed Development on the environment.

18.2 Cumulative Effects Assessment Stage One and Two

18.2.1 The Inspectorate advice on CEA[274] states: "*Stages 1 and 2 should be undertaken early in the pre-application stage and ideally before requesting a scoping opinion. Applicants should make use of the EIA scoping process to provide information on the CEA, to ensure it is focussed and proportionate. This provides an opportunity to request information from the local authorities about developments to include in the assessment. Stages 1 and 2 are set out sequentially in this advice but they may be undertaken together*."

18.2.2 Stage 1 of the CEA involves determining whether a development falls within the ZoI for the technical disciplines covered in this Scoping Report. The ZoIs for these disciplines are based on the selected 'Study Area' for each discipline. Consequently, the ZoIs / Study Areas vary by discipline. Relevant Study Areas for the scoping stage of the CEA include:

- Air Quality – 250 m of Site Boundary;
- Biodiversity and Nature Conservation – 10 km of Site Boundary;
- Climate Change and Greenhouse Gas Assessment – land within the Site Boundary;
- Cultural Heritage and Archaeology – 3 km of Site Boundary;
- Ground Conditions and Land Quality – 100 m of Site Boundary;
- Landscape and Visual – 5 km of Site Boundary;
- Noise and Vibration – 500 m of Site Boundary;
- Socio-Economics and land Use – 5 km from the DCO Limits;
- Traffic and Transport – the road network as identified in **Chapter 14, Traffic and Transport**; and
- Water Resources and Flood Risk – 1 km of Site Boundary.

18.2.3 The table provided in **Appendix F, Cumulative Developments** sets out stages 1 and 2 of the CEA and provides a judgement whether a development should progress to stage 3.

18.2.4 The Applicant welcomes the views of the Inspectorate, and the local authorities, on the suitability of the cumulative developments presented in **Appendix F** and, in particular, suggestions for any other developments known to the local authorities that should be considered as part of the CEA.

19 PROPOSED SCOPE OF THE EIA

19.1 Introduction

19.1.1 This chapter outlines the environmental subjects that the EIA should consider, in accordance with the EIA Regulations. Schedule 4[1] specifies that the ES must provide a detailed account of the environmental aspects that may experience significant impacts due to the Proposed Development.

19.1.2 This requirement and the broad categories set out in Schedule 4, along with others which are considered likely to lead to significant environmental effects, have been interpreted and applied in the context of the Proposed Development. **Table 19.1** sets out the EIA regulation topics and shows where they have been approached in subsequent sections of this Scoping Report.

Table 19.1 EIA Regulations Topics Approached in this Scoping Report

EIA Regulations Topic	Location within this Scoping Report
Population	Considered in Chapters 14 (Traffic and Transport) and 16 (Socio-economics, Land Use, Tourism, and Recreation)
Air Quality	Considered in Chapter 13 (Air Quality)
Biodiversity	Considered in Chapter 7 (Biodiversity and Nature Conservation)
Climate	Considered in Chapter 12 (Climate Change and Greenhouse Gas Assessment)
Cultural Heritage	Considered in Chapter 9 (Cultural Heritage and Archaeology)
Emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisance, and the disposal and recovery of waste	Considered in Chapters 13 (Air Quality), 15 (Noise and Vibration), 8 (Landscape and Visual Impact), and 17 (Other Environmental Topics)
Human Health	Considered in Chapters 8 (Landscape and Visual), 11 (Water Resources and Flood Risk), 13 (Air Quality), 15 (Noise and Vibration), and 17 (Other Environmental Topics)
Land	Considered in Chapter 10 (Ground Conditions and Land Quality)
Landscape	Considered in Chapter 8 (Landscape and Visual Impact)
Material Assets	Considered in Chapters 9 (Cultural Heritage and Archaeology), and 10 (Ground Conditions and Land Quality)
Soil	Considered in Chapter 10 (Ground Conditions and Land Quality)
Water	Considered in Chapter 11 (Water Resources and Flood Risk)

19.2 Topics Not Included in the EIA Scope

19.2.1 Paragraph 5.10 of Inspectorate Advice Note Seven[2] states: "*Ensuring that ESs are appropriately focused on aspects and matters where a likely significant effect*

may occur is essential. The Planning Inspectorate is keen to ensure that the scoping process is used effectively, ensuring that the EIA process is proportionate. The Planning Inspectorate will agree to 'scope out', from the need for further assessment, aspects and matters where it is appropriate to do so. In order to support the Planning Inspectorate with this aim, Applicants should ensure that their requests include sufficient justification for scoping aspects / matters out. The justification should be evidence based and have reference to the assessment process."

19.2.2 Accordingly, impacts that are unlikely to result in significant effects should be excluded and scoped out of the EIA. The topics that have been deemed non-significant and are therefore proposed to be scoped out of the EIA are detailed within each technical chapter of this Scoping Report, with the justification for the decision included for each Topic that is scoped out. The table presented in **Appendix B, Solar Scoping Table** summarises these topics that have been scoped out of the EIA, along with the reasoning behind this decision.

20 STRUCTURE OF THE ES

20.1 ES Structure

20.1.1 The ES will be included within Volume 6 of the DCO. It will include a standalone non-technical summary. Introductory chapters will be found in ES Volume 1, while Topic chapters will be in ES Volume 2. Additional ES documents and technical appendices will be included in ES Volume 3 in line with the Inspectorate Advice on the Preparation and Submission of Application Documents[276].The anticipated structure of the ES is shown in **Table 20.1**.

Table 20.1 Structure of the ES

Volume	Chapter	Title
6	1	Introduction
	2	Development Description
	3	Alternatives and Design Iterations
	4	Planning, Policy and Legislative Context
	5	Approach to Environmental Impact Assessment and Consultation
	6	Biodiversity and Nature Conservation
	7	Landscape and Visual Impact Assessment
	8	Cultural Heritage and Archaeology
	9	Ground Conditions and Land Quality
	10	Water Resources and Flood Risk
	11	Climate Change and Greenhouse Gas Assessment
	12	Air Quality
	13	Traffic and Access
	14	Noise and Vibration
	15	Socio-Economics and Land-Use
	16	Other Environmental Topics
	17	Cumulative Effects
	18	Summary of Mitigation
	19	Conclusions

[1] Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. Available at The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 Accessed November 2024

[2] The Inspectorate Advice Note Seven. Available at: Nationally Significant Infrastructure Projects - Advice Note Seven: Environmental Impact Assessment: process, preliminary environmental information and environmental statements - GOV.UK (www.gov.uk). Accessed: July 2024

[3] Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009. Available at The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 Accessed November 2024

[4] Overarching National Policy Statement for energy (EN-1) 2024. Available at: Overarching National Policy Statement for energy (EN-1) - GOV.UK (www.gov.uk). Accessed: July 2024

[5] National Policy Statement for renewable energy infrastructure (EN-3) 2024. Available at: National Policy Statement for renewable energy infrastructure (EN-3) - GOV.UK. Accessed: October 2024

[6] National Policy Statement for Electricity Networks Infrastructure (EN-5) 2024. Available at: National Policy Statement for electricity networks infrastructure (EN-5) - GOV.UK (www.gov.uk). Accessed: July 2024

[7] National Planning Policy Framework (2024). Available at National Planning Policy Framework - GOV.UK. Accessed: December: 2024

[8] Doncaster Local Plan 2015 – 2035 (adopted 2021). Available at: Doncaster Local Plan 2015-2035 Adopted Version . Accessed: November 2024

[9]Rotherham Core Strategy 2013 to 2028. Available at: Rotherham Core Strategy 2013 to 2028. Accessed: November 2024

[10] National Grid (2024) Project Summar Document: Substation Near Brinsworth. Available at https://www.nationalgrid.com/electricity-transmission/document/155231/download [accessed 18/03/2025]

[11] Planning Inspectorate (2024) Nationally Significant Infrastructure Projects; Advice on Good Design (footnote -Planning Inspectorate (2024) Nationally Significant Infrastructure Projects; Advice on Good Design)

[12] Department for Environment, Food and Rural Affairs (MAGIC). (2024). MagicMap. Available at: https://magic.defra.gov.uk/MagicMap.html. Accessed: November 2024.

[13] Mining Remediation Authority, Mining Remediations Authority Interactive Map. Available at: https://datamine-cauk.hub.arcgis.com/. Accessed November 2024.

[14] Nationally Significant Infrastructure Projects: Advice on Good Design. Available at: Nationally Significant Infrastructure Projects: Advice on Good Design - GOV.UK. Accessed: November 2024

[15] The Planning Inspectorate's Advice Note 9: Rochdale Envelope. Available at: Nationally Significant Infrastructure Projects - Advice Note Nine: Rochdale Envelope - GOV.UK (www.gov.uk). Accessed: July 2024

[16] Planning Inspectorate (2024) Nationally Significant Infrastructure Projects: Advice on the Consultation Report. Available at: Nationally Significant Infrastructure Projects: Advice on the Consultation Report - GOV.UK. Accessed: November 2024

[17] Planning Inspectorate (2024) Nationally Significant Infrastructure Projects: Advice on EIA Notification and Consultation. Available at: Nationally Significant Infrastructure Projects: Advice on EIA Notification and Consultation - GOV.UK. Accessed: November 2024

[18] Rotherham Metropolitan Borough Council (2024) Statement of Community Involvement. Available at; Draft Statement of Community Involvement 2024 . Accessed: November 2024

[19] City of Doncaster Council (2023) Statement of Community Involvement. Available at: Statement of Community Involvement - City of Doncaster Council . Accessed: November 2024

[20] Planning Inspectorate (2024). Nationally Significant Infrastructure Projects: Technical Advice Page for Scoping Solar Development. Available at: https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-technical-advice-page-for-scoping-solar-development . Accessed: November 2024.

[21] Nationally Significant Infrastructure Projects: Commitments Register. Available at: Nationally Significant Infrastructure Projects: Commitments Register - GOV.UK. Accessed: November 2024

[22] Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment. Available at: Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment - GOV.UK. Accessed: October 2024

[23] European Parliament (2009) The Birds Directive. [Online] Available at: The Birds Directive - European Commission. (Accessed: November 2024)

[24] European Parliament (1992) The Habitats Directive. [Online] Available at: eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31992L0043&from=EN. (Accessed: November 2024)

[25] HM Government (1997) Hedgerow Regulations 1997. [Online] Available at: The Hedgerows Regulations 1997. (Accessed: November 2024)

[26] Protection of Badgers Act 1992. [Online] Available at: ukpga_19920051_en.pdf. (Accessed: November 2024)

[27] Environment Act 2021. [Online] Available at: Environment Act 2021. (Accessed: November 2024)

[28] HM Government (2017) The Conservation of Habitats and Species Regulations 2017 (as amended). [Online] Available at: The Conservation of Habitats and Species Regulations 2017. (Accessed: November 2024)

[29] HM Government (2019) The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. [Online] Available at: The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. (Accessed: November 2024)

[30] HM Government (1981) The Wildlife and Countryside Act 1981 (as amended). [Online] Available at: Wildlife and Countryside Act 1981. (Accessed: November 2024)

[31] HM Government (2006) Natural Environment and Rural Communities Act 2006. [Online] Available at: Natural Environment and Rural Communities Act 2006. (Accessed: November 2024)

[32] Four Countries' Biodiversity Group (2010) UK Post-2010 Biodiversity Framework [Online] Available at: UK Biodiversity Framework. (Accessed: November 2024)

[33] dinnington-st-johns-neighbourhood-plan

[34] Wickersley Neighbourhood Plan Adopted Version

[35] Maltby neighbourhood plan – Rotherham Metropolitan Borough Council

[36] Sheffield Local Biodiversity Action Plan (2002). [Online] Available at: Sheffield Local Biodiversity Action Plan - Sheffield & Rotherham Wildlife Trust (Accessed: November 2024)

[37] Rotherham Local Biodiversity Action Plan (2012). [Online] Available at: https://www.wildsheffield.com/wildlife/a-living-landscape/rotherham-local-biodiversity-action-plans/?srsltid=AfmBOooufSIshzexV2n7TamMGOPhMHBuDZqz-cx9FPW9OoMIadGW1NRZ (Accessed: November 2024)

[38] Developing South Yorkshire Local Nature Recovery Strategy (LNRS) [Online] Available at: https://www.southyorkshire-ca.gov.uk/explore_local-nature-recovery-strategy (Accessed: November 2024)

[39] CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.3. Chartered Institute of Ecology and Environmental Management, Winchester. [Online] Available at: Combined-EcIA-guidelines-2018-compressed.pdf. (Accessed: November 2024)

[40] Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D. and Win, I. (2021) The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. *British Birds* 114, 723–747 (Accessed: August 2024)

[41] Bat Conservation Trust (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th Edition) [Online] Available at: https://www.bats.org.uk/resources/guidance-for-professionals/bat-surveys-for-professional-ecologists-good-practice-guidelines-4th-edition (Accessed: November 2024)

[42] CIEEM (2023). UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats. [Online] Available at: https://cieem.net/resource/uk-bat-mitigation-guidelines-2023/ (Accessed: November 2024)

[43] Froglife (1999) Froglife Advice Sheet 10: Reptile Survey: An introduction to planning, conducting and interpreting surveys for snake and lizard conservation. [Online] Available at: https://www.wildcare.co.uk/media/wysiwyg/pdfs/froglife_advice_sheet_10_-_reptile_surveys.pdf (Accessed: November 2024)

[44] English Nature (2001) Great crested newt mitigation guidelines. [Online] Available at: https://mokrady.wbs.cz/literatura_ke_stazeni/great_crested_newt_mitigation_guidelines.pdf (Accessed: November 2024)

[45] Harris S, Cresswell P and Jeffries D (1989) Surveying Badgers, Mammal Society.

[46] Defra (2007) Hedgerow Survey Handbook. A standard procedure for local surveys in the UK. 2nd Edition. [Online] Available at: https://www.hedgelink.org.uk/cms/cms_content/files/89_hedgerow-survey-handbook.pdf (Accessed: November 2024)

[47] Chanin P (2003). Monitoring the Otter *Lutra lutra*. Conserving Natura 2000 Rivers Monitoring Series No. 10, English Nature, Peterborough.

[48] Gow, D., Dean. M., Andrews, A., and Strachan, R. (2016) The Water Vole Mitigation Handbook: Mammal Society Mitigation Guidance Series. Mammal Society. [Online] Available at: https://gat04-live-1517c8a4486c41609369c68f30c8-aa81074.divio-media.org/filer_public/1e/30/1e3072bf-0ffe-4df2-8ee2-e1af6f66755e/d93_-_water_vole_mitigation_handbook81824175_1.pdf (Accessed: November 2024)

[49] Wildcru (2011) The Water Vole Conservation Handbook (3rd Edition). [Online] Available at: https://gat04-live-1517c8a4486c41609369c68f30c8-aa81074.divio-media.org/filer_public/6a/8f/6a8fa262-ca19-4703-a096-82bb3cc20878/d92_-_water_vole_conservation_handbook81831419_1.pdf (Accessed: November 2024)

[50] UKHab Ltd (2023). UK Habitat Classification Version 2.0. [Online] Available at: https://www.ukhab.org (Accessed: November 2024)

[51] MoRPh River Condition Assessment methodology (2016) [Online] Available at: https://modularriversurvey.org/morph-rivers/ (Accessed: November 2024)

[52] Defined as any species meeting one or more of the following criteria: Listed on Schedule 1 of the Wildlife and Countryside Act 1981, listed on Annex I of the Birds Directive, Red- or Amber-listed Birds of Conservation Concern (Stanbury, *et al.* 2021), and/or Species of Principal Importance under the NERC Act 2006.

[53] eBird (2025) [Online] Available at: https://ebird.org/home. (Accessed: December 2024)

[54] Sheffield Bird Study Group (2025) [Online] Available at: https://www.sbsg.org/. (Accessed: December 2024)

[55] British Trust for Ornithology (2008) Winter Farmland Bird Survey. [Online] Available at: https://www.bto.org/sites/default/files/shared_documents/publications/research-reports/2007/rr494.pdf. (Accessed: December 2024)

[56] Bird Survey & Assessment Steering Group. (2024). Bird Survey Guidelines for assessing ecological impacts. [Online] Available at: https://birdsurveyguidelines.org. (Accessed: December 2024)

[57] Gilbert, *et al.* (1998) Bird Monitoring Methods. RSPB

[58] The MoRPh Survey: Technical Reference Manual. 2020 version

[59] Landscape Institute and Institute for Environmental Management & Assessment (2013) Guidelines for Landscape and Visual Impact Assessment – Third Edition (GLVIA3).

[60] The Council of Europe (2004) Landscape Convention (ETS No. 176), as amended by the 2016 Protocol (CETS No. 219)

[61] Ministry of Housing, Communities & Local Government (2016) Natural Environment (landscape) – Updated 21st July 2019

[62] Renewable and low carbon energy (updated August 2023). Available at: Natural environment - GOV.UK (www.gov.uk)

[63] National Infrastructure Commission Design Group (2020) Design Principles for National Infrastructure

[64] Natural England (2014) An Approach to Landscape Character Assessment

[65] The Landscape Institute (2019) Technical Guidance Note 06/19 Visualisation of development

[66] The Landscape Institute (2020) TGN 04/2020 Infrastructure

[67] The Landscape Institute (2021) TGN 02-21 Assessing Landscape value outside national designations

[68] Landscape Institute 2019 Technical Guidance Note 02/19 Residential Visual Amenity Assessment (RVAA)

[69] The Landscape Institute (2024) LITGN-2024-01 Notes and clarifications on aspects of the 3rd Edition Guidelines on Landscape and Visual Impact Assessment (GLVIA3)

[70] UK Government (1979) Ancient Monuments and Archaeological Areas Act 1979 [Online] Available at: https://www.legislation.gov.uk/ukpga/1979/46 (Accessed: November 2024)

[71] UK Government (1990) Planning (Listed Buildings and Conservation Areas) Act 1990 [Online] Available at: https://www.legislation.gov.uk/ukpga/1990/9/contents (Accessed: November 2024)

[72] UK Government (2019) Guidance: Historic Environment [Online] Available at : https://www.gov.uk/guidance/conserving-and-enhancing-the-historic-environment (Accessed: August 2024)

[73] UK Government (2019) Guidance: Countryside hedgerow protection: removing hedgerows [Online] Available at: https://www.gov.uk/guidance/countryside-hedgerows-regulation-and-management (Accessed: November 2024)

[74] English Heritage (2008) Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment [Online] Available at: https://historicengland.org.uk/images-books/publications/conservation-principles-sustainable-management-historic-environment/conservationprinciplespoliciesandguidanceapril08web/ (Accessed: November 2024)

[75] Historic England (2015) Historic Environment Good Practice Advice in Planning Note 2: Managing Significance in Decision-Taking in the Historic Environment [Online] Available at: https://historicengland.org.uk/images-books/publications/gpa2-managing-significance-in-decision-taking/gpa2/ (Accessed: November 2024)

[76] Historic England (2016) Preserving Archaeological Remains Decision-taking for Sites under Development [Online] Available at: https://historicengland.org.uk/images-books/publications/preserving-archaeological-remains/heag100a-preserving-archaeological-remains/ (Accessed: November 2024)

[77] Historic England (revised 2017) Historic Environment Good Practice Advice in Planning Note 3: The Setting of Heritage Assets [Online] (Accessed: November 2024)

[78] Historic England (2019) Statements of Heritage Significance: Analysing Significance in Heritage Assets. Historic England Advice Note 12 [Online] (Accessed: November 2024)

[79] Chartered Institute for Archaeologists (2020). Standard and guidance for historic environment desk-based assessment. [Online] (Accessed: November 2024)

[80] Chartered Institute for Archaeologists (2020) Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment [Online] Available at: https://www.archaeologists.net/sites/default/files/CIfAS%26GCommissioning_2.pdf (Accessed: November 2024)

[81] Historic England (2021) Commercial Renewable Energy Development and the Historic Environment: Historic England Advice Note 15 [Online] Available at: https://historicengland.org.uk/images-books/publications/commercial-renewable-energy-development-historic-environment-advice-note-15/heag302-commercial-renewable-energy-development-historic-environment/ (Accessed: November 2024)

[82] IEMA (2021) Principles of Cultural Heritage Impact Assessment in the UK [Online] Available at: https://files.clickdimensions.com/iemanet-ay0iq/files/j30361_iema_principlesofchia_v8.pdf?1626095514392 (Accessed: November 2024)

[83] Historic England (2024) *Search the List* [Online] Available at: https://historicengland.org.uk/listing/the-list/ (Accessed November: 2024)

[84] Sheffield City Council (2024) *Historic Environment Record* [Online] Available at: https://www.sheffield.gov.uk/planning-development/south-yorkshire-archaeology-service/sites-and-monuments-record (Accessed: June 2024)

[85] Derbyshire County Council (2024) *Derbyshire Historic Environment Record* [Online] Available at: https://her.derbyshire.gov.uk/ (Accessed: June 2024)

[86] British Geological Survey (2024) *Geoindex* [Online] Available at: https://www.bgs.ac.uk/map-viewers/geoindex-onshore/ (Accessed: November 2024)

[87] National Library of Scotland (2024) *Map Images* [Online] Available at: https://maps.nls.uk/ (Accessed: November 2024)

[88] Sheffield City Council (2024) *South Yorkshire Archaeology Service* [Online] https://www.sheffield.gov.uk/planning-development/south-yorkshire-archaeology-service Accessed November 2024

[89] Derbyshire County Council (2024) *Archaeology and planning* [Online] https://www.derbyshire.gov.uk/environment/conservation/archaeology/archaeology-and-planning.aspx Accessed November 2024

[90] South Yorkshire Historic Environment Research Framework (2024) *Palaeolithic to Bronze Age: Palaeolithic* [Online] Available at: https://researchframeworks.org/syrf/palaeolithic/ (Accessed: November 2024)

[91] Cresswell Crags (2024) *Cresswell Caves: The Caves* [Online] Available at: https://www.creswell-crags.org.uk/explore/the-caves?gad_source=1&gclid=EAIaIQobChMI8YHImrz8iQMVDJJQBh10oSi1EAAYASACEgLBC_D_BwE (Accessed: November 2024)

[92] Cresswell Crags (2024) *Cresswell Caves: Musuems and Exhibitions* [Online] Available at: https://www.creswell-crags.org.uk/explore/museum-and-exhibitions (Accessed: November 2024)

[93] South Yorkshire Historic Environment Research Framework (2024) *Palaeolithic to Bronze Age: Neolithic and Bronze Age* [Online] https://researchframeworks.org/syrf/neolithic-bronze-age/#section-2 Accessed November 2024

[94] South Yorkshire Historic Environment Research Framework (2024) *Palaeolithic to Bronze Age: Neolithic and Bronze Age* [Online] https://researchframeworks.org/syrf/neolithic-bronze-age/#section-2 Accessed November 2024

[95] South Yorkshire Historic Environment Research Framework (2024) *Iron Age and Roman: Iron Age and Romano-British* [Online] Available at: https://researchframeworks.org/syrf/iron-age-and-romano-british/#section-7 (Accessed: November 2024)

[96] South Yorkshire Historic Environment Research Framework (2024) *Iron Age and Roman: Roman* [Online] Available at: https://researchframeworks.org/syrf/roman/ (Accessed: November 2024)

[97] Sheffield City Council (2006) *A short history of Sheffield* [Online] Available at: https://www.sheffield.gov.uk/sites/default/files/docs/libraries-and-archives/archives-and-local-studies/research/Short-History--PDF--428-KB-.pdf (Accessed: November 2024)

[98] South Yorkshire Historic Environment Research Framework (2024) *Iron Age and Roman: Roman* [Online] Available at: https://researchframeworks.org/syrf/roman/ (Accessed: November 2024)

[99] South Yorkshire Historic Environment Research Framework (2024) Iron Age and Roman: Roman [Online] Available at: https://researchframeworks.org/syrf/roman/ (Accessed: November 2024)

[100] South Yorkshire Historic Environment Research Framework (2024) Iron Age and Roman: Roman [Online] Available at: https://researchframeworks.org/syrf/roman/ (Accessed: November 2024)

[101] South Yorkshire Historic Environment Research Framework (2024) Iron Age and Roman: Roman [Online] Available at: https://researchframeworks.org/syrf/roman/ (Accessed: November 2024)

[102] National Library of Scotland (1956) *Ordnance Survey map of Roman Britain* [Online] Available at: https://maps.nls.uk/view/230556567 (Accessed: November 2024)

[103] Archaeology Data Service (2016) *The Rural Settlement of Roman Britain: an online resource* [Online] Available at: https://archaeologydataservice.ac.uk/archives/view/romangl/map.html (Accessed: November 2024)

[104] South Yorkshire Historic Environment Research Framework (2024) Medieval: Early Medieval and Later Medieval [Online] Available at: https://researchframeworks.org/syrf/early-medieval/ (Accessed: November 2024)

[105] South Yorkshire Historic Environment Research Framework (2024) Medieval: Early Medieval [Online] Available at: https://researchframeworks.org/syrf/early-medieval/ (Accessed: November 2024)

[106] Open Domesday (unknown date) *Map: England in 1086* [Online] Available at: https://opendomesday.org/map/ (Accessed: November 2024)

[107] Historic England (2024) *Castle Hills motte and bailey castle, Mexborough* [Online] Available at: https://historicengland.org.uk/listing/the-list/list-entry/1013650?section=official-list-entry (Accessed: November 2024)

[108] Open Domesday (unknown date) *Name: Roger of Bully* [Online] Available at: https://opendomesday.org/name/roger-of-bully/ (Accessed: November 2024)

[109] Historic England (2024) Castle Hill motte and bailey castle [Online] Available at: https://historicengland.org.uk/listing/the-list/list-entry/1012199?section=official-list-entry (Accessed: November 2024)

[110] Historic England (2024) Conisbrough Castle [Online] Available at: https://historicengland.org.uk/listing/the-list/list-entry/1010828?section=official-list-entry (Accessed: November 2024)

[111] English Heritage (2024) *Roche Abbey* [Online] Available at: https://www.english-heritage.org.uk/visit/places/roche-abbey/history/ (Accessed: November 2024)

[112] National Churches Trust (2024) *Beauchief Abbey* [Online] Available at: https://www.nationalchurchestrust.org/church/beauchief-abbey-beauchief (Accessed: November 2024)

[113] Historic England (2024) *Beauchief Abbey Premonstratensian monastery: inner precinct and three fishponds* [Online] Available at: https://historicengland.org.uk/listing/the-list/list-entry/1011390?section=official-list-entry (Accessed: November 2024)

[114] South Yorkshire Historic Environment Research Framework (2024) Medieval: Later Medieval [Online] Available at: https://researchframeworks.org/syrf/later-medieval/ (Accessed: November 2024)

[115] Historic England (1991) *Manor House moated site* [Online] Available at: https://historicengland.org.uk/listing/the-list/list-entry/1012202?section=official-list-entry (Accessed: November 2024)

[116] Open Domesday (unknown date) *Todwick* [Online] Available at: https://opendomesday.org/place/SK4984/todwick/ (Accessed: November 2024)

[117] Open Domesday (unknown date) *Name: Count Robert of Mortain* [Online] Available at: *https://opendomesday.org/name/count-robert-of-mortain/ (*Accessed: November 2024)

[118] Berkhamstead Castle (2024) *Robert, Count of Mortain* [Online] Available at: *https://www.berkhamstedcastle.org.uk/biographies/robert-count-of-mortain/* (Accessed: November 2024)

[119] South Yorkshire Historic Environment Research Framework (2024) *Medieval: Later Medieval* [Online] Available at: https://researchframeworks.org/syrf/later-medieval/ (Accessed: November 2024)

[120] South Yorkshire Historic Environment Research Framework (2024) *Post – Medieval: Post – Medieval and Industrial* [Online] Available at: https://researchframeworks.org/syrf/post-medieval/#section-3 (Accessed: November 2024)

[121] UK Parliament (2024) *Enclosing the Land* [Online] Available at: https://www.parliament.uk/about/living-heritage/transformingsociety/towncountry/landscape/overview/enclosingland/ (Accessed: November 2024)

[122] Sheffield City Council (2006) A short history of Sheffield [Online] Available at: https://www.sheffield.gov.uk/sites/default/files/docs/libraries-and-archives/archives-and-local-studies/research/Short-History--PDF--428-KB-.pdf (Accessed: November 2024)

[123] South Yorkshire Historic Environment Research Framework (2024) Post- Medieval and Industrial: Industrial [Online] Available at: https://researchframeworks.org/syrf/industrial/ (Accessed: November 2024)

[124] National Library of Scotland (2024) *Map Images* [Online] Available at: https://maps.nls.uk/ (Accessed: November 2024)

[125] Historic England (revised 2017) Historic Environment Good Practice Advice in Planning Note 3: The Setting of Heritage Assets [Online] Available at: https://historicengland.org.uk/images-books/publications/gpa3-setting-of-heritage-assets/heag180-gpa3-setting-heritage-assets/ (Accessed: November 2024)

[126] Historic England (2015) Historic Environment Good Practice Advice in Planning Note 2: Managing Significance in Decision-Taking in the Historic Environment [Online] Available at: https://historicengland.org.uk/images-books/publications/gpa2-managing-significance-in-decision-taking/gpa2/ (Accessed: November 2024)

[127] Historic England (2019) Statements of Heritage Significance: Analysing Significance in Heritage Assets. Historic England Advice Note 12 [Online] Available at: https://historicengland.org.uk/images-books/publications/statements-heritage-significance-advice-note-12/ (Accessed: November 2024)

[128] Historic England (2015) Historic Environment Good Practice Advice in Planning Note 2: Managing Significance in Decision-Taking in the Historic Environment [Online] Available at: https://historicengland.org.uk/images-books/publications/gpa2-managing-significance-in-decision-taking/gpa2/ (Accessed: November 2024)

[129] Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 Available at https://www.legislation.gov.uk/uksi/2017/407/part/1/made

[130] UK Government (1990) The Environmental Protection Act 1990. Available online at: https://www.legislation.gov.uk/ukpga/1990/43/contents.

[131] European Environment Agency. Groundwater Directive (GWD) 2006/118/EC. Available online at: https://www.eea.europa.eu/policy-documents/groundwater-directive-gwd-2006-118-ec

[132] UK Government (1991). The Water Resources Act 1991. [Online] Available at: https://www.legislation.gov.uk/ukpga/1991/57/contents

[133] UK Government (2014). The Water Act 2014. [Online] Available at: https://www.legislation.gov.uk/ukpga/2014/21/contents/enacted

[134] Environment Agency (2023) Land Contamination Risk Management. Available online: https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm

[135] https://www.gov.uk/guidance/land-affected-by-contamination

[136] https://www.gov.uk/guidance/land-stability

[137] https://www.gov.uk/guidance/minerals

[138] A New Perspective on Land and Soil in Environmental Impact Assessment, Institute of Environmental Management & Assessment (IEMA) Guide, February 2022

[139] https://www.rotherham.gov.uk/downloads/file/2425/spd11-natural-environment-june-2021

[140] https://www.rotherham.gov.uk/downloads/file/544/yorkshire-humberside-pollution-advisory-guidance-document-april-2019-

[141] https://www.doncaster.gov.uk/services/planning/local-plan

[142] British Geological Survey (2023). GeoIndex Onshore. Available online: https://mapapps2.bgs.ac.uk/geoindex/home.html

[143] https://maps.rotherham.gov.uk/mapping/Map.aspx?MapName=LocalPlan

[144] https://maps.doncaster.gov.uk/portal/apps/webappviewer/

[145] Natural England (2010). Agricultural Land Classification Map. Available online: https://publications.naturalengland.org.uk/publication/144017

[146] UKradon - UK maps of radon

[147] Agricultural Land Classification Yorkshire and The Humber - ALC003

[148] European Parliament (2007) Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks. Accessed: November 2024.

[149] UK Government (2009) The Flood Risk Regulations 2009 (revoked). Available at: https://www.legislation.gov.uk/uksi/2009/3042/contents. Accessed: November 2024.

[150] UK Government (2023) The Environmental Targets (Water) (England) Regulations 2023 (SI 2023/93). Available at: https://www.legislation.gov.uk/uksi/2023/93/contents/made. Accessed: November 2024.

[151] UK Government (2010) Flood and Water Management Act 2010. Available at: https://www.legislation.gov.uk/ukpga/2010/29/contents. Accessed November 2024.

[152] UK Government (2003) Water Act. Available at: https://www.legislation.gov.uk/ukpga/2003/37/contents. Accessed: November 2024.

[153] UK Government (2013) The Bathing Water Regulations 2013. Available at: https://www.legislation.gov.uk/uksi/2013/1675/contents/made . Accessed: November 2024.

[154] UK Government (1991) The Land Drainage Act 1991. Available at: https://www.legislation.gov.uk/ukpga/1991/59/contents Accessed: November 2024.

[155] HMSO (2015) The Environmental Damage (Prevention and Remediation) (England) Regulations 2015. Available at: https://www.legislation.gov.uk/uksi/2015/810/pdfs/uksi_20150810_en.pdf. Accessed November 2024.

[156] European Parliament (2017) The Water Supply (Water Quality) Regulations 2016. Available at: https://www.legislation.gov.uk/uksi/2016/614/contents/made . Accessed: November 2024.

[157] UK Government (2018) The Private Water Supplies (England) (Amendment) Regulations 2018. Available at: http://www.legislation.gov.uk/uksi/2016/1154/pdfs/uksi_20161154_en.pdfwww.legislation.gov.uk/uksi/2018/707/contents/made . Accessed: November 2024.

[158] UK Government (2016) The Environmental Permitting (England and Wales) Regulations 2016. Available at: https://www.legislation.gov.uk/uksi/2016/1154/contents/made . Accessed: November 2024.

[159] HMSO (2009) The Groundwater (England and Wales) Regulations 2009. Available at: https://www.legislation.gov.uk/ukdsi/2009/9780111480816/pdfs/ukdsi_9780111480816_en.pdf . Accessed: November 2024.

[160] HMSO (2009) The Flood Risk (England and Wales) Regulations 2009. Available online at: https://w Ministry of Housing, Communities & Local Government (2023) National Planning Policy Framework. Available at: https://www.gov.uk/government/publications/national-planning-policy-framework--2ww.legislation.gov.uk/uksi/2009/3042/pdfs/uksi_20093042_en.pdf . Accessed: November 2024.

[161] CIRIA (2001). Control of water pollution from construction sites. Guidance for consultants and contractors (C532). Accessed: November 2024.

[162] CIRIA (2004) Development and flood risk – guidance for the construction industry (C624D). Accessed: November 2024.

[163] The British Standards Institute (BSI) (2009) BS 6031:2009 Code of Practice for Earthworks. Accessed: November 2024.

[164] CIRIA (2015) The SuDS Manual (C753). Accessed: November 2024.

[165] CIRIA (2015) C741 Environmental good practice on site guide. 4th edition. Accessed: November 2024.

[166] Department for Communities and Local Government (2024) Planning practice guidance: flood risk and coastal change. Available at: https://www.gov.uk/government/collections/planning-practice-guidance . Accessed: November 2024.

[167] National Highways (2020) Design Manual for Roads and Bridges (DMRB) LA 113 – Road drainage and the water environment, formerly HD45/09, Revision 1. Accessed: November 2024

[168] DEFRA and EA (2024) Pollution prevention for businesses. Available at: https://www.gov.uk/guidance/pollution-prevention-for-businesses. Accessed: November 2024.

[169] Environment Agency (2022). National Flood and Coastal Erosion Risk Management Strategy for England. Available at: https://www.gov.uk/government/publications/national-flood-and-coastal-erosion-risk-management-strategy-for-england--2. Accessed: November 2024.

[170] Environment Agency (2022) Peak River flow climate change allowances by management catchment. Available at: https://www.gov.uk/government/publications/peak-river-flow-climate-change-allowances-by-management-catchment . Accessed: November 2024.

[171] Environment Agency (2022) Peak rainfall climate change allowances by management catchment. Available at: https://www.gov.uk/government/publications/peak-rainfall-climate-change-allowances-by-management-catchment . Accessed: November 2024.

[172] EA and DEFRA (2024) Discharges to surface water and groundwater: environmental permits. Available at: https://www.gov.uk/guidance/discharges-to-surface-water-and-groundwater-environmental-permits . Accessed: November 2024.

[173] Environment Agency (2023). Apply for a water abstraction or impounding licence. Available at: https://www.gov.uk/guidance/water-management-apply-for-a-water-abstraction-or-impoundment-licence . Accessed: November 2024.

[174] JBA Consulting (2015) 2015s2340 Doncaster MBC Level 1 Strategic Flood Risk Assessment. Accessed: November 2024.

[175] Barnsley MBC, Doncaster MBC, Rotherham MBC and Sheffield City Council (2015) South Yorkshire Interim Local Guidance for Sustainable Drainage Systems. Accessed: November 2024.

[176] Rotherham MBC (2022) Local Flood Risk Management Strategy. Available at: https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.rotherham.gov.uk%2Fdownloads%2Ffile%2F1078%2Frotherham-local-flood-risk-management-strategy&wdOrigin=BROWSELINK. Accessed: November 2024.

[177] Jacobs (2008) Rotherham MBC Strategic Flood Risk Assessment Level 1. Available at: https://www.rotherham.gov.uk/downloads/file/2250/strategic-flood-risk-assessment-2008. Accessed: November 2024.

[178] Rotherham MBC (2011) Rotherham Metropolitan Borough Council Preliminary Flood Risk Assessment Report. Available at: https://moderngov.rotherham.gov.uk/documents/s43701/PFRA%20Draft%20Report%20app%20A.pdf. Accessed: November 2024.

[179] Rotherham MBC (2017) Preliminary flood risk assessment: Rotherham Metropolitan Borough Council. Available at: https://assets.publishing.service.gov.uk/media/5acb8615e5274a7f20e71347/PFRA_Rotherham_Metropolitan_Borough_Council_2017.pdf. Accessed: November 2024.

[180] Doncaster MBC (2011) Preliminary Flood Risk Assessment. Available at: https://www.doncaster.gov.uk/Documents/DocumentView/Stream/Media/Default/TransportStreetsParking/Documents/Preliminary%20Flood%20Risk%20Assessment.pdf. Accessed: November 2024.

[181] Doncaster MBC (2017) Preliminary flood risk assessment: Doncaster Metropolitan Borough Council. Available at: https://assets.publishing.service.gov.uk/media/5acb8578ed915d5a9323b540/PFRA_Doncaster_Metropolitan_Borough_Council_2017.pdf. Accessed: November 2024.

[182] British Geological Survey (2024) GeoIndex Onshore Map. Accessed: November 2024.

[183] British Geological Survey (2024) Groundwater Flooding. Accessed: November 2024.

[184] Environment Agency (2024) Catchment Data Explorer. Available at: https://environment.data.gov.uk/catchment-planning/ . Accessed: November 2024

[185] Environment Agency (2024). Flood Map for Planning. Available at: https://flood-map-for-planning.service.gov.uk/?_sm_au_=iHV72VRVTQ8qf67QM2L7tKs07RsKp . Accessed: November 2024

[186] Environment Agency (2024) Long Term Flood Risk Map. Available at: https://www.gov.uk/check-long-term-flood-risk . Accessed: November 2024.

[187] Environment Agency (2024) Recorded Flood Outlines. Available at: https://www.data.gov.uk/dataset/16e32c53-35a6-4d54-a111-ca09031eaaaf/recorded-flood-outlines. Accessed: November 2024.

[188] Environment Agency (2024) Historic Flood Map. Available at: https://www.data.gov.uk/dataset/76292bec-7d8b-43e8-9c98-02734fd89c81/historic-flood-map . Accessed: November 2024

[189] National River Flow Archive (2024) Data Search. Accessed: November 2024.

[190] Environment Agency (2024) AIMS Spatial Flood Defences. Available at: https://www.data.gov.uk/dataset/cc76738e-fc17-49f9-a216-977c61858dda/aims-spatial-flood-defences-inc-standardised-attributes#:~:text=The%20Environment%20Agency%27s%20(EA)%20Spatial,buildings%20or%20parts%20of%20buildings . Accessed: November 2024.

[191] Environment Agency (2024) Live Flood map. Available at: https://check-for-flooding.service.gov.uk/river-and-sea-levels?v=map-live&lyr=mv,ri,ti,gr,rf&ext=-2.723129,53.207923,0.915703,54.473373. Accessed: November 2024.

[192] Ministry of Housing, Communities and Local Government (2022). Available at: https://www.gov.uk/guidance/flood-risk-and-coastal-change#Table-2-Flood-Risk-Vulnerability-Classification . Accessed: November 2024.

[193] Environment Agency (2022). Flood risk assessments: climate change allowances. Available at: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances . Accessed: November 2024.

[194] IEMA (2022) Institute of Environmental Management and Assessment (IEMA) Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance. [Online] Available at: 2022_iema_greenhouse_gas_guidance_eia.pdf. Accessed: November 2024

[195] IEMA (2020) Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation. [Online] Available at: IEMA - IEMA EIA Guide to: Climate Change Resilience and Adaptation (2020). Accessed: February 2025

[196] United Nations (1992) United Nations Framework Convention on Climate Change. [Online] Available at: UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE Accessed: February 2025

[197] Montreal Protocol on Substances That Deplete the Ozone Layer (1987). Treaty volume 1522. Number 26369. United Nations Treaty Series. [Online] Available at: https://treaties.un.org/doc/Publication/UNTS/Volume%201522/volume-1522-I-26369-English.pdf

[198] United Nations (2015) Paris Agreement. [Online] Available at: ADOPTION OF THE PARIS AGREEMENT - Paris Agreement text English. Accessed February 2025.

[199] Secretary of State for Energy Security and Net Zero (2025) United Kingdom of Great Britain and Northern Ireland's 2035 Nationally Determined Contribution. [Online] Available at: United Kingdom of Great Britain and Northern Ireland's 2035 Nationally Determined Contribution (NDC)

[200] HMSO (2008) Climate Change Act 2008. [Online] Available at: https://www.legislation.gov.uk/ukpga/2008/27/pdfs/ukpga_20080027_en.pdf. Accessed: February 2025

[201] HMSO (2019) The Climate Change Act 2008 (2050 Target Amendment) Order 2019. Available at: The Climate Change Act 2008 (2050 Target Amendment) Order 2019. Accessed: January 2025

[202] HMSO (2009) The Carbon Budgets Order 2009. [Online] Available at: https://www.legislation.gov.uk/uksi/2009/1259/contents/made . Accessed: February 2025

[203] Ministry of Housing, Communities & Local Government (2019). National Planning Practice Guidance: Climate Change. [Online] Available at: Climate change - GOV.UK Accessed: November 2024

[204] Institute of Environmental Management & Assessment (IEMA) Guide: Assessing Greenhouse Gas Emissions and Evaluating their Significance 2022.

[205] Planning guidance – Rotherham Metropolitan Borough Council

[206] Supplementary Planning Documents and Interim Planning Guidance - City of Doncaster Council

[207] Tackling Climate Change – Rotherham Metropolitan Borough Council

[208] Climate and Environment - Team Doncaster

[209] World Resources Institute Water Risk Atlas. Accessed February 2025

[210] WBCSD, WRI. The Greenhouse Gas Protocol. [Online] Available at: ghg-protocol-revised.pdf (ghgprotocol.org). Accessed: February 2025

[211] Department for Energy Security and Net Zero (2024) Greenhouse gas reporting: conversion factors 2024. Available at: Greenhouse gas reporting: conversion factors 2024 - GOV.UK (www.gov.uk). Accessed: January 2025

[212] Resilience defined as "a measure of its ability to respond to changes it experiences. If a receptor or a project has good climate change resilience, it is able to respond to the changes in climate in a way that ensures it retains much of its original function and form", M Pooley et al., 2020, 'Environmental Impact Assessment Guide to: Climate Change Resilience & Adaptation', *IEMA*, *Glossary,* [Online] Available at IEMA-EIA-Climate-Change-Resilience-June-2020-2.pdf. Accessed: February 2025

[213] UK Government (2010). '*The Air Quality Standards Regulations 2010 Statutory Instrument 2008/301'*. [Online] Available at: https://www.legislation.gov.uk/uksi/2010/1001/schedule/2/made

[214] DEFRA (July 2007), '*The Air Quality Strategy for England, Scotland, Wales and Northern Island (Volume 1)'.* [Online] Available at: ://assets.publishing.service.gov.uk/media/5a758459ed915d731495a940/pb12654-air-quality-strategy-vol1-070712.pdf

[215] Defra (2022). Local Air Quality Management: Technical Guidance TG22 (August 2022) [Online] Available at: https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf. Accessed: November 2024

[216] Institute of Air Quality Management (2024). Guidance on the assessment of dust from demolition and construction. Version 2.2. [Online] Available at: https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf. Accessed: November 2024

[217] Institute of Air Quality Management (2017). Land-Use Planning & Development Control: Planning for Air Quality. [Online] Available at: https://iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf. Accessed: November 2024

[218] Sum of the differences between hourly ozone concentration and 40 parts per billion (ppb) for each hour when the concentration exceeds 40 ppb during a relevant growing season, e.g. for forest and crops

[219] Institute of Air Quality Management (2024). Guidance on the assessment of dust from demolition and construction. Version 2.2. [Online] Available at: https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf Accessed: November 2024

[220] DEFRA (2024) *Interactive Monitoring Networks Map*. [Online] Available at: https://uk-air.defra.gov.uk/interactive-map. Accessed: November 2024

[221] DEFRA (2024) Ambient Air Quality. [Online] Available at: https://uk-air.defra.gov.uk/. Accessed: November 2024

[222] DEFRA (2022) AQMA Map. [Online] Available at: https://uk-air.defra.gov.uk/aqma/maps/. Accessed: November 2024

[223] Rotherham Metropolitan Borough Council 2023. 2023 Air Quality Annual Status Report (ASR). [Online] Available at: https://www.rotherham.gov.uk/downloads/file/3411/2023-air-quality-annual-status-report Accessed: November 2024

[224] IAQM, 2024. Guidance on the assessment of dust from demolition and construction. [Online] Available at: Construction-Dust-Guidance-Jan-2024.pdf (iaqm.co.uk) Accessed: November 2024.

[225] DEFRA (2024). Background Mapping data for local authorities – 2021 [Online] Available at: https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2021. Accessed: November 2024

[226] Rotherham Metropolitan Borough Council 2023. 2023 Air Quality Annual Status Report (ASR). [Online] Available at: https://www.rotherham.gov.uk/downloads/file/3411/2023-air-quality-annual-status-report. Accessed: November 2024

[227] Institute of Air Quality Management (2024). Guidance on the assessment of dust from demolition and construction. Version 2.2. [Online] Available at: https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf Accessed: November 2024

[228] IAQM (2017) Land-Use Planning & Development Control: Planning For Air Quality. [Online] Available at: https://iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf. Accessed: November 2024

[229] Institute of Air Quality Management (2017). Planning for Air Quality. [Online] Available at: https://iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf Accessed: November 2024

[230] Institute of Air Quality Management (2024). Guidance on the assessment of dust from demolition and construction. Version 2.2. [Online] Available at: https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf. Accessed: November 2024

[231] Institute of Air Quality Management (2017). Planning for Air Quality. [Online] Available at: https://iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf. Accessed: November 2024

[232] Rotherham Metropolitan Borough Council Transport Strategy. [Online] Available at: Rotherham Transport Strategy – Rotherham Metropolitan Borough Council (Accessed on: 22/11/2024)

[233] Institute of Environmental Management and Assessment (2023) *Guidelines for the Environmental Assessment of Road Traffic and Movement.* [Online] Available at: https://www.thenbs.com/PublicationIndex/documents/details?Pub=IEA&DocID=257892 (Accessed: 22/11/2024)

[234] Standard for Highway, Design Manual for Roads and Bridges (DMRB). [Online] Available at: https://www.standardsforhighways.co.uk/dmrb. (Accessed: 22/11/2024)

[235] Department for Transport (2022). Strategic Road Network and the Delivery of Sustainable Development. [Online] Available at: https://www.gov.uk/government/publications/strategic-road-network-and-the-delivery-of-sustainable-development. (Accessed: 22/11/2024)

[236] Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2014). Travel Plans, Transport Assessments and Statements. Available Online at: https://www.gov.uk/guidance/travel-plans-transport-assessments-and-statements. (Accessed: 21/11/2024)

[237] UK Government, National Highways Traffic Flow Data. Available Online at: https://webtris.highwaysengland.co.uk/ (Accessed 22/11/2024)

[238] City of Doncaster Council Public Rights of Way Map. Available Online at: https://maps.doncaster.gov.uk/portal/apps/webappviewer/index.html?id=ce1079b14e61466bb6e3a6fcd2a6a1e1. (Accessed 22/11/2024)

[239] Rotherham Metropolitan Borough Council Public Rights of Way Map. Available online at: Public rights of way – Rotherham Metropolitan Borough Council (Accessed on: 22/11/2024)

[240] Legislation.gov.uk. Control of Pollution Act 1974. Legislation.gov.uk. [Online] [Cited: 26 November 2024.] https://www.legislation.gov.uk/ukpga/1974/40

[241] Department for Environment, Food & and Rural Affairs. *Noise Policy Statement for England (NPSE).* London : Crown Copyright 2010, 2010.

[242] Ministry of Housing, Communities and Local Government. Planning Practice Guidance on Noise. *GOV.UK.* [Online] 6 March 2014. [Cited: 26 November 2024.] https://www.gov.uk/guidance/noise--2.

[243] British Standards Institution. *BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites. Noise.* s.l. : BSI, 2014. ISBN 978 0 580 77749 3.

[244] *BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites. Vibration.* s.l. : BSI Standards Limited 2014, 2014. ISBN 978 0 580 77750 9.

[245] BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound. s.l. : BSI, 2019. ISBN 978 0 539 02069 4.

[246] BS 8233:2014 - Guidance on sound insulation and noise reduction for buildings. s.l. : BSI Standards Limited 2014, 2014. ISBN 978 0 580 74378 8.

[247] International Organization for Standardization. *ISO 9613-2 Acoustics - Attenuation of sound during propagation outdoors - Part 2: Engineering Method for the prediction of sound pressure levels outdoors.* Geneva : ISO 2024, 2024.

[248] Highways England. *Design Manual for Roads and Bridges, LA 111 Noise and Vibration Revision 2.* London : Highways England, 2020.

[249] Department of Transport Welsh Office HMSO. Calculation of Road Traffic Noise. London: Crown Copyright 1988, 1988. ISBN 0 11 550847 3.

[250] HM Treasury (2021), Build Back Better: Our Plan for Growth. Available online at: Build Back Better: our plan for growth - GOV.UK. Accessed: January 2025.

[251] South Yorkshire Mayoral Combined Authority (2022), Our Strategic Economic Plan. Available online at: SYMCA_SEP_v2_Jan22.pdf. Accessed: January 2025.

[252] Ministry of Housing, Communities and Local Government (2019), English Indices of Deprivation 2019: File 10, Local Authority District Summaries. Available online at: English indices of deprivation 2019 - GOV.UK. Accessed: January 2025.

[253] A lower layer super output area (LSOA) is a geographical unit comprising between 400 and 1,200 households, with a resident population of between 1,000 and 3,000 persons.

[254] Control of Pollution (Amendment) Act, 1989. Available at: https://www.legislation.gov.uk/ukpga/1989/14/contents. Accessed: January 2025.

[255] European Parliament and the Council (2008). Directive 2008/98/EC of the European Parliament and of the Council. [Online] Available at: Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (Text with EEA relevance) (legislation.gov.uk) Accessed: August 2024.

[256] The Waste (England and Wales) Regulations, 2011. Available at: https://www.legislation.gov.uk/uksi/2011/988/contents. Accessed: January 2025.

[257] The Waste (Enalnd and Wales) (Amendment) Regulations, 2014. Available at: https://www.legislation.gov.uk/uksi/2014/656/contents/made. Accessed: January 2025.

[258] The Controlled Waste (England and Wales) Regulations, 2012. Available at: https://www.legislation.gov.uk/uksi/2012/811/contents. Accessed: January 2025.

[259] The Hazardous waste (England and Wales) Regulations, 2005. Available at: https://www.legislation.gov.uk/uksi/2005/894/contents Accessed January 2025

[260] The Waste (England and Wales) Regulations 2011. Available at The Waste (England and Wales) Regulations 2011 Accessed January 2025

[261] National Planning Policy for Waste, 2014 Available at: https://www.gov.uk/government/publications/national-planning-policy-for-waste/national-planning-policy-for-waste. Accessed: January 2025.

[262] Waste Management Plant for England, 2021. Available at: https://www.gov.uk/government/publications/waste-management-plan-for-england-2021. Accessed: January 2025.

[263] Barnsley, Doncaster, and Rotherham Councils (2012) Barnsley, Doncaster and Rotherham Joint Waste Plan

[264] CLAIRE, Definition of Waste: Development Industry Code of Practice (DoW:CoP), version 2, 2011. Accessed: January 2025.

[265] IEMA (2020) IEMA guide to: Materials and Waste in Environmental Impact Assessment [online]

[266] UK Government (1996) The Special Waste Regulations 1996. [Online] Available at: https://www.legislation.gov.uk/uksi/1996/972/contents . Accessed: January 2025.

[267] Solar Photovoltaic and Building Development – Glint and Glare Guidance (2022) [Online] Available at: Glint and Glare Guidance (Fourth Edition) – Now Available! - Pager Power. Accessed: August 2024.

[268] Guidance for Renewable and low carbon energy (2015) [Online] Available at: Renewable and low carbon energy - GOV.UK (www.gov.uk). Accessed: August 2024.

[269] IEAM (2020), Major Accidents and Disasters in EIA: An IEMA Primer'. [Online] Available at: Major Accidents and Disasters in EIA: An IEMA Primer. Accessed: August 2024.

[270] Health and Safety at Work etc. Act 1974. [Online] Available at: Health and Safety at Work etc. Act 1974 (legislation.gov.uk). Accessed: August 2024.

[271] The Management of Health and Safety at Work Regulations 1999. [Online] Available at: The Management of Health and Safety at Work Regulations 1999 | Peoplesafe. Accessed: August 2024.

[272] The Workplace (Health, Safety and Welfare) Regulations 1992. [Online] Available at: The Workplace (Health, Safety and Welfare) Regulations 1992 (legislation.gov.uk). Accessed: August 2024.

[273] UK Government (2015) The Construction (Design and Management Regulations. Available at: The Construction (Design and Management) Regulations 2015

[274] Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment. [Online] Available at: Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment - GOV.UK. Accessed: November 2024.

[275] IEMA Impact Assessment Outlook Journal Volume 7: July 2020 Demystifying Cumulative Effect. [Online] Available at: IEMA - Institute of Environmental Management and Assessment. Accessed: November 2024.

[276] Nationally Significant Infrastructure Projects: Advice on the Preparation and Submission of Application Documents. Available at: Nationally Significant Infrastructure Projects: Advice on the Preparation and Submission of Application Documents - GOV.UK. Accessed: February 2025.

WHITESTONE SOLAR FARM

EIA Scoping Report

Volume 2, Appendices B-F

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Appendices

Appendix Number	Appendix Title
B	Solar Scoping Table
C	Commitments Register
D	Landscape and Visual Methodology
E	Cultural Heritage Gazetteer
F	Cumulative Developments

B. Solar Scoping Table

EIA Topic	Element of EIA Topic Scoped Out	Phase	Rationale for "Scoping Out"
Biodiversity and Nature conservation	Protected Species – White clawed crayfish, hazel dormouse	Construction, Operation and Decommissioning	Not known from the Site or Area of Influence. White clawed crayfish likely absent due to the presence of invasive crayfish species recorded extensively in desk study.
Biodiversity and Nature conservation	International statutory designated sites	Construction, Operation and Decommissioning	Not present in the Site or Area of Influence.
Biodiversity and Nature conservation	Protected Habitats – Ancient Woodland	Construction, Operation and Decommissioning	Not present within the Site and avoidance buffer to be implemented from the Proposed Development to nearest ancient woodland.
Landscape and Visual	Landscape subject to statutory landscape designation	Construction, Operation and Decommissioning	There are no National Parks or National Landscapes within the study area.
Landscape and Visual	Landscape subject to non-statutory/local landscape designation	Construction, Operation and Decommissioning	No local landscape designations apply within the study area.
Landscape and Visual	Local Landscape Character Areas outside of the study area	Construction, Operation and Decommissioning	Landscape Character Areas that lie at the periphery of the study area or have no intervisibility or interconnectivity with the Site have been scoped out as it is considered the Proposed Development would have no or limited indirect adverse effect upon their character.
Landscape and Visual	Visual receptors using Public Rights of Way within the Site Boundary during Construction and Decommissioning.	Construction and Decommissioning	PRoWs which cross the Site will be temporarily closed during the Construction phase and will therefore be scoped out of the LVIA at Construction and Decommissioning stages.

EIA Topic	Element of EIA Topic Scoped Out	Phase	Rationale for "Scoping Out"
Landscape and Visual	Visual receptors: users of Public Rights of Way or other outdoor locations within the study area where the ZTV demonstrates no visibility during Construction, Operation and Decommissioning.	Construction, Operation and Decommissioning	Where the ZTV has identified no visibility then no effect would occur or if there is potential visibility this would not be significant
Landscape and Visual	Visual receptors at public locations outside of the Study Area for the Site.	Construction, Operation and Decommissioning	Views may be possible beyond the Study Area. Where visible, it is considered that, the Proposed Development would not be readily perceptible or is unlikely to result in significant adverse visual effects given consideration of the distance, intervening screening and context of existing views.
Landscape and Visual	Visual receptors: Workers in nearby buildings and outdoor locations within the Study Area	Construction, Operation and Decommissioning	Workers are unlikely to be focused upon views and any adverse effects upon their views would not be significant.
Landscape and Visual	Cumulative effects of similar developments without intervisibility or outside of the Study Area	Construction, Operation and Decommissioning	Where developments are outside the Study Area and / or have no intervisibility with the Proposed Development they would not result in significant cumulative effects so would be scoped out.
Landscape and Visual	Night-time effects	Construction, Operation and Decommissioning	Night-time effects are scoped out of the LVIA as any lighting during the Construction and Decommissioning phases would be minimal and temporary. During the Operational phase there will be no continuous lighting.
Landscape and Visual	Residential Visual Amenity Assessment for properties	Construction and Decommissioning	As the Proposed Development's design progresses it will be reviewed to consider residential properties in proximity to the Proposed Development. If it is likely that visual change would materially affect residential

EIA Topic	Element of EIA Topic Scoped Out	Phase	Rationale for "Scoping Out"
	within 250 m of the Proposed Development.		amenity then a separate RVAA would be undertaken. Construction and decommissioning impacts would be for a short duration so are scoped out of the RVAA
Landscape and Visual	Residential Visual Amenity Assessment for properties beyond 250 m from the Proposed Development.	Construction, Operation and Decommissioning	The Proposed Development would comprise structures that are of relatively low height, and which are not located in proximity to residential properties. Views of the Proposed Development beyond 250 m would be unlikely to result in visual change that would materially affect residential amenity.
Cultural Heritage and Archaeology	Assessment of the direct effects to heritage assets outwith the Site Boundary, with the exception of designated assets such as bridges along transport routes.	Construction, Operation and Decommissioning	Direct Effects to heritage assets outwith the Site Boundary are considered unlikely.
Cultural Heritage and Archaeology	Indirect effects to the setting heritage assets within the cable route	Construction, Operation and Decommissioning	Significant Indirect Effects to setting are considered unlikely.
Ground Conditions and Land Quality	Damage to soils	Construction and Decommissioning	Measures detailed in the oCEMP and oEMMP will mitigate any potential impacts.
Ground Conditions and Land Quality	Effects of construction of cables on possible BMV land	Construction	Temporary effect mitigated by restoration of soils after installation
Ground Conditions and Land Quality	Effects of construction and operation within Mineral Safeguarding Areas	Construction and Operation	Measures to mitigate impacts to minerals will be implemented, for example reduction in the area and amount of resource impacted, or extraction in advance of development where there is the potential

EIA Topic	Element of EIA Topic Scoped Out	Phase	Rationale for "Scoping Out"
			for sterilisation, in consultation with the Minerals Planning Authority.
Ground Conditions and Land Quality	Effects of construction on contaminated soil and unstable ground conditions	Construction	Phase 1 and, where required, Phase 2 Contaminated Land and Coal Mining Reports will ensure no potential significant effects are likely, and the measures detailed in the oCEMP and oEMMP will mitigate any residual effects.
Ground Conditions and Land Quality	Effects of construction and decommissioning in terms of physical damage to soils	Construction and Decommissioning	Measures detailed in the oCEMP and oEMMP will mitigate any potential impacts.
Water Resources and Flood risk	Effects relating to soils, ground conditions and contaminated land	Construction, Operation and Decommissioning	Potential effects relating to soils, ground conditions and contaminated land are to be assessed within **Chapter 10, Ground Conditions and Land Quality** and are therefore scoped out of the Water Resources and Flood Risk chapter. Whilst there is potential for in-combination effects between water resources and flood risk and soils, ground conditions and contaminated land, acknowledging the nature of the Proposed Development and the existing land use as arable farmland, any in combination effect would not lead to a significant impact.
Water Resources and Flood risk	Effects relating to ecological receptors	Construction, Operation and Decommissioning	Potential effects relating to ecological receptors will be assessed within **Chapter 7, Biodiversity and Nature Conservation**. Potential effects on the water environment may have secondary effects on ecological receptors, however the assessment of the potential effects on the water environment will capture the potential effects and provide mitigation measures, where required, to prevent any significance impacts.

EIA Topic	Element of EIA Topic Scoped Out	Phase	Rationale for "Scoping Out"
Water Resources and Flood risk	Impacts on potable and wastewater supplies	Construction, Operation and Decommissioning	Throughout all phases of the Proposed Development, it is anticipated that potable and wastewater will be sourced and disposed of using temporary measures without the need to connect to existing potable and wastewater networks. As there will be no connection to existing networks there will be no additional demand placed on the supply and receiving capacity of potable and water networks within the study area, and potential effects relating to potable and wastewater supplies are scoped out.
Air Quality	Air Quality (emissions) during Operation from routine maintenance and operational traffic	Operation	There are no significant emissions sources from the Proposed Development during Operation as there are no combustion sources on-site as part of regular operation and maintenance, and the traffic associated with regular maintenance and operation of the Proposed Development is expected to be sufficiently small to scope out.
Traffic and Transport	Traffic and transport effects of Operational traffic	Operation	Due to the low numbers of vehicle movements anticipated, it is unlikely that the Operation of the Proposed Development will have any significant impact on the road network. The Proposed Development is not intended to attract visitors, and therefore it is not anticipated to generate other types of trips other than for regular maintenance. The effect of Operational traffic is therefore expected to be negligible and is scoped out of the traffic and transport ES chapter.
Traffic and Transport	Traffic and transport effects of Decommissioning traffic	Decommissioning	Traffic associated with decommissioning the Proposed Development will be the same or less than that experienced during Construction. It is not

EIA Topic	Element of EIA Topic Scoped Out	Phase	Rationale for "Scoping Out"
			possible to accurately forecast baseline environment including traffic flow levels 60 years into the future. For the above reasons, further work would be undertaken, and appropriate traffic management procedures agreed with the relevant authorities at the time of Decommissioning and therefore is scoped out of the traffic and transport ES chapter.
Noise and Vibration	Road traffic noise during Operation	Operation	No significant increase in road traffic noise during Operation is expected due to the low numbers of vehicles associated with operation and maintenance.
Noise and Vibration	Vibration generated from equipment during Operation.	Operation	No significant vibration generating equipment will be required during Operation.
Noise and Vibration	Operational noise from the cable corridor during operation.	Operation	Operational noise from the cable corridor is not expected.
Noise and Vibration	Noise and vibration effects during decommissioning.	Decommissioning	Noise and vibration effects during Decommissioning. are expected to be similar to those generated during the Construction phase, thus does not require separate assessment.
Noise and Vibration	Road traffic noise during decommissioning	Decommissioning	Noise increases from road traffic noise are expected to be similar to those generated during the Construction phase
Socio-Economics and Land Use	Wider socio-economic effects	Operation	These impacts are not expected to arise during the operational phase.
Socio-Economics and Land Use	Socio-cultural effects	Operation	These impacts are not expected to arise during the operational phase.
Socio-Economics and Land Use	Direct and indirect effects on tourism and recreational receptors	Operation	Impacts on tourism are expected to be negligible during Operation. Any requirement for worker

EIA Topic	Element of EIA Topic Scoped Out	Phase	Rationale for "Scoping Out"
			accommodation during the operational phase is expected to be very small.
Socio-Economics and Land Use	Effects on tourism accommodation	Operation	These impacts are not expected to arise during the operational phase.
Waste	Waste ES Chapter	Construction, Operation and Decommissioning	Given the mitigation measures to be implemented, and requirement to comply with relevant waste legislation, no significant waste impacts are expected during Construction, Operation or Decommissioning, therefore the need for a separate waste chapter has been scoped out of the EIA. The Application will include a Waste Management Plan instead.
Glint and Glare	Assessment of Glint and Glare impacts and effects on aviation and ground receptors during Construction and Decommissioning	Construction and Decommissioning	Potential for significant effects is only anticipated during operation, as this is the only period when the Proposed Development will have complete solar PV coverage.
Telecommunications and Utilities	Telecommunications and Utilities ES chapter	Construction, Operation and Decommissioning	The DCO will incorporate necessary protective provisions to safeguard any existing infrastructure which may be impacted by the Proposed Development, dismissing the requirement for a telecommunications and utilities chapter in the ES. Where design mitigation.
Major Accidents and Disasters	Major Accidents and Disasters ES chapter	Construction, Operation and Decommissioning	Significant effects in relation to the risk of Major Accidents and Disasters are not anticipated given the nature, scale and location of the Proposed Development. The risk of major accidents and disasters will be considered throughout the design process of the Proposed Development. Where design mitigation is unable to remove the potential interaction between a major accident or disaster and

EIA Topic	Element of EIA Topic Scoped Out	Phase	Rationale for "Scoping Out"
			a particular technical topic, the potential effects resulting from major accidents or disasters will be reported in the relevant topic chapter and assessments of the ES. Therefore, it has been determined that a standalone chapter on the topic of major accidents and/or disasters is not required in the ES.

C. Commitments Register

Commitment Reference	Commitment	Monitoring	Project Phase	Biodiversity	Landscape and Visual Impact	Cultural Heritage and Archaeology	Ground Conditions and Land Quality	Water Environment	Climate Change	Air Quality	Traffic and Transport	Noise and Vibration	Socio-Economics	Land Use and Agriculture	Human Health	Waste	Glint and Glare	Utilities	Major Accidents and Disasters
C01	The biodiversity gain objective is that the biodiversity value attributable to the development in question must exceed the pre-development value by at least 10%. This is expected to be mandatory for NSIP projects where the application is submitted from November 2025. The Proposed Development is committed to achieving this through habitat retention, enhancement and creation with consideration to local priority habitats, and opportunities will be sought to link delivery of Biodiversity Net Gain (BNG) to relevant local plans and strategies.		Construction and Operation																
C02	Standard construction and operational good practice will be adopted to safeguard habitats and species, including buffers from watercourses, woodland, and buffers for root protection zones. Good practice mitigation measures will be described in the ES and the means for securing them will be set out in relevant documents (e.g. Construction Environmental Management Plan).	A detailed Habitat Monitoring and Management Plan (HMMP) will be required; this would include details of the creation and ongoing monitoring and management of created habitats for BNG and compensation, alongside the enhancement of existing habitats.	Construction																
C03	Siting and layout of the solar arrays and associated structures to avoid important landscape features and elements such as existing trees and hedgerows and to provide suitable buffers between the panels and construction areas and woodland, trees, properties and PRoW. Consideration will also be given to the findings of the Glint and Glare Assessment, breaking up large areas of panels where feasible and considering the colour and tone of associated structures to minimise their visibility and scale in the landscape and views.		Operation																
	Any access tracks to utilise existing tracks wherever possible with new routes located to pass through existing gates and gaps in hedgerows where feasible.		Construction, Operation and Decommissioning																

Commitment Reference	Commitment	Monitoring	Project Phase	Biodiversity	Landscape and Visual Impact	Cultural Heritage and Archaeology	Ground Conditions and Land Quality	Water Environment	Climate Change	Air Quality	Traffic and Transport	Noise and Vibration	Socio-Economics	Land Use and Agriculture	Human Health	Waste	Glint and Glare	Utilities	Major Accidents and Disasters
	Development of a comprehensive outline Landscape Biodiversity Management Plan (oLBMP) for the Site, including landscape proposals for the solar array areas, landscape reinstatement proposals for the cable corridor, and details of required habitat management for landscape mitigation and ecological enhancements.		Operation																
	Landscape proposals, which would seek to deliver landscape and biodiversity enhancement, integrate and embed the Proposed Development within the existing landscape character, provide new green infrastructure that connects to the wider green infrastructure network, provide hedgerow and landscape reinstatement, and provide visual filtering and screening as appropriate.		Operation																
	No significant permanent night-time lighting to be proposed.		Operation																
C04	If avoidance is not proportionate or possible, and an indirect impact on the setting of the historic environment is predicted, then practical measures to reduce the impact will be developed, following specific guidance provided by relevant stakeholders.		Construction																
	Investigation and survey to develop a robust historic environment baseline considered for impact assessment.		Pre-Construction																
	Input to design process to maximise the avoidance of known features.		Pre-Construction																
	Develop written schemes of investigation for the construction phase (in consultation with South Yorkshire Archaeology Society (SYAS)) heritage officer) to record and report assets that cannot be avoided.		Construction																
	Develop procedures for construction to be implemented in the event of chance finds.		Construction																
C05	An Outline Construction Environmental Management Plan (oCEMP) will be developed to describe the mitigation of potential adverse environmental impacts during the construction phase i.e. specific measures to mitigate identified impacts, such as dust suppression techniques, noise barriers, and proper waste management, details of best practice measures to be used on-site, measures to minimize impacts on water resources and flood risk.	The establishment of a surface and groundwater monitoring program at locations on principal watercourses downstream of the Proposed Development and control points, which will be based on methodology and frequency agreed with the EA (if required).	Construction																

Commitment Reference	Commitment	Monitoring	Project Phase	Biodiversity	Landscape and Visual Impact	Cultural Heritage and Archaeology	Ground Conditions and Land Quality	Water Environment	Climate Change	Air Quality	Traffic and Transport	Noise and Vibration	Socio-Economics	Land Use and Agriculture	Human Health	Waste	Glint and Glare	Utilities	Major Accidents and Disasters
	A Pollution Response Plan will be drafted prior to the commencement of works on-site.		Pre-construction and Construction																
	The oCEMP will include a Site Waste Management Plan, describing how waste materials will be disposed of by the contractor(s) to appropriate recycling facilities or appropriately licensed landfills.		Construction and Decommissioning																
C06	An outline Decommissioning Environmental Management Plan (oDEMP) will be developed to describe the mitigation of potential adverse environmental impacts during the decommissioning phase.		Decommissioning																
C07	An Outline Excavated Materials Management Plan (oEMMP) will be developed to help ensure that excavated materials are managed in an environmentally responsible and compliant manner throughout the construction process.		Construction																
	Watercourse buffers will be implemented during construction with a 50 m buffer proposed for construction excavations and major construction works, excluding watercourse crossings where required; and 10 m buffer proposed for solar panel installation.		Construction																
C08	A proposed 10 m buffer for infrastructure around watercourses including EA designated Main Rivers. Any infrastructure located within 10 m of an EA designated Main River will require a permit from the EA; and any infrastructure which may impede the flow or quality conditions of Ordinary Watercourses will require consent from the Lead Local Flood Authority (LLFA). There will also be a proposed 5 m buffe for infrastructure from any surface water ponds identified during the desk based and field-based assessments		Construction, Operation and Decommissioning																
C09	A outline Surface Water Drainage Strategy (oSWDS) to be developed to confirm the change in surface water runoff between the baseline conditions and after construction of the Proposed Development. This will include measures to isolate and dispose of fire suppressant water from the Battery Energy Storage System (BESS) in line with consultee requirements, and it will set out the drainage approach to ensure there is no significance increase in surface water runoff from the Proposed Development in up to and including the 1 in 100-year (1%) scenario, including an appropriate allowance for climate change.		Operation																
C10	Flood Risk Assessment to be completed		Construction, Operation and Decommissioning																

Commitment Reference	Commitment	Monitoring	Project Phase	Biodiversity	Landscape and Visual Impact	Cultural Heritage and Archaeology	Ground Conditions and Land Quality	Water Environment	Climate Change	Air Quality	Traffic and Transport	Noise and Vibration	Socio-Economics	Land Use and Agriculture	Human Health	Waste	Glint and Glare	Utilities	Major Accidents and Disasters
C11	The climate resilience review will provide a description of how the Proposed Development will be designed to be more resilient to the climate change impacts identified during the review of the climate data generated by the Intergovernmental Panel on Climate Change's (IPCC) Coupled Model Intercomparison Project Phase 6 (CMIP6)72.		Pre-construction																
C12	It is expected and considered best practice to reduce the potential for impacts due to emissions of dust from construction activities in line with the IAQM Guidance document.	Impacts from construction activities will be assessed semi-quantitatively using the methodology described in the IAQM guidance. It is anticipated that all impacts will be mitigated to not significant through embedded mitigation.	Construction																
C13	The Traffic and Access ES chapter will provide details of standard mitigation where appropriate in the form of an Outline Construction Traffic Management Plan (oCTMP). Additional mitigation may be included should the assessment reveal criteria that are significant following the application of standard mitigation measures.		Construction																
C14	The construction contractor will use Best Practicable Means (BPM) as defined by the CoPA 1974 and EPA 1990, to minimise noise (including vibration) at neighbouring residential properties and other sensitive receptors. As part of BPM, mitigation measures will be applied following the guidance set out in Section 8 of BS 5228-1: Code of Practice on Noise Control.	Baseline noise monitoring will be undertaken to quantify existing noise levels at a representative selection of the closest receptors which will be used to assess the effects of the scheme. Monitoring will be carried out for a period of at least one week in accordance with BS 4142	Construction																
	Noise control measures such as choosing low noise versions of equipment, use of acoustic enclosures, noise barriers/bunding, siting equipment and positioning new buildings to provide		Operation																

Commitment Reference	Commitment	Monitoring	Project Phase	Biodiversity	Landscape and Visual Impact	Cultural Heritage and Archaeology	Ground Conditions and Land Quality	Water Environment	Climate Change	Air Quality	Traffic and Transport	Noise and Vibration	Socio-Economics	Land Use and Agriculture	Human Health	Waste	Glint and Glare	Utilities	Major Accidents and Disasters
	screening will be considered, where necessary and practicable, as the design proceeds.																		
C15	The requirement for material assets during the operational phase will be limited to maintenance and replacement components, as required. Operational wastes will be handled in accordance with relevant guidance and legislation, including the Special Waste Regulations, 1996		Operation																
	During decommissioning, the removal of any material assets and waste will be recycled or disposed of in accordance with good practice and market conditions at that time. If items can be recycled, this will be the first-choice option.		Decommissioning																
C16	Consultation with appropriate utilities and telecommunications providers including of water, gas, and electricity, is standard practice for development, and will identify existing infrastructure constraints.		Pre-Construction																
C17	The risk of major accidents and disasters will be considered throughout the design process of the Proposed Development. This will include siting the potentially hazardous equipment, such as the BESS and grid infrastructure, at a suitable distance from sensitive receptors.		Construction, Operation and Decommissioning																
	During all phases of the Proposed Development, measures will be implemented in accordance with health and safety legislation, regulations, and industry guidance to ensure that risks are suitably controlled and managed and minimise risks to human and environmental receptors.		Construction, Operation and Decommissioning																

D. Landscape and Visual Methodology

Methodology

1.1.1 Landscape and Visual Impact Assessment (LVIA) is a tool used to systematically identify and assess the nature and significance of the effects of a proposed development upon both the landscape and views and visual amenity. The purpose of the LVIA is to identify the level and nature of effect arising from a proposed development and if necessary, through an iterative design process, to inform changes to the development and evolution of mitigation strategies which minimise significant effects wherever possible.

1.1.2 The methodology for this LVIA is informed by the Guidelines for Landscape and Visual Impact Assessment (The Landscape Institute and Institute of Environmental Assessment, 3rd Edition, 2013), often referred to as 'the GLVIA' including LITGN-2024-01 as required. The LVIA aims to establish the following:

- A clear understanding of the development site and its context, in respect of the physical and perceived landscape and of views and visual amenity;
- An understanding of the proposed development in terms of how this would relate to the existing landscape and views;
- An identification of significant effects of the proposed development upon the landscape and upon views, throughout the life cycle of the development, including cumulative interactions with other developments;
- Those mitigation measures necessary to reduce or eliminate any potential adverse effect on the landscape or views arising because of the proposed development; and
- A conclusion as to the residual significant effects of the proposed development.

1.1.3 Professional judgement is a key part of the LVIA process at every stage of the assessment. This judgement must be exercised within an assessment framework that transparently sets out the steps in the assessment process which have led to the overall conclusions. This is emphasised in Box 3.1 (page 37) of the GLVIA, which advocates a structured approach that considers the sensitivity of the receptor and magnitude of the effect when determining if an effect is significant or not.

1.1.4 To ensure the transparency of the assessment and professional judgements made, the LVIA follows a standard approach and the key steps below:

- The establishment of the baseline conditions, through desktop study and field surveys, against which the effects of the proposed development will be assessed;
- The determination of the sensitivity of the receptor likely to be affected;
- The prediction of the nature of the effect likely to occur; and

- An assessment of whether a likely significant effect would occur upon any receptor, by considering the predicted magnitude of change together with the sensitivity of the receptor, considering any proposed mitigation measures.

1.1.5 Landscape and visual matters are closely related and interlinked subject areas but are separate issues and are dealt with as such throughout the LVIA. The methodologies for assessing both are outlined separately below.

Landscape Assessment

1.1.6 The assessment of Landscape considers the potential effects of the Proposed Development on the elements of the landscape. Landscape receptors which could be affected include:

- Individual landscape elements and features;
- Specific aesthetic and perceptual qualities of the landscape; and
- The character and key characteristics of the landscape within each area (landscape character areas or types).

Landscape Sensitivity

1.1.7 The nature of a landscape receptor likely to be affected, its sensitivity which is determining from considering two factors:

- Susceptibility to change; and
- Value.

1.1.8 These factors are considered together. Professional judgement determines the final judgement of sensitivity, due to the non-linear and complex relationship between susceptibility and value, a reasoned narrative is set out to justify the particular sensitivity assessed for each receptor and how the judgement has been made. This is described as a three-point scale (or intermediate levels if required) of Low, Medium, and High.

Susceptibility to Change

1.1.9 Susceptibility is defined in GLVIA3 (para 5.40) as:

"The ability of a defined landscape or visual receptors to accommodate the specific proposed development without undue negative consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies."

1.1.10 To understand susceptibility to change, the various characteristics/factors that make up a particular landscape must be identified and consideration given as to how these will be affected by the proposed development. Consideration is given to physical and perceptual factors which are considered together to derive an overall susceptibility to change. Factors influencing the susceptibility of a landscape to change resulting are set out below:

- Scale: A larger scale landscape (relative to the development proposed) will typically be less susceptible than a smaller scale landscape;

- Pattern/Complexity: The susceptibility of a receiving landscape to change will be influenced by the specific pattern of features and elements present and by the complexity of this pattern;
- Development/Human Influence: A landscape that includes obvious alterations to natural ground levels, contemporary development, or that is clearly functional/utilitarian in land use will typically be less susceptible than one where development is more traditional in style, or where natural influences and natural or long-established landforms are predominant;
- Connections with adjacent areas: A landscape which has a clear relationship with other surrounding landscapes, for example in relation to views in and out, will typically be more susceptible than one where such relationships are not present; and
- Visual Interruption: A landscape where views are frequently interrupted by screening features, for example vegetation cover or variations in landform, will typically be less susceptible than one where there are few / no screening features.

1.1.11 A particular landscape may have distinctive characteristics that are susceptible to change. As such, the overall susceptibility to change is allocated using professional judgement based upon consideration of the range of factors outlined above and the relative weight attached to these (which will vary from landscape to landscape). The assessment of susceptibility is expressed using a three-point verbal scale of high, medium, or low. Where appropriate, intermediate levels such as medium/high or low/medium are used to refine the assessment. The rationale in support of the assessment of susceptibility is set out for each receptor in the assessment, so that it is clear how each judgement has been made. Typical criteria are set out in **Table D.1** below.

Table D.1 Landscape Susceptibility

A landscape which would be unlikely to accommodate change without undue negative consequences. The scale or development would be uncharacteristic. Mitigation would be unlikely to reduce impacts	High
A landscape which would be reasonably able to accommodate change without major negative consequences. The scale or development would not be wholly uncharacteristic. Mitigation would be possible but may take time and not fully restore or enhance the baseline condition.	Medium
A landscape which would easily accommodate change with only minor negative consequences. The scale or development would be within character. Mitigation would readily be achievable and could enhance.	Low

Landscape Value

1.1.12 Landscape value is defined in the GLVIA3 glossary as:

"The relative value that is attached to different landscapes by society. A landscape may be valued by different stakeholders for a whole variety of different reasons."

1.1.13 Factors that influence value are

- Presence/absence of statutory landscape designations;
- Presence/absence of local landscape designations and associated policies;

- Landscape quality and condition;
- Scenic quality;
- Rarity of particular elements/features;
- Representativeness;
- Conservation interest;
- Recreation value;
- Perceptual aspects; and
- Cultural associations.

1.1.14 The assessment of value is determined on a similar basis to that for susceptibility of change above. **Table 2** indicates the typical factors used to determine value.

Table D.2 Landscape Value

Typical criteria	Rank
A landscape with important components or has distinctive character and or strong sense of identity. Typically, a Nationally designated landscape. May be undesignated but would have very limiting detracting features. Landscape features may be nationally rare but locally abundant. Landscape condition would be very good. Typically, would have a perceptual or cultural association and high recreational value.	High
A landscape with moderately important positive characteristics and a sense of identity. May contain parts of National designations/ local designations. May be undesignated but would have some detracting features. Landscape features are not typically rare. Landscape condition would be fair or good. May have some cultural associations and some recreational value.	Medium
A landscape of low importance, with weak character. Typically, wouldn't have a sense of place. Unlikely to be designated. Landscape condition likely to be fair or poor. May have some recreational value.	Low

Landscape Magnitude

1.1.15 The nature of the effect that is likely to occur, is the landscape magnitude to change is determined by the following four separate factors:

- Size or scale - the extent of existing elements that would be lost, the proportion of the total extent that this represents and the contribution of that element to the wider character;
- Geographical extent – the area over which the change would occur and whether the effects of the Proposed Development are experienced over a large or very localised area;
- Duration – the time over which the change would occur, using the following scale:
  - short term (0-5 years)
  - medium term (5-15 years)
  - long term (over 15 years)
- Reversibility - whether the change can be reversed, is partially reversible or permanent.

1.1.16 These four factors are then considered together to determine the overall magnitude of change for each landscape receptor, through professional judgement. The assessment of landscape magnitude of change is expressed using a four-point scale of large, medium, small, or negligible. If appropriate intermediate levels such as small to medium may be used. **Table D.3** below sets out typical criteria for the magnitude of change. However, there must be a reasoned narrative as is set out in GLIVA3 to justify the magnitude of change allocated to each receptor.

Table D.3 Landscape Magnitude of Change

Typical criteria	Rank
A substantial change in landscape characteristics and/or over extensive geographical area and/or which may result in an irreversible landscape impact.	Large
A moderate change in landscape characteristics and/or which may be over a large geographical area, and/or which may be reversible over a long duration of time.	Medium
A small change in landscape characteristics and/or which may be over a relatively localised geographical area, and/or which may be reversible over a short duration of time.	Small
A barely perceptible change in landscape characteristics and/or which is focused on a small geographical area, and/or which is almost or completely reversible.	Negligible

Visual Assessment

1.1.17 The visual assessment is the potential effects upon the people likely to be affected (the views experienced by people). As for landscape effects, the sensitivity of the receptor affected is identified, as is the magnitude of the change that may occur. These are then considered together to determine the level and significance of effect.

1.1.18 The key focus of the visual assessment is effects from a number of viewpoints, which reflect views available to different groups of people. The viewpoint itself is not the receptor, rather it is the people that would be experiencing the view. These people will generally have different responses to a change in the view depending on their primary occupation, the time of day or year and weather.

1.1.19 There are 3 types of viewpoints as set out in GLVIA3 which are:

- Representative Viewpoints (which represent the experience of different types of receptors nearby);
- Specific viewpoints (a particular view, e.g., a promoted view); and
- Illustrative viewpoints (which illustrate a particular effect or issue).

1.1.20 Private viewpoints, such as from specific residential properties are not typically included in the LVIA. It is often impractical to visit all affected properties and access to private land may not be granted. Representative or specific viewpoints from nearby publicly accessible locations can often give an impression of the likely effects from private land would be.

Visual Sensitivity

1.1.21 The nature of a visual receptor likely to be affected, its sensitivity is determined by considered two factors:

- Susceptibility to change; and
- Value.

1.1.22 These factors are considered together, in the same way as for landscape sensitivity. Again, professional judgement determines the final judgement of sensitivity, due to the non-linear and complex relationship between susceptibility and value, a reasoned narrative is set out to justify the particular sensitivity assessed for each receptor and how the judgement has been made. As for landscape this is described as a three-point scale (or intermediate levels if required) of Low, Medium, and High.

Visual Susceptibility to Change

1.1.23 Visual susceptibility to change is defined within GLVIA3 as

"6.32 mainly a function of:

The occupation of activity of people experiencing the view at particular locations:

The extent to which their attention or interest may therefore be focused on the views and visual amenity they experience at particular locations."

1.1.24 **TableD.4** below sets out typical criteria for visual susceptibility to change. It is important to note it only addresses the first bullet and part of the second bullet as defined in GLVIA3.

1.1.25 Therefore, the assessment of susceptibility needs to be adjusted depending on the location and the visual amenity people experience to meet the second part of bullet two.

1.1.26 As an example, the presence of existing detracting features in any given view may reduce the visual amenity of those experience the view. This may therefore reduce their susceptibility to certain types of change and ultimately their sensitivity.

1.1.27 The assessment of visual susceptibility is made on the same basis as landscape susceptibility. A three-point scale (with intermediate levels where appropriate) is used, supported by a reasoned narrative that explains the judgement made.

Table D.4 Visual Susceptibility

Typical criteria	Rank
Residents at home; People engaged in outdoor recreation, whose attention/interest is likely to be focused on the landscape or particular views, including from promoted public rights of way; Visitors to heritage assets or other attractions, where views of the surroundings are an important contributor to the experience; Communities where views contribute to the landscape setting enjoyed by residents; and Travellers on scenic routes.	High

Typical criteria	Rank
People engaged in outdoor recreation, or travelling along local public rights of way or local roads, which are not promoted but where there is an appreciation of the surrounding landscape relevant to the experience; and People working outdoors	Medium
People engaged in outdoor sport or recreation which does not involve or depend upon appreciation of views of the landscape; and People at their place of work whose attention may be focused on their work / activity and not their surroundings	Low

Visual Value

1.1.28 As set out in GLVIA3 paragraph 6.37 when considering value, this should take account 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 of facilities for their enjoyment and references to them in literature or art.

1.1.29 For this reason, while not specifically covered within GLVIA3, the number of people likely to be affected can influence the value of a particular view.

1.1.30 The assessment of value is made on the same basis as the assessment of landscape value, a 3-point scale, **Table D.5** below sets out the typical criteria for value of a view.

Table D.5 Visual Value

Typical criteria	Rank
A recognised view within, towards or across a designated landscape or heritage asset, or a locally important feature of key importance to defining or appreciating the local context e.g. a local landmark. Published or promoted views within guidebooks or sign boards. Views from public rights of way within the designated landscapes mentioned above. Views from private residences may be highly valued.	High
A view within, towards or across a locally important landscape or heritage feature, or important to the local context. Viewpoints may be promoted or contain signage locally. Views from private residences may be of medium value.	Medium
A view of little intrinsic merit in the local context, has many detracting features and does not add to the appreciation of the locality. Views may be from public rights of way. Views from private residences may be of low value.	Low

Visual Magnitude of Change

1.1.31 The nature of the effect that is likely to occur, is the visual magnitude to change is determined by the following four separate factors:

- Size or scale – the effect is determined by considering the following:

  - the scale of change in the view, in respect of the loss of or addition of features, and change in composition, including the proportion of the view occupied by the development.
  - The degree of contrast or integration of new features or other changes
  - The nature of the view, namely the relative amount of time it would be experienced for and whether the views would be full, partial or glimpsed.
- Geographical extent – the effect will vary from view to view and will reflect the following:
  - The angle of the view in relation to the main occupation of the receptor
  - The distance from the Proposed Development
  - The extent over which change in the view would be visible
- Duration – the effect for which the length of time it would be experienced, as follows:
  - short term (0-5 years)
  - medium term (5-15 years)
  - long term (over 15 years) or the change could not reasonably be considered temporary in nature
- Reversibility - whether the change can be reversed, is partially reversible or permanent.

1.1.32 These four factors are then considered together to determine the overall visual magnitude of change for each visual receptor, through professional judgement. The assessment of visual magnitude of change is expressed using a four-point scale of large, medium, small, or negligible. If appropriate intermediate levels such as small to medium may be used. **Table D.6 D.6** below sets out typical criteria for the visual magnitude of change. However, there must be a reasoned narrative as is set out in GLIVA3 to justify the particular magnitude of change allocated to each receptor.

Table D.6 Visual Magnitude of Change

Typical criteria	Rank
A change affecting a large proportion of a view, which may be seen across an extensive area or experienced from a long section of a route, and/or a longer-term effect, and/or contrasting with the existing view.	Large
A change affecting a moderate proportion of a view, which may be seen across a wider area or experienced from a section of a route, and/or a medium-term effect, and/or broadly compatible with the existing view.	Medium
A change affecting a smaller proportion of a view, which may be seen from a limited area or experienced from a short section of a route, and/or a shorter-term effect, and/or compatible with the existing view.	Small
A change which is barely perceptible in the view, and/or which is only glimpsed from a route.	Negligible

Level and Significance of Effect

1.1.33 The purpose of the Environmental Impact Assessment (EIA) and the LVIA is to determine the likely significant effects of the Proposed Development. Not all landscape and visual effects arising because of the Proposed Development will

be significant. Nor does a significant effect necessarily mean that such an effect is unacceptable to decision-makers. These are matters to be weighed in the planning balance alongside other factors. What is important is that the likely effects of the Proposed Development are assessed and described in order that the relevant determining authority can bring a balanced and well0informed judgement to bear as part of the decision-making process.

1.1.34 The State of Environmental Impact Assessment Practice in the UK (Institute for Environmental Management and Assessment 2011) identifies a range of different factors that should be considered when evaluating the significance of an effect, including:

- Knowledge and experience of significance from previous assessments;
- Details of the Proposed Development, such as construction and operational activities, and the nature of the effect associated with such activity;
- Details about the environmental sensitivity of the area that will be affected;
- Feedback from scoping and consultation; and
- The wider legal and policy context, which offers protection to the environment and community.

1.1.35 The level and significance of effect can only be defined in relation to the Proposed Development and its specific location. It is for each LVIA to determine how judgements about receptor sensitivity and the magnitude of change should be combined to derive the level of effect and to clearly explain how this assessment has been made through professional judgement, and if the level of effect is considered significant.

1.1.36 **Table D.7** below provides a guide as to how sensitivity and magnitude can be combined to identify the level of effect upon a receptor. The final assessment of the level of effect whether it is significant for decision makers if one of professional judgement.

1.1.37 Where magnitude of change is assessed as 'negligible', then effects are automatically considered not to be significant due to the minimal level of change from the baseline, which typically would not be readily perceptible.

1.1.38 The judgement of this LVIA as to being of significant is considered to be effects of Moderate and above. This is typically those having larger magnitudes of change on higher sensitivity receptors. This does not preclude a 'moderate' effect or lower being significant or greater than 'moderate' effect being significant. This judgement will depend on the specific circumstances being considered. For each receptor, a statement will confirm if the effect is significant or not.

1.1.39 It is important to note that effects may be either adverse (negative) or beneficial (positive) An effect can be significant and adverse, or significant and beneficial. If change occurs with no obvious deterioration of improvement, this can be said to be neutral.

Table D.7 Level of Effect

Magnitude of Change/ Landscape Sensitivity or Visual Sensitivity	Low	Medium	High
Large	Moderate effect	Major effect	Major effect
Medium	Minor effect	Moderate effect	Major effect

Magnitude of Change/ Landscape Sensitivity or Visual Sensitivity	Low	Medium	High
Small	Minor effect	Minor effect	Moderate effect
Negligible	Negligible effect	Negligible effect	Negligible effect

E. Gazetteers

E.1 Designated Assets within 1 km

Designation	Designation Reference	Name	Grade	Buffer	Period	Easting	Northing
Registered Parks and Gardens	1001365	Barlborough Hall	n/a	1 km	Post-Medieval	447950	378205
Scheduled Monument	1004818	Canklow Hill earthworks	n/a	1 km	Iron -Age to Roman	443395	390697
Scheduled Monument	1012201	Blue Man's Bower moated site, Whiston	n/a	1 km	Medieval	443849	389597
Scheduled Monument	1012202	Manor House moated site	n/a	1 km	Medieval	449824	384244
Conservation Area	n/a	Clifton	n/a	1 km	Modern	451956	396392
Conservation Area	n/a	Ulley	n/a	1 km	Modern	446466	387546
Conservation Area	n/a	Aston	n/a	1 km	Modern	447949	391583
Conservation Area	n/a	Barlborough	n/a	1 km	Modern	449351	380919
Conservation Area	n/a	Brampton en le Morthen	n/a	1 km	Modern	448574	388207
Conservation Area	n/a	Harthill	n/a	1 km	Modern	449396	380613
Conservation Area	n/a	North Anston	n/a	1 km	Modern	451823	384412
Conservation Area	n/a	Ravenfield	n/a	1 km	Modern	448544	395110
Conservation Area	n/a	South Anston	n/a	1 km	Modern	451707	383736
Conservation Area	n/a	Treeton	n/a	1 km	Modern	443118	387762
Conservation Area	n/a	Wales	n/a	1 km	Modern	447744	382935
Conservation Area	n/a	Wickersley	n/a	1 km	Modern	448009	391426

Designation	Designation Reference	Name	Grade	Buffer	Period	Easting	Northing
Listed Building	1132709	Church Of All Hallows	I	1 km	Medieval	449368	380962
Listed Building	1132728	Church Of St Helen	I	1 km	Medieval	443251	387710
Listed Building	1192792	Church Of St James	I	1 km	Medieval	451964	383705
Listed Building	1057656	Church Of St Giles	II*	1 km	Medieval	446120	380966
Listed Building	1132671	4, Walseker Lane	II*	1 km	Medieval	448287	380763
Listed Building	1151903	Church Of St Peter And St Paul	II*	1 km	Medieval	449746	384126
Listed Building	1286360	Church Of St John The Baptist	II*	1 km	Medieval	447757	382683
Listed Building	1286668	Church Of St John The Baptist	II*	1 km	Medieval	448403	397066
Listed Building	1151867	Church Of St James	II*	1 km	Post-Medieval	448587	395452
Listed Building	1314660	Aughton Court	II*	1 km	Post-Medieval	446904	385182
Listed Building	1109641	Medieval Cross 10 Metres South Of St Giles Church	II	1 km	Medieval	446123	380952
Listed Building	1314649	Remains Of Cross South East Of Junction Of Morthen Hall Lane And York Lane	II	1 km	Medieval	447670	389371
Listed Building	1132668	Harthill Schoolhouse	II	1 km	Post-Medieval	449405	380946
Listed Building	1132669	The Old Rectory	II	1 km	Post-Medieval	449381	380912
Listed Building	1132670	Danby House	II	1 km	Post-Medieval	449360	380750

Designation	Designation Reference	Name	Grade	Buffer	Period	Easting	Northing
Listed Building	1132682	7, Hillside	II	1 km	Post-Medieval	451908	384509
Listed Building	1132683	Anston Bridge	II	1 km	Post-Medieval	451564	384339
Listed Building	1132684	The Gate House	II	1 km	Post-Medieval	451984	384621
Listed Building	1132688	Grange Farmhouse	II	1 km	Post-Medieval	447518	389373
Listed Building	1132690	Farmbuilding Immediately To North Of Guilthwaite Hall Farmhouse	II	1 km	Post-Medieval	444958	388728
Listed Building	1132691	The Poplars	II	1 km	Post-Medieval	445805	388968
Listed Building	1132708	Chesterfield Canal Norwood Bridge	II	1 km	Post-Medieval	446886	381933
Listed Building	1132727	25, Bole Hill	II	1 km	Post-Medieval	443539	388369
Listed Building	1132729	24, Station Road	II	1 km	Post-Medieval	443136	387799
Listed Building	1132773	Barn Approximately 35 Metres To The South East Of Church Of St John	II	1 km	Post-Medieval	448425	397015
Listed Building	1132816	The Earl Of Strafford	II	1 km	Post-Medieval	448358	397044
Listed Building	1151523	Manor House	II	1 km	Post-Medieval	451639	394798

Designation	Designation Reference	Name	Grade	Buffer	Period	Easting	Northing
Listed Building	1151535	Garden Wall With Pedestrian Entrance Archway Fronting Onto Bridle Path On East Side Of Firsby Hall Farm	II	1 km	Post-Medieval	449409	396019
Listed Building	1151841	Newhall Grange (House)	II	1 km	Post-Medieval	450228	391075
Listed Building	1151843	Sawn Moor Farmhouse	II	1 km	Post-Medieval	449757	388509
Listed Building	1151844	Barn And Attahced Cartshed/Granary Immediately To North West Of Sawn Moor Farmhouse	II	1 km	Post-Medieval	449781	388522
Listed Building	1151848	23, Main Street	II	1 km	Post-Medieval	446491	387562
Listed Building	1151849	Ulley Hall	II	1 km	Post-Medieval	446562	387445
Listed Building	1151870	Farmbuilding Approximately 140 Metres To North Of Ravenfield Hall Farmhouse	II	1 km	Post-Medieval	448294	395824
Listed Building	1151871	Enclosure Wall To North Of Ravenfield Hall Farmhouse With Attached Farmbuildings At South End Of East Side	II	1 km	Post-Medieval	448273	395818
Listed Building	1151872	Barn Approximately 30 Metres To South West Of Manor Farmhouse	II	1 km	Post-Medieval	448534	388140
Listed Building	1151873	Old Hall Cottages	II	1 km	Post-Medieval	448564	388350

Designation	Designation Reference	Name	Grade	Buffer	Period	Easting	Northing
Listed Building	1151874	Granary And Dovecote With Attached Barn Approximately 30 Metres To East Of Holme Farmhouse	II	1 km	Post-Medieval	448610	388294
Listed Building	1151883	Milepost Opposite Junction With Lodge Lane	II	1 km	Post-Medieval	446158	385414
Listed Building	1151884	Conduit House Farmhouse	II	1 km	Post-Medieval	448292	385463
Listed Building	1151886	South Farm House	II	1 km	Post-Medieval	446661	385406
Listed Building	1151904	Former Cottages To Rear Of Number 32	II	1 km	Post-Medieval	449522	384736
Listed Building	1151905	Outbuilding Approximately 30 Metres To North West Of Todwick Old Hall	II	1 km	Post-Medieval	449520	384871
Listed Building	1151906	Milepost Approximately 35 Metres To East Of Entrance To Todwick Grange	II	1 km	Post-Medieval	449046	385286
Listed Building	1151907	Step Cottage	II	1 km	Post-Medieval	447704	382652
Listed Building	1151915	Railway Bridge At Kiveton Bridge Station	II	1 km	Post-Medieval	448843	382957
Listed Building	1151921	Dovecote Approximately 40 Metres To South West Of Vessey Close Farmhouse	II	1 km	Post-Medieval	448140	386384
Listed Building	1151922	Aughton Hall	II	1 km	Post-Medieval	445465	386704

Designation	Designation Reference	Name	Grade	Buffer	Period	Easting	Northing
Listed Building	1192645	Outbuilding Approximately 15 Metres To West Of South Farm House	II	1 km	Post-Medieval	446650	385418
Listed Building	1192779	16, Main Street	II	1 km	Post-Medieval	452108	384461
Listed Building	1192784	Lodge Farmhouse	II	1 km	Post-Medieval	451710	384522
Listed Building	1192805	Laurel Bank	II	1 km	Post-Medieval	451720	383835
Listed Building	1192818	Mulberry Farmhouse Including Attached Outbuilding	II	1 km	Post-Medieval	451982	384561
Listed Building	1192848	Farmbuilding At Spa House Farm Approximately 35 Metres To North Of Farmhouse	II	1 km	Post-Medieval	444091	388402
Listed Building	1192858	Village Stocks Approximately 10 Metres To South To South Of Church Of St Helen	II	1 km	Post-Medieval	443243	387685
Listed Building	1192930	Barn Fronting Onto Bridle Path On East Side Of Firsby Hall Farmyard	II	1 km	Post-Medieval	449397	396043
Listed Building	1192933	Lawns Farmhouse	II	1 km	Post-Medieval	447588	389281
Listed Building	1192952	Hardwick Grange Farmhouse	II	1 km	Post-Medieval	448534	386318
Listed Building	1192956	44 And 46, Kiveton Lane	II	1 km	Post-Medieval	449527	384594

Designation	Designation Reference	Name	Grade	Buffer	Period	Easting	Northing
Listed Building	1193016	Oak Cottage	II	1 km	Post-Medieval	447829	389426
Listed Building	1193035	Milepost Immediately To North Of Entrance To Guilthwaite Grange	II	1 km	Post-Medieval	445036	388996
Listed Building	1193067	Bridge House	II	1 km	Post-Medieval	448495	395284
Listed Building	1193108	Stable Block Approximately 40 Metres To North East Of Ravenfield Hall Farmhouse	II	1 km	Post-Medieval	448338	395709
Listed Building	1193121	Entrance Gateway And Attached Railings To Ravenfield Hall Farm	II	1 km	Post-Medieval	448259	395646
Listed Building	1193145	Manor Farmhouse, Manor Farm Cottages And Attached Meeting House	II	1 km	Post-Medieval	448561	388178
Listed Building	1193177	Brampton Grange	II	1 km	Post-Medieval	448578	388458
Listed Building	1193190	Holme Farmhouse	II	1 km	Post-Medieval	448589	388264
Listed Building	1193200	Thackeray Farmhouse	II	1 km	Post-Medieval	448588	388292
Listed Building	1193449	Ulley Grange	II	1 km	Post-Medieval	446615	387574
Listed Building	1281513	Walker's Butchers/Threshing Barn	II	1 km	Post-Medieval	449396	380612
Listed Building	1286125	Wickersley Hall	II	1 km	Post-Medieval	448020	391341

Designation	Designation Reference	Name	Grade	Buffer	Period	Easting	Northing
Listed Building	1286131	Dovecote And Attached Outbuilding To South West Of Ulley Hall	II	1 km	Post-Medieval	446568	387397
Listed Building	1286324	The Heights Farmhouse	II	1 km	Post-Medieval	445794	389096
Listed Building	1286351	Todwick Old Hall	II	1 km	Post-Medieval	449515	384851
Listed Building	1286364	Kiveton Park Colliery Offices	II	1 km	Post-Medieval	449044	382732
Listed Building	1286518	22 And 24, Worksop Road	II	1 km	Post-Medieval	446698	385373
Listed Building	1286535	Chapel House	II	1 km	Post-Medieval	445469	386615
Listed Building	1286677	The Coach House Approximately 20 Metres To South Of The Earl Of Strafford	II	1 km	Post-Medieval	448350	396999
Listed Building	1314592	Hooton Roberts Rectory	II	1 km	Post-Medieval	448370	397098
Listed Building	1314623	Milepost In Front Of No 229	II	1 km	Post-Medieval	444308	390323
Listed Building	1314627	Farmbuilding At Spa House Farm Approximately 12 Metres To South West Of Farmhouse	II	1 km	Post-Medieval	444080	388340
Listed Building	1314628	The Georgian House	II	1 km	Post-Medieval	443233	387746

Designation	Designation Reference	Name	Grade	Buffer	Period	Easting	Northing
Listed Building	1314631	Manor Farmhouse	II	1 km	Post-Medieval	442743	388692
Listed Building	1314636	Hardwick Hall Farmhouse	II	1 km	Post-Medieval	448696	386476
Listed Building	1314637	Glebe Farmhouse	II	1 km	Post-Medieval	449417	380984
Listed Building	1314638	Tiered Stone Steps Opposite Number 44	II	1 km	Post-Medieval	449370	380867
Listed Building	1314639	44, Union Street	II	1 km	Post-Medieval	449344	380863
Listed Building	1314643	High House	II	1 km	Post-Medieval	452098	384468
Listed Building	1314644	South Anston Manor House	II	1 km	Post-Medieval	451883	383619
Listed Building	1314645	18, The Green	II	1 km	Post-Medieval	451960	384609
Listed Building	1314650	The Mews	II	1 km	Post-Medieval	447856	389439
Listed Building	1314651	Milepost Approximately 125 Metres South-West Of Junction With Moorgate Road	II	1 km	Post-Medieval	444270	390124
Listed Building	1314655	Green Arbour Farm Cottage	II	1 km	Post-Medieval	449688	388292
Listed Building	1314669	Hand-Pump Immediately To North Of Number 44	II	1 km	Post-Medieval	449533	384600

Designation	Designation Reference	Name	Grade	Buffer	Period	Easting	Northing
Listed Building	1314671	Cartshed And Granary Attached To Barn House	II	1 km	Post-Medieval	447713	382959
Listed Building	1314672	The Parish Council Reading Room	II	1 km	Post-Medieval	446540	385547
Listed Building	1314678	U Shaped Range Of Farmbuildings To South West Of Newhall Grange Including 'The Mews'	II	1 km	Post-Medieval	450178	391033
Listed Building	1314679	Garden Wall With Gateway At Ulley Hall	II	1 km	Post-Medieval	446589	387413
Listed Building	1314680	Barn Adjoining West End Of Moat Farmhouse	II	1 km	Post-Medieval	448668	390430
Listed Building	1314690	Barn Approximately 20 Metres To South Of Town End Farmhouse	II	1 km	Post-Medieval	448600	388155
Listed Building	1314691	Farm View Cottages	II	1 km	Post-Medieval	448569	388238
Listed Building	1366108	Town End Farmhouse	II	1 km	Post-Medieval	448602	388191
Listed Building	1151908	Bath House at Kiveton Colliery	II	1 km	Post-Medieval	449128	382735.36
Listed Building	1193129	War Memorial At Junction Of Church Street And Wales Road	II	1 km	Modern	447773	382908
Listed Building	1241455	K6 Telephone Kiosk	II	1 km	Modern	448575	388252
Listed Building	1389510	War Memorial At Junction With Church Grove	II	1 km	Modern	453107	394685

E.2 Non-Designated Assets within 1 km

HER Reference	Name	Buffer	Period
01054/01	Prehistoric Arrowhead Finds, Whiston	Within RLB	Bronze Age
00826/03	Prehistoric Scrapers from the Hooton Roberts area	1 km	Upper Palaeolithic
05328	Palaeolithic Flint Finds, Hail Mary Hill Wood	1 km	Palaeolithic
01241/01	Prehistoric Cave Site at Hooton Cliff, Hooton Roberts	1 km	Prehistoric
04362/01	Prehistoric Flint Arrowhead, found near Spa Hill, Treeton	Within RLB	Mesolithic
05106	Mesolithic Flint Finds, Spring Wood, Ulley	1 km	Mesolithic
05107	Mesolithic Flint Finds, Turnshaw Lane, Ulley	Within RLB	Mesolithic
05112	Mesolithic Flint Finds, Spa House, Treeton	Within RLB	Mesolithic
01053/01	Mesolithic Flint Finds, Whiston	1 km	Mesolithic
05305	Mesolithic Flint Finds, Long Lane, Whiston	1 km	Mesolithic
00988/01	Prehistoric Flint Finds, Whiston	1 km	Mesolithic to Bronze Age
00826/01	Prehistoric Arrowheads from the Hooton Roberts Area	1 km	Mesolithic
00991/01	Mesolithic Flint and Chert Finds, Hail Mary Hill Wood, Aston cum Aughton	1 km	Mesolithic
00995/01	Flint Core Finds of Possible Mesolithic Date, Treeton	1 km	Mesolithic
01051/01	Mesolithic Flint Core Finds, Treeton	1 km	Mesolithic
05130	Mesolithic Flint Finds, Manor Farm, Mexborough	1 km	Mesolithic
05312	Mesolithic Flint Finds, Canklow	1 km	Mesolithic
05314	Mesolithic Flint Find, Canklow	1 km	Mesolithic
04046/01	Prehistoric Flint Scatter, Bolehill, Treeton	1 km	Mesolithic to Bronze Age
00826/02	Prehistoric Blades from the Hooton Roberts area	1 km	Mesolithic to Bronze Age
00826/04	Prehistoric waste cores from the Hooton Roberts area	1 km	Mesolithic to Bronze Age
00826/05	Prehistoric Borers from the Hooton Roberts area	1 km	Mesolithic to Bronze Age

HER Reference	Name	Buffer	Period
00986/01	Prehistoric Flint Core, found near Ulley Brook, Treeton	1 km	Mesolithic to Bronze Age
00987/01	Prehistoric Flint Finds, Whiston	1 km	Mesolithic to Bronze Age
00989/01	Prehistoric Flint Finds, Whiston	1 km	Mesolithic to Bronze Age
05321	Prehistoric Flint Finds, Guilthwaite Hill, Whiston	1 km	Mesolithic to Bronze Age
05322	Prehistoric Flint Finds, Royds Moor Hill, Whiston	1 km	Mesolithic to Bronze Age
01821/01	Neolithic Flint Flake Find from Denaby Wood	Within RLB	Neolithic
00990/01	Neolithic Polished Stone Axe Find, Treeton	Within RLB	Neolithic
00996/01	Neolithic Polished Stone Axe, Treeton	1 km	Neolithic
00997/01	Neolithic Polished Stone Axe, found west of Morthen Village, Whiston	1 km	Neolithic
00998/01	Neolithic Polished Stone Axe, found at Royds Moor Farm, Whiston	1 km	Neolithic
02121/01	Prehistoric flint tools found near Firsby	1 km	Neolithic
01895/01	?Neolithic Worked Flint Finds, Wadworth	1 km	Neolithic
03292/01	Bronze Age finds discovered under Hooton Cliff	Within RLB	Bronze Age
00831/01	Bronze Age Thumb Nail Scraper, found near Firsby Hall Farm, Conisbrough Parks	Within RLB	Bronze Age
05625	Prehistoric flints recovered during fieldwalking, Ulley	Within RLB	Bronze Age
01002/01	Possible ?Bronze Age Barrow Cemetery, north-west of Guilthwaite Hill, Whiston	Within RLB	Bronze Age
03362/02	Medieval or earlier earthworks, Conisborough Parks	Within RLB	Bronze Age - Medieval
00724/01	Unprovenanced Bronze Age Palstave found at Thurcroft Colliery	1 km	Bronze Age
00833/01	Bronze Age arrowhead Find, east of James Church Ravenfield	1 km	Bronze Age

HER Reference	Name	Buffer	Period
00929/01	?Bronze Age Thumb Nail Scraper Find, Beacon Hill, Conisbrough Parks	1 km	Bronze Age
00994/01	Bronze Age Flint Thumb Nail Scraper, Brinsworth	1 km	Bronze Age
01284/01	Flint Flake Find, Braithwell	1 km	Bronze Age
00933/01	Unclassified Pits and Flint Flake Finds on Clifton Common, Conisbrough Parks	1 km	Bronze Age to Post-Medieval
02005/01	Large Iron Age or Romano-British Rectangular Enclosure and Ditches, Conisbrough Parks	Within RLB	Iron - Age to Roman
02349/01	Iron Age or Romano-British Enclosure and Field System, Slacks Farm, Bramley	Within RLB	Iron - Age to Roman
05835	Possible Iron Age to Romano-British settlement site, Hard Lane, Harthill	Within RLB	Iron - Age to Roman
05836	Possible Iron Age to Romano-British ditch, Hard Lane, Harthill	Within RLB	Iron - Age to Roman
06114	Enclosure and ditch of probable Iron Age or Romano-British date, Hooton Roberts	Within RLB	Iron - Age to Roman
06163	Enclosure of probable late prehistoric or Romano-British date, Todwick	Within RLB	Iron - Age to Roman
02139/01	Iron Age or Romano-British Sub-rectangular Enclosure, Upper Whiston	1 km	Iron - Age to Roman
03240/01	Iron Age or Romano-British Enclosure, Upper Whiston	1 km	Iron - Age to Roman
03354/01	Iron Age or Romano-British Enclosure, Upper Whiston	1 km RLB	Iron - Age to Roman
00088/01	Iron Age or Romano-British Field System, Sandy Lane, Bramley	1 km	Iron - Age to Roman
02007/01	Possible Iron Age or Romano-British Enclosure at Ravenfield Park	1 km	Iron - Age to Roman

HER Reference	Name	Buffer	Period
02140/01	Iron Age or Romano-British Sub-rectangular Enclosures, Upper Whiston	1 km	Iron - Age to Roman
02340/01	Iron Age or Romano-British Circular Enclosure and Possible Field System at Brampton Common, Bramley	1 km	Iron - Age to Roman
02661/01	Iron Age or Romano-British Unclassified Cropmark, Whiston	1 km	Iron - Age to Roman
05717	Undated ditch, Bawtry Road, Bramley	1 km	Iron Age to Medieval
06113	Curvilinear features of uncertain date, Hooton Roberts	1 km	Iron-Age to Medieval
02566/01	Roman Drain near Clifton Villa, Conisbrough Parks	Within RLB	Roman
04256/01	Roman Coins found at Spa Hill, Treeton	Within RLB	Roman
04481/01	Roman Coin Find, Harthill with Woodall	Within RLB	Roman
00993/01	Roman Pottery and Bronze Horse Harness Find, Treeton	Within RLB	Roman
01004/01	Roman Pottery Find, Whiston	Within RLB	Roman
01005/01	Roman Pottery Find, Whiston	Within RLB	Roman
03023/01	Roman Villa, Conisbrough Parks	Within RLB	Roman
04916	Roman Road; Catcliffe to Oldcotes	Within RLB	Roman
03293/01	Roman and Medieval Pottery found east of Hooton Cliff	1 km	Roman to Medieval
04466/01	Roman Coin Find, Hooton Roberts	1 km	Roman
00827/01	Roman Coin found at Hooton Cliff	1 km	Roman
00912/01	Roman Coin Hoard and Associated Urns, Clifton, Conisbrough Parks	1 km	Roman
01006/01	?Roman Pottery Find, Whiston	1 km	Roman
03552/01	Roman Bronze Coin Hoard (also known as the Ulley Coin Hoard), Whiston	1 km	Roman
00999/01	Roman Coin Hoard, Guilthwaite Common, Whiston	1 km	Roman
01055/01	Roman Pottery Finds, Whiston	1 km	Roman

HER Reference	Name	Buffer	Period
04918	Roman Road; Chesterfield to Templeborough	1 km	Roman
02104/01	Roman Brooch Find, Wickersley	1 km	Roman
00905/01	Roman Coin Find, Flash Lane, Bramley	1 km	Roman
02105/01	Roman coin, Rotherham	1 km	Roman
02106/01	Roman coin, Rotherham	1 km	Roman
02564/01	Romano-British Midden Deposit, White Cross, Edlington	1 km	Roman
02565/01	Roman Brooch Find northwest of Clifton, Conisbrough Park	1 km	Roman
03253/01	Roman Coin Find, Whiston	1 km	Roman
03276/01	Roman Coin Find, Anston	1 km	Roman
03761/01	Roman Coin Find, Dinnington St John's	1 km	Roman
04321/01	Roman Coin Find, Wales	1 km	Roman
04442/01	Roman Coin Find, Bramley	1 km	Roman
04448/01	Roman Brooch, Rotherham	1 km	Roman
04483/01	Roman Pottery Finds, Wales	1 km	Roman
01052/01	Roman Road, Ulley	1 km	Roman
00908/01	Roman Coin Find, Whiston	1 km	Roman
01000/01	Roman Coin Finds, Ulley	1 km	Roman
01007/01	Romano-British Pottery Finds, Aston cum Aughton	1 km	Roman
01044/01	Romano-British Pottery Finds, Anston	1 km	Roman
01046/01	Roman Pottery Finds, Rotherham	1 km	Roman
01084/01	Roman Coin Hoard, found in the garden of 44 Daylands Avenue, Conisbrough	1 km	Roman
01094/01	Roman Coin Finds, Todwick	1 km	Roman

HER Reference	Name	Buffer	Period
01198/01	Three Roman Coins found near Clifton Reservoir, Conisbrough Parks	1 km	Roman
00930/01	Roman Coin Find, White Cross, Edlington	1 km	Roman
00911/01	?Roman Ironstone Workings at Clifton, Conisbrough Parks	1 km	Roman
04235/01	Roman Pottery Find, Hail Mary Hill	1 km	Roman
01017/01	'Ancient' Culvert, Mexborough and Conisbrough Road	1 km	Roman
02137/01	Possible Romano-British Enclosure, east of Firsby Reservoir, Hooton Roberts	1 km	Roman
00942/01	Approximate location of ?Roman Small Burial Urn, Human Skulls and Coin Finds, Braithwell	1 km	Roman
02571/01	Medieval Period Pottery Scatter and Possible Kiln near Firsby, Conisbrough Parks	Within RLB	Medieval
03742/01	Early Medieval Morthen Assembly or Moot, Morthen, Upper Whiston	Within RLB	Medieval
00459/01	Firsby Medieval Pottery Industry, Conisbrough Parks	Within RLB	Medieval
02958/01	Conisbrough Deer Park	Within RLB	Medieval
02071/01	Medieval Pottery found north of Micklebring Gorse, Conisbrough Parks	Within RLB	Medieval
02069/01	Medieval Pottery Scatter near Firsby (I), Conisbrough Parks	Within RLB	Medieval
03362/01	Ridge and furrow Earthworks, Conisbrough Parks	Within RLB	Medieval
05811	Aston medieval deer park, Aston	Within RLB	Medieval
01578/01	Monk's Path Medieval Trackway, Aston cum Aughton	Within RLB	Medieval
04364/01	Medieval to Post-Medieval Period Road, Conisbrough	Within RLB	Medieval to Post-Medieval
04543/01	Straight Mile Ridge and Furrow, Thurcroft	1 km	Medieval

HER Reference	Name	Buffer	Period
05624	Medieval to post-medieval finds collected during fieldwalking, Ulley	1 km	Medieval
05626	Medieval ridge and furrow earthworks, Ulley	1 km	Medieval
01121/01	Medieval Pottery Finds, Whiston	1 km	Medieval
04580/01	Medieval Period Pottery Scatter, Firsby, Conisbrough Parks	1 km	Medieval
00088/02	Ridge and Furrow, off Sandy Lane, Bramley	1 km	Medieval
04441/01	Medieval Key Find, Wickersley	1 km	Medieval
03245/01	Medieval Jetton Find, Harthill, Rotherham	1 km	Medieval
03247/01	Medieval Coin and Cannon Ball Finds, Todwick	1 km	Medieval
04470/01	Late Medieval Pottery and Slag Finds, Firsby, Conisbrough Parks	1 km	Medieval
04484/01	Early Medieval Bronze Brooch Find, Harthill	1 km	Medieval
04489/01	Medieval Silver Coin Find, Todwick	1 km	Medieval
00199/01	Clifton Beacon, Conisbrough Parks	1 km	Medieval
00204/01	Edlington Hall	1 km	Medieval
00263/01	Medieval Cross (base only), Whiston	1 km	Medieval
00284/01	Townwells Medieval Moat and Fish Pond, North Anston	1 km	Medieval
00458/01	Denaby Old Hall, remains of a medieval house, Denaby	1 km	Medieval
00471/01	Mexborough Medieval Manor	1 km	Medieval
00495/01	Ravenfield Chapel	1 km	Medieval
00763/01	Harthill Rectory	1 km	Medieval
00763/02	Medieval Tithe Barn, Harthill	1 km	Medieval
01164/01	Old Hall Medieval Hall, Thurcroft	1 km	Medieval
01420/01	Medieval Cruck barn (ruin), Treeton	1 km	Medieval

HER Reference	Name	Buffer	Period
01477/01	Whiston Hall, possible site of medieval manorial centre	1 km	Medieval
01495/01	The Old Slaughterhouse, Timber framed building, Treeton	1 km	Medieval
01496/01	Medieval Barn at Church Street, Wales	1 km	Medieval
01502/01	Medieval Timber Framed Building at Church Street, Wales	1 km	Medieval
01505/01	The Poplars Medieval Timber Framed House, Whiston	1 km	Medieval
01572/01	Hall Farm Medieval House, Aston cum Aughton	1 km	Medieval
01574/01	Morthen Grange Timber Framed Farm Building, Whiston	1 km	Medieval
01575/01	Remnants of a Medieval Timber Framed Building, Vale Farm, Whiston	1 km	Medieval
01576/01	Medieval Timber Framed Cottage, Hardwick Grange Farm, Todwick	1 km	Medieval
01577/01	Medieval Barn, Hardwick Hall Farm, Aston cum Aughton	1 km	Medieval
01595/01	Site of Medieval Timber Framed Structure, 8 Hillside, North Anston	1 km	Medieval
02128/01	Medieval House, 70 Union Street, Harthill	1 km	Medieval
02146/01	Medieval Manor House at Hooton Roberts	1 km	Medieval
02150/01	Todwick Grange	1 km	Medieval
02205/01	Possibly Late Medieval House, 1 Chapel Yard, Harthill	1 km	Medieval
02898/01	Edlington Medieval Shrunken Village	1 km	Medieval
02983/01	Medieval Ridge and Furrow, Laughton	1 km	Medieval
03963/01	Haworth Hall, Brinsworth	1 km	Medieval
00190/01	Late Anglo-Saxon coin hoard, Whiston	1 km	Medieval
00285/01	Medieval Pottery Find, Anston	1 km	Medieval
01111/01	Medieval pottery, Rotherham	1 km	Medieval
01122/01	Medieval Pottery Finds, Whiston	1 km	Medieval

HER Reference	Name	Buffer	Period
04581/01	Medieval Pottery and Burnt Clay Fragments, Firsby Hall Farm, Conisbrough Parks	1 km	Medieval
01421/01	Medieval Barn, Thurcroft	1 km	Medieval
04678	Site of a Medieval Chapel of Ease, Bramley	1 km	Medieval
00482/01	Medieval Buckle Find, Tickhill	1 km	Medieval
00484/01	Medieval Long Cross Penny Find, Tickhill	1 km	Medieval
03715/01	Medieval to post-medieval settlement features, Wales	1 km	Medieval
02978/01	Medieval Mere Fishery, Aston cum Aughton	1 km	Medieval
00186/01	Early Medieval Cross, Mexborough	1 km	Medieval
05606	Medieval deer park boundary features, Conisbrough	1 km	Medieval
05659	Medieval pottery, residual within later features, Todwick	1 km	Medieval
04191/01	Medieval Agricultural Area near Todwick	1 km	Medieval
05716	Medieval gully, Bawtry Road, Bramley	1 km	Medieval
01470/01	Medieval Timber Framed House at Walseker Lane, Woodall	1 km	Medieval
00271/01	Medieval Market Cross (base), Harthill	1 km	Medieval
03888/01	Medieval Ridge and Furrow, Anston	1 km	Medieval
02070/01	Medieval Pottery Scatter near Firsby (II), Conisbrough Parks	1 km	Medieval
01514/01	Medieval Timber Framed House, 35 Kiveton Lane, Todwick	1 km	Medieval
MDR14234	Longford Medieval Deer Park, Barlborough	1 km	Medieval
05882	Probable medieval boundary ditch, Wales	1 km	Medieval
MDR6308	St Giles's Church, Church Lane, Killamarsh	1 km	Medieval
MDR6307	Churchyard Cross, St Giles's Church, Church Lane, Killamarsh	1 km	Medieval

HER Reference	Name	Buffer	Period
00268/01	Chantry Chapel, Wales	1 km	Medieval to Post-Medieval
04210/01	Site of a Medieval to Post-Medieval Iron Bloomery, Wales	1 km	Medieval to Post-Medieval
00197/01	Possible Medieval Moated Site at Moat Farm, Wickersley	1 km	Medieval to Post-Medieval
06043	Medieval to post-medieval pottery, Union Road, Harthill	1 km	Medieval to Post-Medieval
05454	Medieval to Post-Medieval Lime Kilns, Sandy Lane, Bramley	1 km	Medieval to Post-Medieval
00798/01	Whiston Manorial Barn	1 km	Medieval to Post-Medieval
01446/01	Site of Holly House Farm, Ecclesfield	1 km	Medieval to Post-Medieval
02961/01	Deer Park, Thrybergh	1 km	Medieval to Modern
02786/01	Post-Medieval to Industrial Period Dam, Conisbrough Parks	Within RLB	Post-Medieval
04368/01	Industrial Period Ventilation and Access Shafts, Conisbrough Parks	Within RLB	Post-Medieval
03362/03	Post medieval extractive pits, Conisborough Parks	Within RLB	Post-Medieval
04367/01	Post-Medieval to Industrial Period Brickyard, Conisbrough Parks	Within RLB	Post-Medieval
04793	Post-Medieval Bell Pits near Denaby Main	Within RLB	Post-Medieval
05838	Site of a mill on Broad Bridge Dike, Harthill	Within RLB	Post-Medieval
05842	Site of Hard Mill, Harthill	Within RLB	Post-Medieval
02451/01	Chesterfield Canal and associated water management features	1 km	Post-Medieval to Modern
03696/01	Guilthwaite Spa, Treeton	1 km	Post-Medieval
04486/01	White Horse Farm Post-Medieval Pottery Assemblage, Woodall	1 km	Post-Medieval
04490/01	Post-Medieval to Industrial Period Bottle Seal, Harthill	1 km	Post-Medieval
01504/01	Post-Medieval Timber Framed Buildings, Whiston	1 km	Post-Medieval

HER Reference	Name	Buffer	Period
01573/01	Possible 17th Century Stone House, Morthen, Whiston	1 km	Post-Medieval
01582/01	Post-Medieval Barn, Harthill	1 km	Post-Medieval
02057/01	Orchard and Poplar Cottages, Aston cum Aughton	1 km	Post-Medieval
02131/01	Hathaway's Cottage, Wales.	1 km	Post-Medieval
02132/01	Wales Hall	1 km	Post-Medieval
02149/01	Todwick Old Hall	1 km	Post-Medieval
02152/01	Manor Farm, South Anston	1 km	Post-Medieval
03557/01	Post-Medieval Dovecote, Hardwick, Aston cum Aughton	1 km	Post-Medieval
03558/01	17th-18th Century Farm Complex (with 19th Century alterations) at Holme Farm, Thurcroft	1 km	Post-Medieval
03869/01	Post-Medieval to Industrial Period School, east of Union Street, Harthill	1 km	Post-Medieval
03910/01	Norwood Canal Bridge, Harthill	1 km	Post-Medieval
03957/01	Ruddle Mine near Micklebring, Braithwell	1 km	Post-Medieval
03964/01	Post-Medieval to Industrial Period Methodist Chapel, Aston cum Aughton	1 km	Post-Medieval
03965/01	Hatfield Farmhouse, Thurcroft	1 km	Post-Medieval
03966/01	Rising Deer Inn, Thurcroft	1 km	Post-Medieval
04209/01	Site of a Post-Medieval Formal Garden, Wales	1 km	Post-Medieval
04366/01	Ravenfield Lane	1 km	Post-Medieval
04369/01	Firsby Hall Farm, Conisbrough Parks	1 km	Post-Medieval
03536/05	Ravenfield Hall Gateway	1 km	Post-Medieval
03866/01	Danby House Post-Medieval to Industrial Period Farmhouse, Harthill	1 km	Post-Medieval
03559/01	Ulley Hall Large Post-Medieval House	1 km	Post-Medieval

HER Reference	Name	Buffer	Period
04405/01	Kiveton Park Colliery, Wales	1 km	Post-Medieval
03957/02	Ruddle Mine Workers Cottages, Braithwell	1 km	Post-Medieval
03902/01	Early 18th Century House, 7 Hillside, Anston	1 km	Post-Medieval
03536/01	Site of Ravenfield Hall	1 km	Post-Medieval
05636	Evidence for post-medieval iron production, Wales	1 km	Post-Medieval
04192/01	Site of a Post-Medieval Ore Roasting Hearth, Todwick	1 km	Post-Medieval
05961	North Anston Town Wells	1 km	Post-Medieval
MDR6170	Nitticarhill Road, Bellpits	1 km	Post-Medieval
MDR11115	Letter Box, Church Lane, Killamarsh	1 km	Post-Medieval
MDR9883	Tramroad, High Moor, Killamarsh	1 km	Post-Medieval
MDR6312	Tramroad (route of), east of Killamarsh	1 km	Post-Medieval
MDR9887	Tramroad (route of), east of Killamarsh	1 km	Post-Medieval
MDR9045	Norwood Colliery (Comberwood Shaft), Barlborough	1 km	Post-Medieval
MDR9880	Newland Colliery (site of), Killamarsh	1 km	Post-Medieval
MDR9881	Highmoor Colliery (site of), Hut Lane, Killamarsh	1 km	Post-Medieval
MDR9882	Dale Colliery (remains of), Killamarsh	1 km	Post-Medieval
MDR9884	Chesterfield Canal side cut (Curr Hole), off Church Lane, Killamarsh	1 km	Post-Medieval
MDR6177	Cropmark bellpits, Spinkhill Road, Barlborough	1 km	Post-Medieval
MDR12527	Schoolmaster's house, Sheffield Road, Killamarsh	1 km	Post-Medieval
MDR6152	Chesterfield Canal, Chesterfield, Brimington, Eckington, Killamarsh and Staveley	1 km	Post-Medieval
MDR14673	Kennel Cottage, Barlborough	1 km	Post-Medieval
MDR14674	North Lodge, Barlborough	1 km	Post-Medieval
04795	Post-Medieval Bell Pits, Conisbrough Parks	1 km	Post-Medieval

HER Reference	Name	Buffer	Period
03883/01	Whiston Mill, Rotherham	1 km	Post-Medieval
05963	6 Union St, Harthill. 18th century dwelling with reused timbers.	1 km	Post-Medieval
05984	Anston Mill, 19th century steam-powered corn mill	1 km	Post-Medieval
05985	Anston Windmill, 18th century corn mill	1 km	Post-Medieval
MDR12523	Killamarsh Infant and Nursery School, Sheffield Road, Killamarsh	1 km	Post-Medieval to Modern
05789	Aston Park, Aston Hall	1 km	Post-Medieval to Modern
06011	Site of water powered mill, Sheffield Road, Conisbrough	1 km	Post-Medieval to Modern
02305/01	Aston Hall, Aston cum Aughton	1 km	Post-Medieval - Modern
04712	'H25 Heavy Anti-Aircraft Battery, Ulley	Within RLB	Modern
04665	C10(f) and SF3 (f) Ulley WWII Bombing Decoy and Permanent Starfish	1 km	Modern
04686	Conisbrough Anti-Aircraft Operations Room and Sub-Regional Seat of Government Control Room	1 km	Modern
04691	'H6' 'Freeton' (Treeton) Heavy Anti-Aircraft Battery	1 km	Modern
04711	'H24' Heavy Anti-Aircraft Battery, Hill Top, Conisbrough	1 km	Modern
04724	C10(b) Kiveton WWII Bombing Decoy	1 km	Modern
MDR12522	Killamarsh Junior School, Sheffield Road, Killamarsh	1 km	Modern
04365/01	Large Rectangular Cropmark Enclosure of Unknown Date, Conisbrough Parks	Within RLB	Unknown
01003/01	Irregular Enclosure of Unknown Date, Whiston	1 km	Unknown
01967/01	Retouched Flake Finds, Mexborough	1 km	Unknown
03239/01	Undated Coin Find, Thurcroft	1 km	Unknown
04463/01	Flint Scraper Find, Ravenfield	1 km	Unknown
04478/01	Pottery Finds, Harthill	1 km	Unknown

HER Reference	Name	Buffer	Period
04482/01	Lead Spindle Whorl Find, Harthill	1 km	Unknown
04487/01	Cannon Ball found in fields north west of Woodall	1 km	Unknown
04491/01	Scottish Silver Coin of Unknown Date, Harthill	1 km	Unknown
01283/01	Cemetery of Unknown Date, Braithwell	1 km	Unknown
02492/01	Unclassified Cropmark, Braithwell	1 km	Unknown
03363/01	Cropmark of Unknown Date, south of the A630, Conisbrough Parks	1 km	Unknown
03713/01	Undated Earthwork Mound, Church Street, Wales	1 km	Unknown
03714/01	Undated Earthwork Bank, Wales	1 km	Unknown
00986/02	Flint Flake Finds of Unknown Date, Treeton	1 km	Unknown
06130	Holy well, Sheffield Road, Conisbrough	1 km	Unknown
02660/01	Unclassified Cropmark of Unknown Date, Ulley	1 km	Unknown
06131	Cave at Holywell Quarry, Sheffield Road, Conisbrough	1 km	Unknown
04265/01	Axe Find of Unknown Date, Whiston	1 km	Unknown
MDR6173	Cropmark enclosure, Pebley, Barlborough	1 km	Unknown
MDR6178	Rectangular enclosures, Barlborough	1 km	Unknown

E.3 Locally Listed Assets within 3 km

Designation	Name	Buffer
Locally Listed	Tommy Flockton's Field	1 km
Locally Listed	Sitwell House	3 km
Locally Listed	Sitwell House lodge, gate piers and boundary walls	3 km
Locally Listed	Edlington Wood	3 km

Designation	Name	Buffer
Locally Listed	High Melton Hall Park, High Melton Historic Park & Garden	3 km
Locally Listed	St Joseph's RC Church	3 km
Locally Listed	St Leonards Church	3 km
Locally Listed	The Older Rectory	3 km
Locally Listed	The Old Rectory (Job Centre Plus)	3 km
Locally Listed	The Former Chelmsford Mining and Technical Institute (Rother Valley College)	3 km
Locally Listed	Throapham Farmhouse	3 km
Locally Listed	Former Don Pottery Workshop	3 km
Locally Listed	Swinton Bridge Workshops (former Swinton Bridge Board School)	3 km
Locally Listed	Stag Inn	3 km
Locally Listed	Moorgate Cemetery Chapel	3 km
Locally Listed	Moorgate Cemetery Lodges, Gates & Boundary Walls	3 km
Locally Listed	Alma Road Board School	3 km
Locally Listed	Former Grammer School Building	3 km
Locally Listed	Down's Row Old Chapel	3 km
Locally Listed	Jamia Masquid Ahl-e-Hadith Mosque (Former Unitarian church)	3 km
Locally Listed	Marsh Street Pumping Station	3 km
Locally Listed	Brinsworth Strip Mill	3 km
Locally Listed	Iron Age Enclosures	3 km
Locally Listed	Dinnington War Memorial	3 km
Locally Listed	Templeborough Roman Fort and Vicus	3 km

E.4 Designated Assets within 3 km

Designation	Designation Reference	Name	Grade	Easting	Northing
Registered Parks and Gardens	1001500	Boston Park Rotherham	N/A	443025	391450
Registered Parks and Gardens	1001653	Moorgate Cemetery	N/A	443071	391700
Scheduled Monument	1004788	Thorpe Salvin Old Hall	N/A	452141	381273
Scheduled Monument	1004812	Roman Ridge: section 150yds (140m) long W of Bow Brown Wood	N/A	445783	400086
Scheduled Monument	1004814	Roman Ridge: section 520yds (480m) E of Dyson's Cottage to Long Plantation	N/A	444534	398028
Scheduled Monument	1004824	Edlington Wood Roman Settlement	N/A	454991	398734
Scheduled Monument	1004819	The glassworks cone	N/A	442545	388612
Scheduled Monument	1004834	Double Dyke	N/A	454870	397887
Scheduled Monument	1009393	Hellaby: a deserted medieval village and well, enclosure, ridge and furrow and post medieval long house	N/A	450529	392202
Scheduled Monument	1010828	Conisbrough Castle	N/A	451455	398894
Scheduled Monument	1011756	Standing cross	N/A	447615	377275
Scheduled Monument	1012199	Castle Hill motte and bailey castle	N/A	451629	388217
Scheduled Monument	1012930	Cross located on the former village green	N/A	446843	395473
Scheduled Monument	1012931	Cross in the churchyard of St Leonard's Church	N/A	446729	395474
Scheduled Monument	1013468	Dead Man's Cave, Anston	N/A	452761	383529
Scheduled Monument	1016789	Slade Hooton Medieval settlement and moated site	N/A	452252	389290

Designation	Designation Reference	Name	Grade	Easting	Northing
Scheduled Monument	1011852	Standing cross at the junction of Holywell Lane with High Street, Maltby Lane and Ashton Lane	N/A	453088	394434
Scheduled Monument	1012461	Moat Hall moated site and site of external ancillary buildings, Braithwell	N/A	453437	394346
Scheduled Monument	1013650	Castle Hills motte and bailey castle, Mexborough	N/A	448466	399897
Conservation Area	N/A	Braithwell	N/A	453055	394550
Conservation Area	N/A	Conisborough	N/A	451369	398837
Conservation Area	N/A	Dinnington	N/A	452465	386003
Conservation Area	N/A	Eckington and Renishaw Park	N/A	443950	379358
Conservation Area	N/A	Laughton en le Morthen	N/A	451984	388119
Conservation Area	N/A	Mexborough	N/A	447553	399750
Conservation Area	N/A	Moorgate	N/A	443201	391903
Conservation Area	N/A	Old Edlington	N/A	453238	397273
Conservation Area	N/A	Rotherham Town Centre Conservation Area	N/A	442899	392826
Conservation Area	N/A	Thorpe Salvin	N/A	452203	381089
Conservation Area	N/A	Whiston	N/A	444910	390024
Listed Building	1108972	Balborough Hall	I	447770	378258
Listed Building	1132698	Church Of St John	I	452320	387572
Listed Building	1132732	The Glassworks Cone	I	442545	388614
Listed Building	1192747	Conisbrough Castle	I	451451	398901
Listed Building	1192787	Church Of St Peter	I	451220	398754
Listed Building	1193267	Church Of All Saints	I	451702	388206
Listed Building	1314667	Church Of St Peter	I	452046	381151

Designation	Designation Reference	Name	Grade	Easting	Northing
Listed Building	1151642	Church Of St John The Baptist	I	447975	399741
Listed Building	1151917	Church Of All Saints	I	446816	385251
Listed Building	1286332	Church Of St Peter	I	453249	397253
Listed Building	1039862	Village Cross	II*	447616	377278
Listed Building	1132715	Moorgate Hall And Attached Outbuilding	II*	443131	392071
Listed Building	1132783	Church Of St Leonard	II*	446687	395489
Listed Building	1151845	Slade Hooton Hall	II*	452420	389240
Listed Building	1151846	Wall Enclosing Front Garden To Slade Hooton Hall Including Attached Gatepiers And Gateway	II*	452397	389267
Listed Building	1192650	Hellaby Hall	II*	450576	392271
Listed Building	1193434	Stable And Remains Of Attached Barn Immediately To South West Of Slade Hooton Hall	II*	452408	389217
Listed Building	1286372	Ruins Of Thorpe Salvin Hall	II*	452139	381267
Listed Building	1314652	Dinnington Hall	II*	452488	385686
Listed Building	1314668	Gatehouse To Thorpe Salvin Hall	II*	452126	381244
Listed Building	1314692	Thurcroft Hall	II*	450958	389213
Listed Building	1335412	Church Of St James	II*	447696	377188
Listed Building	1335416	Barlborough Old Hall	II*	447645	377296
Listed Building	1367143	Gazebo At Barlborough Hall	II*	447652	378265
Listed Building	1372089	Park Hall	II*	446264	378794
Listed Building	1132687	Whiston Hall Barn	II*	444734	390053
Listed Building	1192880	Church Of St Mary Magdalene	II*	445105	390025
Listed Building	1286514	Church Of St James	II*	452992	394697

Designation	Designation Reference	Name	Grade	Easting	Northing
Listed Building	1192970	Morthen Hall	II*	447886	389476
Listed Building	1314660	Aughton Court	II*	446904	385182
Listed Building	1039121	Farm Outbuilding To The South Of Westhorpe Farmhouse	II	445477	379980
Listed Building	1039871	Park Street Farmhouse	II	447628	377342
Listed Building	1039889	Coach House To North West Of Barlborough House	II	447647	377155
Listed Building	1045918	Southgate Stables, Including Wall To South Enclosing Stable Yard	II	449896	377166
Listed Building	1054694	Gatepiers To East Of Barlborough Hall	II	447805	378250
Listed Building	1055870	Church Of The Immaculate Conception	II	445432	378611
Listed Building	1108898	North Walls Farmhouse	II	450177	377713
Listed Building	1108959	Southgate House	II	449805	377108
Listed Building	1108964	1-3, Church Street	II	447638	377270
Listed Building	1108965	The Pole Almshouses	II	447772	377169
Listed Building	1108966	7 And 9, Church Street	II	447793	377157
Listed Building	1108967	Stone Croft	II	447808	377130
Listed Building	1108968	Barlborough House	II	447676	377150
Listed Building	1108969	Wall, Railings And Gatepiers To North Of Barlborough House	II	447667	377166
Listed Building	1108970	Stone Gateway And Attached Wall At Entrance To Memorial Gardens	II	447563	377285
Listed Building	1108971	Lodge To Barlborough Hall	II	447608	377413
Listed Building	1109599	Barn To The South East Of Westhorpe Farmhouse	II	445497	379999

Designation	Designation Reference	Name	Grade	Easting	Northing
Listed Building	1109649	Park Farmhouse And Attached Farm Building To The South West	II	445658	378409
Listed Building	1109944	Stables To North-East Of Number 1 (The Vicarage)	II	451720	388160
Listed Building	1132685	Chesterfield Canal Devil's Hole Bridge	II	452275	381966
Listed Building	1132692	Limelands	II	452144	386098
Listed Building	1132693	Hall Farmhouse And Attached Farmbuildings Under Same Roof	II	452590	385878
Listed Building	1132694	4, Laughton Road	II	452527	385806
Listed Building	1132695	Remains Of Cross Approximately 3 Metres To West Of Number 22	II	452658	385723
Listed Building	1132696	Throapham House	II	452932	387188
Listed Building	1132697	Gate Piers And Attached Wall To Front Of Throapham House	II	452966	387161
Listed Building	1132699	Number 1 And Attached Wall Enclosing Courtyard (Premises Of Hall Court Veterinary Group)	II	452530	385728
Listed Building	1132716	Milepost Opposite Moorgate Grove	II	443435	391625
Listed Building	1132717	Oakwood Hall Including Balustraded Retaining Wall Attached To Portico	II	443625	390959
Listed Building	1132726	Milepost In Front Of No 214	II	445534	391520
Listed Building	1132736	Boston Castle	II	442994	391513
Listed Building	1132739	Milepost Opposite No 144	II	444101	391932
Listed Building	1132782	Club House Of Rotherham Golf Club Thrybergh Park	II	446645	396333

Designation	Designation Reference	Name	Grade	Easting	Northing
Listed Building	1132784	Cartshed Granary And Stable Building Approximately 20 Metres To South Of Chestnut Tree Farmhouse	II	446652	395271
Listed Building	1151498	L Shaped Barn Range Approximately 25 Metres To North Of Lambcote Grange Farmhouse	II	453735	393691
Listed Building	1151529	Church Of St John	II	451482	400527
Listed Building	1151530	Barn Approximately 40 Metres To Rear Of Cadeby Inn	II	451614	400437
Listed Building	1151531	The Old Priory Nursing Home And And Attached Outbuilding	II	451303	398897
Listed Building	1151532	Milepost Approximately 70 Metres To West Of Junction With Denaby Lane	II	449338	399835
Listed Building	1151533	Fountain And Lamp Standard At Southern Entrance To Coranation Park	II	451455	398741
Listed Building	1151534	The Red Lion Public House	II	451314	398313
Listed Building	1151537	Barn With Attached Horse Engine House At Cockhill Farm	II	454610	396235
Listed Building	1151839	Gateway Approximately 30 Metres To North West Of Old Hall Farmhouse	II	451812	388142
Listed Building	1151840	Church Farmhouse	II	451857	388148
Listed Building	1151847	Orchard Enclosure Wall With Attached Steps And Gatepiers To South West Of Slade Hooton Hall	II	452310	389201
Listed Building	1151850	Remains Of Medieval Coffin Adjacent To South Wall Of Church Of St Alban	II	447828	391653
Listed Building	1151851	35 And 37, Morthen Road	II	447967	391617

Designation	Designation Reference	Name	Grade	Easting	Northing
Listed Building	1151868	2-14, Main Street	II	448495	395147
Listed Building	1151869	3 And 5, Main Street	II	448517	395097
Listed Building	1151875	Outbuilding Approximately 40 Metres To South East Of Thurcroft Hall	II	451010	389193
Listed Building	1151878	No. 2, Church Corner	II	451660	388167
Listed Building	1151879	Barn At Manor Farm Approximately 50 Metres To South East Of Farmhouse	II	452068	388039
Listed Building	1151880	Old Hall Farmhouse And Attached Outbuilding	II	451821	388104
Listed Building	1151881	Barn Flanking West Side Of Farm Yard At Park Hill	II	444752	385390
Listed Building	1151882	Fence Farmhouse	II	444149	385474
Listed Building	1151887	12, Flanderwell Lane	II	448722	392576
Listed Building	1151888	Stable Approximately 20 Metres To North East Of Hellaby Hall	II	450597	392291
Listed Building	1151889	Warren House	II	448831	392421
Listed Building	1151890	The Warren	II	448795	392406
Listed Building	1151892	Farmbuiding Immediately To West Of Manor House Farmhouse	II	451952	391289
Listed Building	1151902	Headstones To John Berry And Thomas Morton Situated Approximately 4 Metres To South East Of Porch To Church Of St Peter	II	452044	381143
Listed Building	1151909	Ha Ha Immediately To East Of Kiveton Hall	II	449893	383397
Listed Building	1151910	Section Of Wall Flanking South Side Of Drive To Kiveton Hall And Forming North Side Of Walled Garden To South West Of House	II	449800	383383

Designation	Designation Reference	Name	Grade	Easting	Northing
Listed Building	1151913	Milepost At Sk 46778332	II	446768	383314
Listed Building	1151914	Bedgreave Old Mill	II	445333	382756
Listed Building	1192480	St Leonards Cross Situated Approximately 22 Metres To South East Of Church Of St Leonard	II	446729	395474
Listed Building	1192584	Swinden House	II	444325	391163
Listed Building	1192610	Thomas Rotherham College	II	443284	391614
Listed Building	1192659	Bramley Grange Bramley Grange Farmhouse	II	449156	392797
Listed Building	1192672	Stonecroft	II	448794	392515
Listed Building	1192678	Conisbrough Tunnel East Portal	II	452178	399608
Listed Building	1192683	Farmbuilding Approximately 20 Metres To East Of Home Farmhouse	II	452154	391510
Listed Building	1192824	Milepost Opposite Junction With Addison Road	II	451586	391998
Listed Building	1192827	Milepost In Pavement To Front Of Number 10	II	450870	399440
Listed Building	1192845	The Priory (Offices Of Local Authority Department)	II	451296	398749
Listed Building	1192846	Chesterfield Canal Thorpe Bridge	II	451766	382207
Listed Building	1192847	Chesterfield Canal Pudding Dike Bridge	II	452870	381484
Listed Building	1192867	Mill House	II	442710	387781
Listed Building	1192900	Church Of St Alban With Attached Presbytery	II	450213	399459
Listed Building	1192919	Sundial Approximately 5 Metres To South East Of Porch To Church Of St Peter	II	452046	381141

Designation	Designation Reference	Name	Grade	Easting	Northing
Listed Building	1192972	Farmbuilding Approximately 40 Metres To North East Of Nickerwood Farmhouse	II	447235	384173
Listed Building	1193008	Kiveton Hall	II	449871	383397
Listed Building	1193019	Main Gate Piers To Kiveton Hall	II	449727	383399
Listed Building	1193059	Bedgreave New Mill	II	445355	382765
Listed Building	1193088	Oak House	II	448489	395071
Listed Building	1193116	The Farmhouse (At Bedgreave Mill)	II	445376	382761
Listed Building	1193167	Farmbuilding Approximately 15 Metres To North East Of Lambcote Grange Farmhouse	II	453736	393648
Listed Building	1193211	Pear Tree Farmhouse	II	451264	388972
Listed Building	1193217	Brookhouse Farmhouse	II	451298	388999
Listed Building	1193253	Nos. 9 And 11, Church Corner	II	451655	388132
Listed Building	1193288	Manor Farmhouse	II	452035	388089
Listed Building	1193491	Church Of St Alban	II	447834	391666
Listed Building	1193519	Pair Of Grave Stones To The Bower Family Situated Approximately 10 Metres To South Of Nave Of Church Of St Alban	II	447838	391657
Listed Building	1193555	Barn At Wickersley Grange Farm Approximately 30 Metres To South West Of Farmhouse	II	447829	391542
Listed Building	1241270	Wales Court Comprising The Manor, Wales Place, Wales House And The Mews	II	447869	383650
Listed Building	1253115	Westhorpe Farmhouse	II	445470	380014
Listed Building	1271462	Crenellated Stone Memorials	II	447872	376893
Listed Building	1271463	Stone Memorials	II	447879	376909

Designation	Designation Reference	Name	Grade	Easting	Northing
Listed Building	1286128	Wickersley Old Hall	II	447995	391566
Listed Building	1286248	No. 11, High Street	II	452007	388103
Listed Building	1286288	Garden House Approximately 30 Metres To South East Of Thurcroft Hall	II	450988	389192
Listed Building	1286316	Railway Bridge Beneath Track To Low Laithes Farm	II	447946	383797
Listed Building	1286344	End Sections Of 2 Outbuildings At Kiveton Hall Farm Each Having Twin Oeil-De-Boeuf And Facing Kiveton Lane	II	449758	383447
Listed Building	1286420	War Memorial In Coronation Park	II	451460	398767
Listed Building	1286517	59,61, Moorgate Road	II	443341	391782
Listed Building	1286898	Doorway Re-Erected In Rock Face Approximately 100 Metres To South East Of Boston Castle	II	443064	391466
Listed Building	1314625	Wellgate Old Hall	II	443164	392558
Listed Building	1314633	Milepost Opposite Junction With Bonet Lane	II	441367	390356
Listed Building	1314635	Falconer Farmhouse	II	444199	386227
Listed Building	1314646	Chesterfield Canal Dog Kennels Bridge	II	450781	382446
Listed Building	1314647	Chesterfield Canal, Canal Milestone Approximately 260 Metres To South East Of Devil'S Hole Bridge	II	452458	381785
Listed Building	1314654	The Vicarage	II	451707	388145
Listed Building	1314656	Milepost Approximately 200 Metres South East Of Junction With Lodge Lane	II	445940	384652
Listed Building	1314657	Cowhouse Flanking East Side Of Farm Yard At Park Hill Farm	II	444787	385374

Designation	Designation Reference	Name	Grade	Easting	Northing
Listed Building	1314670	Nickerwood Farmhouse	II	447181	384172
Listed Building	1314676	Outbuilding Approximately 10 Metres To East Of Old Hall Farmhouse	II	451842	388112
Listed Building	1314677	All Saints Church Of England (Aided) School	II	451739	388244
Listed Building	1314681	Gazebo Approximately 50 Metres To East Of Wickersley Grange	II	447955	391544
Listed Building	1314693	Lea Cottage, The Cottage, Cobweb Cottage	II	451275	388975
Listed Building	1314839	West Portal	II	451980	399520
Listed Building	1314840	The Old Hall Restaurant	II	451165	398684
Listed Building	1314841	Set Of Stocks Resited In Coronation Park	II	451459	398786
Listed Building	1314842	Well Cover Approximately 50 Metres North West Of Junction With Church Street	II	451175	398809
Listed Building	1335413	11 And 13, Church Street	II	447800	377148
Listed Building	1335414	The Old Rectory	II	447727	377142
Listed Building	1335415	Clowne Fields Farmhouse	II	447860	377055
Listed Building	1335417	Stable Block At Barlborough Hall	II	447725	378247
Listed Building	1366105	Lambcote Grange Farmhouse	II	453709	393637
Listed Building	1372098	Barlborough Infants School	II	447561	377351
Listed Building	1372311	2, Church Street	II	447622	377236
Listed Building	1424608	Conisbrough Wesleyan Methodist Chapel	II	451268	398503
Listed Building	1439193	Rotherham Grammar School War Memorial	II	443276	391658
Listed Building	1439196	Brinsworth And Canklow War Memorial	II	442139	390293
Listed Building	1151524	Village Cross (At Junction With Holywell Lane And Maltby Lane	II	453088	394435
Listed Building	1192575	Remains Of Moat Hall	II	453444	394373

Designation	Designation Reference	Name	Grade	Easting	Northing
Listed Building	1192959	The Old Hall	II	448305	399070
Listed Building	1286401	Whiston Hall	II	444742	390103
Listed Building	1132689	Ha-Ha, Gates, Gate Piers And Perimeter Wall To Front Garden Of Morthen Hall	II	447911	389452
Listed Building	1132815	Hooton Common Farmhouse	II	447339	396983
Listed Building	1151525	Milestone At Junction With Ashton Lane And Maltby Lane	II	453077	394445
Listed Building	1151526	Rotherwood	II	453127	394458
Listed Building	1151527	Front Gatepiers To The Old Hall Farmhouse	II	453095	394419
Listed Building	1151528	Headstone To Anne Brook Situated Approximately 11 Metres To South West Of Porch To Church Of St James	II	452968	394675
Listed Building	1151536	Dovecote In Garden Of Limestones	II	453305	397249
Listed Building	1151876	Low Farmhouse	II	450996	390324
Listed Building	1151877	No. 18, Carr Lane	II	451061	390227
Listed Building	1151911	The Beeches	II	447795	382994
Listed Building	1151912	Dovecote To Rear Of Number 4 Approximately 20 Metres To North Of House	II	447798	383007
Listed Building	1192598	"Hall Farmhouse The Old Hall Farmhouse"	II	453100	394387
Listed Building	1192646	Grave Slab To Sheppard And Jubb Families Situated Immediately South Of Aisle To Church Of St James	II	453000	394690
Listed Building	1192927	Stable And Granary Immediately To South Of Whiston Hall	II	444728	390082

Designation	Designation Reference	Name	Grade	Easting	Northing
Listed Building	1286397	Headstone To Rebekah Cutt Approximately 11 Metres To West Of Tower Of Church Of St Mary Magdalene*	II	445076	390012
Listed Building	1286526	Dovecote Approximately 50 Metres To West Of Manor House	II	452864	394698
Listed Building	1314598	Newman School	II	444466	390395
Listed Building	1314611	Milepost Approximately 100 Metres To West Of Junction With Carr Lane	II	447306	397059
Listed Building	1314626	Milepost Opposite Nos 85 And 87	II	442723	390266
Listed Building	1314629	Village Stocks Approximately 15 Metres To West Of Tower Of Church Of St Mary Magdalene	II	445072	390012
Listed Building	1314836	Old School House (Now Braithwell Darby And Joan Club And Wrvs Rooms)	II	453105	394557
Listed Building	1314837	3 Chest Tombs Situated Approximately 6, 10 And 13 Metres To South West Of Porch To Church Of St James Sw Of Porch Of Church Of St James*	II	452974	394674
Listed Building	1314838	Manor House	II	452939	394679
Listed Building	1314844	Manor Farm House	II	453279	397293
Listed Building	1392929	Glassby Arch	II	447816	399769
Listed Building	1389510	War Memorial At Junction With Church Grove	II	453107	394685
Listed Building	1151885	Entrance Gateway And Attached Railings At The Lodge	II	446829	385308
Listed Building	1151918	Gate Piers Approximately 12 Metres To East Of Church Of All Saints	II	446843	385247
Listed Building	1151919	High Trees	II	446767	385270

Designation	Designation Reference	Name	Grade	Easting	Northing
Listed Building	1151920	The Old Coach House	II	446790	385251
Listed Building	1314634	East Wing, Coach House And West Wing, Aughton Court	II	446802	385193
Listed Building	1314658	The Grange	II	446796	385347
Listed Building	1314659	The Lodge	II	446835	385294
Listed Building	1314673	Gravestone To Hill Family Situated Approximately 5 Metres To East Of South Porch Of Church Of All Saints	II	446827	385237

F. Cumulative Developments

Other Development Details							Stage 1		Stage 2			
ID	Local Authority	Application Reference	Applicant for 'Other Development' and Brief Description	Distance From Project	Status	Link	Within ZOI?	Progress to Stage 2?	Overlap in Temporal Scope?	Scale and Nature of Development Likely to have a Significant Effect?	Other Factors	Progress to Stage 3/4?
1	City of Doncaster Council	24/01404/FULM	Proposed residential development with public open space, access, landscaping and associated infrastructure.	Adjacent to site.	Awaiting decision	https://planning.doncaster.gov.uk/online-applications/applicationDetails.do?keyVal=SHJLM3FXKGH00&activeTab=summary	Air Quality; Biodiversity; Cultural Heritage; Ground Conditions; Flood Risk; Landscape and Visual; Noise and Vibration; and Socio-economic	Yes	Potential for construction overlap and if approved, operation could overlap.	Proximity of the application to the Proposed Development means there will likely be cumulative effects. The likelihood of operational phase overlap and potential for construction overlap means that there is potential for cumulative effects on biodiversity, cultural heritage, traffic, landscape, flood risk and socio-economic receptors.	Development will likely have significant interaction with the Proposed development given proximity.	Yes
2	City of Doncaster Council	23/01582/OUTM	Outline application for the redevelopment of the former Rossington Colliery for up to 480 residential units (Use Class C3) and associated infrastructure.	Approx. 7.5km	Awaiting decision	https://planning.doncaster.gov.uk/online-applications/applicationDetails.do?keyVal=RYRR37FXM7B00&activeTab=summary	Biodiversity	Yes	Potential construction and operational overlap.	Only ZoI impacted would be for biodiversity, distance means that two schemes would not cross over.	Significant residential development, but unlikely to have significant interaction with the Proposed Development.	No
3	City of Doncaster Council	23/01759/OUTM	Outline application for the erection of up to 390 new build dwellings (Use Class C3) and up to 0.6ha of land allocated for within a local centre for residential/commercial/retail/community uses (Use Classes C3, E/F2) with associated access roads, landscaping, open space and infrastructure works	Approx. 6.5km	Awaiting decision	https://planning.doncaster.gov.uk/online-applications/applicationDetails.do?keyVal=S09C75FX0C500&activeTab=summary	Biodiversity	Yes	Potential construction and operational overlap.	Large residential development; however, only ZoI impacted would be for biodiversity, distance means that two schemes would not cross over.	Significant residential development, but unlikely to have significant interaction with the Proposed Development.	No

Other Development Details							Stage 1		Stage 2			
ID	Local Authority	Application Reference	Applicant for 'Other Development' and Brief Description	Distance From Project	Status	Link	Within ZOI?	Progress to Stage 2?	Overlap in Temporal Scope?	Scale and Nature of Development Likely to have a Significant Effect?	Other Factors	Progress to Stage 3/4?
			(All matters reserved/approval being sought for access).									
4	City of Doncaster Council	22/02396/FULM	Full planning application for 188 residential units (C3), associated car parking, garages, vehicular, pedestrian and cycle access and infrastructure, public open space, landscaping, a pumping station, foul and surface water drainage infrastructure and biodiversity enhancements, with vehicular access from Alverley Lane. (AMENDED PLANS, TECHNICAL DOCUMENTS, AND DESCRIPTION)	Approx. 4.9km	Awaiting decision	https://planning.doncaster.gov.uk/online-applications/applicationDetails.do?activeTab=summary&keyVal=RKMKOUFXHT600	Biodiversity; Landscape and socio-economic	Yes	Potential construction and operational overlap.	Medium residential development; however, only ZoI impacted would be for biodiversity, distance means that two schemes would not cross over. Given the distance of the application to the Proposed Development and New Edlington acting as a barrier, it is unlikely the scheme would give rise to significant cumulative effects.	N/A	No
5	City of Doncaster Council	24/01748/REMM	Details of appearance, landscaping, layout, and scale of design for the erection of 128 dwellings on approx. 51.70ha of land (being matters reserved in outline application previously granted under 17/02958/FULM on 27 July 2018).	Approx. 7.5km	Awaiting decision	https://planning.doncaster.gov.uk/online-applications/applicationDetails.do?keyVal=SK9TOKFXL9N00&activeTab=summary	Biodiversity and socio-economic	Yes	Potential construction and operational overlap.	Medium residential development; however, only ZoI impacted would be for biodiversity, distance means that two schemes would not cross over.	N/A	No
6	City of Doncaster Council	23/00699/FULM	Reconfiguration and extension of existing rail terminal facility at iPort including areas for storage, associated parking,	Approx. 6.5km	Granted with conditions	https://planning.doncaster.gov.uk/online-applications/applicationDetails.do?keyVal=RS	Biodiversity.	Yes	Potential construction and operational overlap.	Only ZoI impacted would be for biodiversity, distance means that two schemes would not cross over.	N/A	No

Other Development Details							Stage 1		Stage 2			
ID	Local Authority	Application Reference	Applicant for 'Other Development' and Brief Description	Distance From Project	Status	Link	Within ZOI?	Progress to Stage 2?	Overlap in Temporal Scope?	Scale and Nature of Development Likely to have a Significant Effect?	Other Factors	Progress to Stage 3/4?
			formation of vehicular access, and siting of ancillary structures.			YI87FXK7L00&activeTab=summary						
7	City of Doncaster Council	24/01229/FULM	Hybrid Planning Application comprising the following: Full permission for the demolition of existing buildings and use of the site for storage of operational vehicles/HGVs (cab/trailer) and associated development including resurfacing works, erection of security gatehouse and driver welfare facilities, provision of cycle storage, external lighting, soft landscaping and associated ancillary works. Outline application (all matters other than access to but not within the site reserved) for demolition of existing buildings and erection of industrial/warehouse buildings (Use Class B2/B8 including ancillary offices Class E(g)(i)), service yards and associated works. The full and outline phase of the development to be	Approx. 8.5km	Awaiting decision	https://planning.doncaster.gov.uk/online-applications/applicationDetails.do?keyVal=SGAYCHFX05E00&activeTab=summary	Biodiversity.	Yes	Potential construction and operational overlap.	Only ZoI impacted would be for biodiversity, distance means that two schemes would not cross over.	N/A	No

Other Development Details							Stage 1		Stage 2			
ID	Local Authority	Application Reference	Applicant for 'Other Development' and Brief Description	Distance From Project	Status	Link	Within ZOI?	Progress to Stage 2?	Overlap in Temporal Scope?	Scale and Nature of Development Likely to have a Significant Effect?	Other Factors	Progress to Stage 3/4?
			delivered via severable phases.									
8	City of Doncaster Council	22/02140/FULM	Erection of a warehouse unit and ancillary office space, car parking, access road, balancing pond and landscaping.	Approx. 6.5km	Granted with conditions	https://planning.doncaster.gov.uk/online-applications/applicationDetails.do?activeTab=summary&keyVal=RINRJVFX0C500	Biodiversity.	Yes	Potential construction and operational overlap.	Only ZoI impacted would be for biodiversity, distance means that two schemes would not cross over.	N/A	No
9	City of Doncaster Council	22/01001/FULM	Erection of a warehouse unit, ancillary office space, car parking, access road, balancing pond and landscaping.	Approx. 6.5km	Granted with conditions	https://planning.doncaster.gov.uk/online-applications/applicationDetails.do?keyVal=RAP34IFXFMK00&activeTab=summary	Biodiversity.	Yes	Potential construction and operational overlap.	Only ZoI impacted would be for biodiversity, distance means that two schemes would not cross over.	N/A	No
10	City of Doncaster Council	22/01002/FULM	Erection of a warehouse unit and ancillary office space, car parking, access road and landscaping within the existing iPort SRFI development site.	Approx. 6.5km	Granted with conditions	https://planning.doncaster.gov.uk/online-applications/applicationDetails.do?keyVal=RAP357FXFML00&activeTab=summary	Biodiversity.	Yes	Potential construction and operational overlap.	Only ZoI impacted would be for biodiversity, distance means that two schemes would not cross over.	N/A	No
11	City of Doncaster Council	22/01003/FULM	Erection of a warehouse unit and ancillary office space, car parking, access road and	Approx. 6.5km	Granted with conditions	https://planning.doncaster.gov.uk/online-applications/applicationDetails.	Biodiversity.	Yes	Potential construction and operational overlap.	Only ZoI impacted would be for biodiversity, distance means that two	N/A	No

Other Development Details							Stage 1		Stage 2			
ID	Local Authority	Application Reference	Applicant for 'Other Development' and Brief Description	Distance From Project	Status	Link	Within ZOI?	Progress to Stage 2?	Overlap in Temporal Scope?	Scale and Nature of Development Likely to have a Significant Effect?	Other Factors	Progress to Stage 3/4?
			landscaping within the existing iPort SRFI development site.			do?keyVal=RAP35TFXFMM00&activeTab=summary				schemes would not cross over.		
12	City of Doncaster Council	22/02151/FULM	Erection of a warehouse unit and ancillary office space, car parking, access road, balancing pond and landscaping.	Approx. 6.5km	Granted with conditions	https://planning.doncaster.gov.uk/online-applications/applicationDetails.do?activeTab=summary&keyVal=RITN9CFX0C500	Biodiversity.	Yes	Potential construction and operational overlap.	Only ZoI impacted would be for biodiversity, distance means that two schemes would not cross over.	N/A	No
13	City of Doncaster Council	22/01978/FULM	Erection of a solar farm and battery energy storage system (BESS) and associated infrastructure.	Approx. 950m	Granted with conditions	https://planning.doncaster.gov.uk/online-applications/applicationDetails.do?activeTab=summary&keyVal=RH0V42FXH0P00	Biodiversity; Cultural Heritage; Flood Risk; Landscape and Visual; and Socio-economic	Yes	Will form part of the baseline for assessment for the Proposed Development.	Proximity of the application to the Proposed Development means there will likely be cumulative effects. The likelihood of operational phase overlap and potential for construction overlap means that there is potential for cumulative effects on biodiversity, cultural heritage, traffic, landscape, flood risk and socio-economic receptors.	Similarity of development.	Yes
14	City of Doncaster Council	22/00840/SCRE	Request for an EIA screening opinion for the Proposed Mere Flats Solar Energy Supply Project.	Approx. 880m	EIA Not Required	https://iawpad.doncaster.gov.uk/PublicAccess_LIVE/SearchResult/RunThirdPartySearch?FileSystemId=DP&FOLDER1_REF=22/00840/SCRE	Biodiversity; Cultural Heritage; Flood Risk; Landscape and Visual; and Socio-economic	Yes	Potential for construction and operation to overlap.	Proximity of the application to the Proposed Development means there will likely be cumulative effects. The likelihood of operational phase overlap and potential for construction overlap means that there is potential for cumulative effects on biodiversity, cultural heritage, traffic, landscape, flood risk and socio-economic receptors.	Similarity of development.	Yes

Other Development Details							Stage 1		Stage 2			
ID	Local Authority	Application Reference	Applicant for 'Other Development' and Brief Description	Distance From Project	Status	Link	Within ZOI?	Progress to Stage 2?	Overlap in Temporal Scope?	Scale and Nature of Development Likely to have a Significant Effect?	Other Factors	Progress to Stage 3/4?
15	City of Doncaster Council	24/02106/FULM	Change of use of land for use as a motocross facility (Sui Generis) with associated engineering and landscaping works, alterations to site access and siting of ancillary portable buildings/containers (RETROSPECTIVE)	Adjacent	Awaiting decision	https://iawpad.doncaster.gov.uk/PublicAccess_LIVE/SearchResult/RunThirdPartySearch?FileSystemId=DP&FOLDER1_REF=24/02106/FULM	Air Quality; Biodiversity; Cultural Heritage; Ground Conditions; Flood Risk; Landscape and Visual; Noise and Vibration; and Socio-economic	Yes	Proximity to site will mean that the interaction between the Proposed Development and this application will be unavoidable.	Proximity of the application to the Proposed Development means there will likely be cumulative effects. The likelihood of operational phase overlap and potential for construction overlap means that there is potential for cumulative effects on biodiversity, cultural heritage, traffic, landscape, flood risk and socio-economic receptors.	Will have significant interaction between both sites.	Yes
16	City of Doncaster Council	24/01563/SCRE	Request for a screening opinion for a 20MWP solar park and 50MW battery energy storage system and associated infrastructure.	Approx. 3.2km	EIA Not Required	https://planning.doncaster.gov.uk/online-applications/applicationDetails.do?keyVal=SIXBKQFX0CI00&activeTab=summary	Biodiversity; Landscape and socio-economic	Yes	Potential for construction and operation to overlap.	Relatively small solar farm which would only be in the ZoI for biodiversity and socio-economic; however, the application would contribute to the additional impact on the wider landscape setting of the Proposed Development area.	Similarity of development.	Yes
17	City of Doncaster Council	24/00873/FULM	Change of use of land for caravan storage and associated infrastructure including gates, access, hardstanding and landscaping (Resubmission of application 23/01368/FULM withdrawn 14/11/2023).	Approx. 980m	Awaiting decision	https://planning.doncaster.gov.uk/online-applications/applicationDetails.do?keyVal=SDHDSBFXJ6G00&activeTab=summary	Biodiversity; Cultural Heritage; Flood Risk; Landscape and Visual; and Socio-economic	Yes	Potential for construction and operation to overlap.	Although within 1km of the site, the scale of and nature of the site is relatively inconsequential to the Proposed Development as the site will be used for storage, therefore it is unlikely to have a significant impact between the two applications.	Even if approved, it is unlikely to have a cumulative impact.	No
18	Rotherham Metropolitan Borough Council	RB2023/1032	Reserved matters application for the details of appearance, landscaping, layout, scale and access for	Approx. 3km	Granted with conditions	https://planning.rotherham.gov.uk/fastweblive/detail.asp?AltRef=RB2023/1032&Scroll=3&Noth	Biodiversity; Landscape; Cultural heritage; and socio-economic	Yes	Potential for construction and operation to overlap.	Large residential development within the ZoI for heritage, socio-economic and biodiversity.	Distance from the scheme is unlikely to result in significant	No

Other Development Details							Stage 1		Stage 2			
ID	Local Authority	Application Reference	Applicant for 'Other Development' and Brief Description	Distance From Project	Status	Link	Within ZOI?	Progress to Stage 2?	Overlap in Temporal Scope?	Scale and Nature of Development Likely to have a Significant Effect?	Other Factors	Progress to Stage 3/4?
			300 dwellinghouses (Phase 2, 3 & 4) following RB2020/1815 to vary condition 2 (approved plans) imposed by RB2016/1492			ing=2&DateReceivedStart=06%2F07%2F2023&DateReceivedEnd=03%2F08%2F2023&Sort1=FullAddressPrefix&Sort2=DateReceived++DESC&Submit=Search					cumulative effects.	
19	Rotherham Metropolitan Borough Council	RB2022/1638	Outline planning application, with all matters reserved except means of access, comprising up to 185 dwellings, vehicle and pedestrian access, parking, public open space, landscaping and associated works.	Approx. 3.6km	Granted with conditions	https://planning.rotherham.gov.uk/fastweblive/detail.asp?AltRef=RB2022/1638&Scroll=4&Nothing=3&Nothing=2&DateReceivedStart=09%2F10%2F2022&DateReceivedEnd=06%2F11%2F2022&Sort1=FullAddressPrefix&Sort2=DateReceived++DESC&Submit=Search	Biodiversity; Landscape and socio-economic	Yes	Potential for construction and operation to overlap.	Outline application for medium sized residential development. Would be situated in within the ZoI for biodiversity and socio-economic.	Distance from the scheme is unlikely to result in significant cumulative effects.	No
20	Rotherham Metropolitan Borough Council	RB2023/0697	Siting of Storage units, and installation of external floodlights and CCTV cameras.	Approx. 1.7km	Granted with conditions	https://planning.rotherham.gov.uk/fastweblive/detail.asp?AltRef=RB2023/0697&Scroll=3&Nothing=2&DateReceivedStart=27%2F04%2F2023&DateReceivedEnd=25%2F05%2F2023&Sort1=FullAddressPrefix&Sort2=DateReceived++DESC&Submit=Search	Biodiversity; cultural heritage; landscape and visual; and socio-economic.	Yes	Potential for construction and operation to overlap.	Application for storage units would be located within the ZoI for biodiversity; cultural heritage; landscape and visual; and socio-economic. Storage units and site would be very small in scale compared to the Proposed Development and is unlikely to have a cumulative effect.	The application on covers storage containers.	No

Other Development Details							Stage 1		Stage 2			
ID	Local Authority	Application Reference	Applicant for 'Other Development' and Brief Description	Distance From Project	Status	Link	Within ZOI?	Progress to Stage 2?	Overlap in Temporal Scope?	Scale and Nature of Development Likely to have a Significant Effect?	Other Factors	Progress to Stage 3/4?
21	Rotherham Metropolitan Borough Council	RB2022/0017	Outline application for the erection of up to 217 dwellinghouses including details of access	Approx. 2.5km	Granted with conditions	https://planning.rotherham.gov.uk/fastweblive/detail.asp?AltRef=RB2022/0017&Scroll=3&Nothing=2&DateReceivedStart=18%2F12%2F2021&DateReceivedEnd=15%2F01%2F2022&Sort1=FullAddressPrefix&Sort2=DateReceived++DESC&Submit=Search	Biodiversity; cultural heritage; landscape and visual; and socio-economic.	Yes	Potential for construction and operation to overlap.	Large residential development located within the ZoI for biodiversity, cultural heritage; landscape and visual; and socio-economic. The development would likely result in cumulative effects as a result in the change in nature of the land between Broom and the M18.	Likely to form the baseline for cumulative effects for the Proposed Development.	Yes
22	Rotherham Metropolitan Borough Council	RB2022/1767	Battery energy storage facility and associated works	Approx 350m	Granted with conditions	https://planning.rotherham.gov.uk/fastweblive/detail.asp?AltRef=RB2022/1767&Scroll=4&Nothing=3&Nothing=2&DateReceivedStart=04%2F11%2F2022&DateReceivedEnd=02%2F12%2F2022&Sort1=FullAddressPrefix&Sort2=DateReceived++DESC&Submit=Search	Biodiversity; Cultural Heritage; Flood Risk; Landscape and Visual; Noise and Vibration; and Socio-economic	Yes	Potential for operation of developments to overlap.	Proximity of the application to the Proposed Development means there will likely be cumulative effects. The likelihood of operational phase overlap and potential for construction overlap means that there is potential for cumulative effects on biodiversity, cultural heritage, traffic, landscape, flood risk and socio-economic receptors.	Scheme will reflect some elements of the Proposed development and could be misunderstood to form part of the White Stone development.	Yes
23	Rotherham Metropolitan Borough Council	RB2023/0575	Erection of building for business, general industry, storage and distribution (use classes B2,B8,E(G) (ii &iii).	Approx 600m	Granted with conditions	https://planning.rotherham.gov.uk/fastweblive/detail.asp?AltRef=RB2023/0575&Scroll=4&Nothing=3&Nothing=2&DateReceivedStart=07%2F04%2F2023&DateReceivedEn	Biodiversity; Cultural Heritage; Flood Risk; Landscape and Visual; Noise and Vibration; and Socio-economic	Yes	Potential for operation of developments to overlap.	Development would be within the ZoI for biodiversity; Cultural Heritage; Flood Risk; Landscape and Visual; Noise and Vibration; and Socio-economic effects. The scale of the development will have an impact on Proposed Development given the	Likely to form the baseline for cumulative effects for the Proposed Development.	Yes

Other Development Details							Stage 1		Stage 2			
ID	Local Authority	Application Reference	Applicant for 'Other Development' and Brief Description	Distance From Project	Status	Link	Within ZOI?	Progress to Stage 2?	Overlap in Temporal Scope?	Scale and Nature of Development Likely to have a Significant Effect?	Other Factors	Progress to Stage 3/4?
						d=05%2F05%2F2023&Sort1=FullAddressPrefix&Sort2=DateReceived++DESC&Submit=Search				close proximity to the Order Limits.		
24	Rotherham Metropolitan Borough Council	RB2021/0037	Erection of 76 No. dwellinghouses with associated access & landscaping.	Approx 1.5km	Granted with conditions	https://planning.rotherham.gov.uk/fastweblive/detail.asp?AltRef=RB2021/0037&ApplicationNumber=RB2021%2F0037&Submit=Search	Biodiversity; Cultural Heritage; Landscape and Visual; Noise and Vibration; and Socio-economic	Yes	Potential for operation of developments to overlap.	Small residential development located within the Biodiversity; Cultural Heritage; Landscape and Visual; Noise and Vibration; and Socio-economic ZoI. Will likely be within view of the Proposed Development and is granted.	Likely to form the baseline for cumulative effects for the Proposed Development.	Yes
25	Rotherham Metropolitan Borough Council	RB2021/1200	Erection of a 6 storey 150 No. bedroom hotel with associated access off Highfield Spring, parking and landscaping together with engineering operations to level the site & facilitate drainage infrastructure.	Approx. 2km	Granted with conditions	https://planning.rotherham.gov.uk/detail.asp?AltRef=RB2021/1200&Scroll=5&Nothing=4&Nothing=3&Nothing=2&ApplicationNumber=&AddressPrefix=&Postcode=&CaseOfficer=&ParishName=&AreaTeam=&WardMember=&Consultant=&DateReceivedStart=2%2F6%2F2021&DateReceivedEnd=25%2F6%2F2021&DateDecidedStart=&DateDecidedEnd=&Locality=&AgentName=&ApplicantName=&ShowDecided=&DecisionDescription	Biodiversity; Cultural Heritage; Landscape and Visual; Noise and Vibration; and Socio-economic	Yes	Potential for operation of developments to overlap.	Development would be within the Biodiversity; Cultural Heritage; Landscape and Visual; Noise and Vibration; and Socio-economic ZoI; however the scheme would have Brinsworth and Catcliffe areas between it and the Proposed Development.	Unlikely to form part of the baseline for the site.	No

Other Development Details							Stage 1		Stage 2			
ID	Local Authority	Application Reference	Applicant for 'Other Development' and Brief Description	Distance From Project	Status	Link	Within ZOI?	Progress to Stage 2?	Overlap in Temporal Scope?	Scale and Nature of Development Likely to have a Significant Effect?	Other Factors	Progress to Stage 3/4?
						=&DecisionLevel=&Sort1=FullAddressPrefix&Sort2=DateReceived+DESC&Submit=Search						
26	Rotherham Metropolitan Borough Council	RB2024/0887	Erection of two storey office building, earthworks to create 3 serviced platforms, formation of service road and drainage infrastructure and landscaping including pedestrian and cycle links and a substation.	Approx. 2km	Granted with conditions	https://planning.rotherham.gov.uk/fastweblive/detail.asp?AltRef=RB2024/0887&Scroll=2&DateReceivedStart=14%2F06%2F2024&DateReceivedEnd=28%2F06%2F2024&Sort1=FullAddressPrefix&Sort2=DateReceived++DESC&Submit=Search	Biodiversity; Cultural Heritage; Landscape and Visual; Noise and Vibration; and Socio-economic	Yes	Potential for operation of developments to overlap.	Development would be within the Biodiversity; Cultural Heritage; Landscape and Visual; Noise and Vibration; and Socio-economic ZoI; however the scheme would have Brinsworth and Catcliffe areas between it and the Proposed Development.	Unlikely to form part of the baseline for the site.	No
27	Rotherham Metropolitan Borough Council	RB2023/1023	Construction of a mixed use centre, including retail and services (Use Class E(a & c)), food and drink uses (Use Classes E(b) and Sui Generis), offices (Use Class E(g)), Community Centre (Use Class F2(a & b)), 50 residential units (Use Class C3), outdoor events space and pop-up markets and associated car parking, provision of enhanced bus stop	Approx. 2km	Granted with conditions	https://planning.rotherham.gov.uk/fastweblive/detail.asp?AltRef=RB2023/1023&Scroll=3&Nothing=2&DateReceivedStart=06%2F07%2F2023&DateReceivedEnd=03%2F08%2F2023&Sort1=FullAddressPrefix&Sort2=DateReceived++DESC&Submit=Search	Biodiversity; Cultural Heritage; Landscape and Visual; Noise and Vibration; and Socio-economic	Yes	Potential for operation of developments to overlap.	Development would be within the Biodiversity; Cultural Heritage; Landscape and Visual; Noise and Vibration; and Socio-economic ZoI; however, the scheme would have Brinsworth and Catcliffe areas between it and the Proposed Development.	Unlikely to form part of the baseline for the site.	No

Other Development Details							Stage 1		Stage 2			
ID	Local Authority	Application Reference	Applicant for 'Other Development' and Brief Description	Distance From Project	Status	Link	Within ZOI?	Progress to Stage 2?	Overlap in Temporal Scope?	Scale and Nature of Development Likely to have a Significant Effect?	Other Factors	Progress to Stage 3/4?
			on Highfield Spring, provision of landscaping and public realm, vehicular and pedestrian access/egress and other associated infrastructure.									
28	Rotherham Metropolitan Borough Council	RB2021/1736	Outline application for residential development with all matters reserved.	Approx. 2km	Granted with conditions	https://planning.rotherham.gov.uk/fastweblive/detail.asp?AltRef=RB2021/1736&Scroll=4&Nothing=3&Nothing=2&DateReceivedStart=13%2F08%2F2021&DateReceivedEnd=10%2F09%2F2021&Sort1=FullAddressPrefix&Sort2=DateReceived++DESC&Submit=Search	Biodiversity; Cultural Heritage; Landscape and Visual; Noise and Vibration; and Socio-economic	Yes	Potential for operation of developments to overlap.	Development would be within the Biodiversity; Cultural Heritage; Landscape and Visual; Noise and Vibration; and Socio-economic ZoI; however, the scheme would have Brinsworth and Catcliffe areas between it and the Proposed Development.	Unlikely to form part of the baseline for the site.	No
29	Rotherham Metropolitan Borough Council	RB2021/0199	Outline application for the construction of up to 22,482.6 sqm of flexible employment floorspace (use class B2, B8 & E (offices & light industry)) with all matters reserved except for access.	Approx. 2km	Granted with conditions	https://planning.rotherham.gov.uk/fastweblive/detail.asp?AltRef=RB2021/0199&Scroll=3&Nothing=2&DateReceivedStart=11%2F01%2F2021&DateReceivedEnd=08%2F02%2F2021&Sort1=FullAddressPrefix&Sort2=DateReceived++DESC&Submit=Search	Biodiversity; Cultural Heritage; Landscape and Visual; Noise and Vibration; and Socio-economic	Yes	Potential for operation of developments to overlap.	Development would be within the Biodiversity; Cultural Heritage; Landscape and Visual; Noise and Vibration; and Socio-economic ZoI; however, the scheme would have Brinsworth and Catcliffe areas between it and the Proposed Development.	Unlikely to form part of the baseline for the site.	No

Other Development Details							Stage 1		Stage 2			
ID	Local Authority	Application Reference	Applicant for 'Other Development' and Brief Description	Distance From Project	Status	Link	Within ZOI?	Progress to Stage 2?	Overlap in Temporal Scope?	Scale and Nature of Development Likely to have a Significant Effect?	Other Factors	Progress to Stage 3/4?
30	Rotherham Metropolitan Borough Council	RB2022/1203	Installation and operation of a solar energy park and associated infrastructure.	Adjacent	Granted with conditions	https://planning.rotherham.gov.uk/fastweblive/detail.asp?AltRef=RB2022/1203&Scroll=3&Nothing=2&DateReceivedStart=31%2F07%2F2022&DateReceivedEnd=12%2F08%2F2022&Sort1=FullAddressPrefix&Sort2=DateReceived++DESC&Submit=Search	Air Quality; Biodiversity; Cultural Heritage; Ground Conditions; Flood Risk; Landscape and Visual; Noise and Vibration; and Socio-economic	Yes	Potential for operation of developments to overlap.	Proximity of the application to the Proposed Development means there will likely be cumulative effects. The likelihood of operational phase overlap and potential for construction overlap means that there is potential for cumulative effects on biodiversity, cultural heritage, traffic, landscape, flood risk and socio-economic receptors.	Similarity of development increases potential for effects of the development	Yes
31	Rotherham Metropolitan Borough Council	RB2024/1366	Environmental Impact Assessment (EIA) Screening Request under The Town and Country Planning (EIA) Regulations 2017. Development of a Solar Photovoltaic (PV) Farm with Associated Infrastructure on the Yorkshire Water Services, land on the north side of West Lane, Aughton, Sheffield, S26 3XS (referred to as the Development).	Approx. 1km	Proposed to be Delegated	https://planning.rotherham.gov.uk/fastweblive/detail.asp?AltRef=RB2024/1366&Scroll=3&Nothing=2&DateReceivedStart=14%2F09%2F2024&DateReceivedEnd=28%2F09%2F2024&Sort1=FullAddressPrefix&Sort2=DateReceived++DESC&Submit=Search	Biodiversity; Cultural Heritage; Flood Risk; Landscape and Visual; Noise and Vibration; and Socio-economic	Yes	Potential for operation of developments to overlap.	Small 20MW solar scheme within the Biodiversity; Cultural Heritage; Flood Risk; Landscape and Visual; Noise and Vibration; and Socio-economic ZoI. Small scale solar scheme. Could result in a cumulative effect to the wider area.	Similarity of development increases potential for effects of the development.	Yes
32	Rotherham Metropolitan Borough Council	RB2020/1346	Erection of 285 No. dwellinghouses with public open space, landscaping & construction of new access road.	Approx. 2.5km	Granted with conditions	https://planning.rotherham.gov.uk/fastweblive/detail.asp?AltRef=RB2020/1346&ApplicationNumber=RB2020%2F1346&Submit=Search	Biodiversity; Cultural Heritage; Landscape and Visual; and Socio-economic	Yes	Potential for operation of developments to overlap.	Large residential development within the ZoI for Biodiversity; Cultural Heritage; Landscape and Visual; and Socio-economic. Distance from site will have Dinnington between the residential	Dinnington will minimise cumulative impact.	No

Other Development Details							Stage 1		Stage 2			
ID	Local Authority	Application Reference	Applicant for 'Other Development' and Brief Description	Distance From Project	Status	Link	Within ZOI?	Progress to Stage 2?	Overlap in Temporal Scope?	Scale and Nature of Development Likely to have a Significant Effect?	Other Factors	Progress to Stage 3/4?
										area and the Proposed Development.		
33	Rotherham Metropolitan Borough Council	RB2025/0240	Proposed Battery Energy Storage Scheme (BESS)	Adjacent	Proposed to be Delegated	https://rotherham.planportal.co.uk/?id=RB2025/0240	Air Quality; Biodiversity; Cultural Heritage; Ground Conditions; Flood Risk; Landscape and Visual; Noise and Vibration; and Socio-economic	Yes	Potential for operation of developments to overlap.	Proximity of the application to the Proposed Development means there will likely be cumulative effects. The likelihood of operational phase overlap and potential for construction overlap means that there is potential for cumulative effects on biodiversity, cultural heritage, traffic, landscape, flood risk and socio-economic receptors.	Similarity of development increases potential for effects of the development	Yes
34	Rotherham Metropolitan Borough Council	RB2021/1540	Erection of 197 No. dwellinghouses with access, landscaping & associated works.	Approx. 215m	Granted with conditions	https://planning.rotherham.gov.uk/detail.asp?AltRef=RB2021/1540&Scroll=4&Nothing=3&Nothing=2&ApplicationNumber=&AddressPrefix=&Postcode=&CaseOfficer=&ParishName=&AreaTeam=&WardMember=&Consultant=&DateReceivedStart=12%2F7%2F2021&DateReceivedEnd=3%2F8%2F2021&DateDecidedStart=&DateDecidedEnd=&Locality=&AgentName=&Applic	Air Quality; Biodiversity; Cultural Heritage; Flood Risk; Landscape and Visual; Noise and Vibration; and Socio-economic	Yes	High likelihood the schemes will overlap in operation phases.	Large development close to scheme which will be located within the Air Quality; Biodiversity; Cultural Heritage; Flood Risk; Landscape and Visual; Noise and Vibration; and Socio-economic ZoI. Likely to form cumulative impacts in combination with the Proposed Development.	Likely to form part of the baseline for the assessment.	Yes

Other Development Details							Stage 1		Stage 2			
ID	Local Authority	Application Reference	Applicant for 'Other Development' and Brief Description	Distance From Project	Status	Link	Within ZOI?	Progress to Stage 2?	Overlap in Temporal Scope?	Scale and Nature of Development Likely to have a Significant Effect?	Other Factors	Progress to Stage 3/4?
						antName=&ShowDecided=&DecisionDescription=&DecisionLevel=&Sort1=FullAddressPrefix&Sort2=DateReceived+DESC&Submit=Search						
35	Rotherham Metropolitan Borough Council	22/00583/FUL	Installation and operation of a solar farm renewable energy generating station comprising: ground-mounted photovoltaic solar arrays, substation, inverter/transformer units, site access, internal access tracks, security measures, access gates, other ancillary infrastructure and landscaping and biodiversity enhancements.	Approx 7.6km	Granted with conditions	https://planning.bolsover.gov.uk/online-applications/applicationDetails.do?keyVal=RL2HDYDDI4T00&activeTab=summary	Biodiversity	Yes	Operational phases likely to overlap.	Although only in biodiversity ZoI, there may be a cumulative effect across borough given the applications are the same type of development.	Similarity of development increases potential for effects of the development	Yes
36	Rotherham Metropolitan Borough Council	RB2025/0029	Proposed ground-mounted solar PV arrays, supporting energy infrastructure (including battery storage (BESS), access improvements and ancillary development including, landscaping and biodiversity enhancements and continued shared agricultural use.	Red line boundary interacts with Order Limits.	Proposed to be Delegated	https://planning.rotherham.gov.uk/fastweblive/detail.asp?AltRef=RB2025/0029&&_sm_au_=iVVrs505p6LQmrR6M2L7tKs07RsKp	Air Quality; Biodiversity; Cultural Heritage; Ground Conditions; Flood Risk; Landscape and Visual; Noise and Vibration; and Socio-economic	Yes	Potential for construction and operation to overlap.	Proximity of the application to the Proposed Development means there will likely be cumulative effects. The likelihood of operational phase overlap and potential for construction overlap means that there is potential for cumulative effects on biodiversity, cultural heritage, traffic, landscape, flood risk and socio-economic receptors.	Similarity of development increases potential for effects of the development	Yes

Other Development Details							Stage 1		Stage 2			
ID	Local Authority	Application Reference	Applicant for 'Other Development' and Brief Description	Distance From Project	Status	Link	Within ZOI?	Progress to Stage 2?	Overlap in Temporal Scope?	Scale and Nature of Development Likely to have a Significant Effect?	Other Factors	Progress to Stage 3/4?
37	Bolsover District Council	22/00583/FUL	Installation and operation of a solar farm renewable energy generating station comprising: ground-mounted photovoltaic solar arrays, substation, inverter/transformer units, site access, internal access tracks, security measures, access gates, other ancillary infrastructure and landscaping and biodiversity enhancements.	Approx 7.6km	Granted with conditions	https://planning.bolsover.gov.uk/online-applications/applicationDetails.do?keyVal=RL2HDYDDI4T00&activeTab=summary	Biodiversity	Yes	Potential for construction and operation to overlap.	Only ZoI for biodiversity, distance means that two schemes are unlikely to have an inter-project cumulative effect.	Similarity of development increases potential for effects of the development	Yes
38	Rotherham Metropolitan Borough Council	RB2025/0358	EIA Screening Opinion for the development for the proposed Thurcroft Interchange comprising of Energy Parkground mounted solar photovoltaic (PV) panels with co-located Battery Energy Storage System (BESS), access, landscaping and cabling with the Point of Connection (PoC)	Red line boundary interacts with Order Limits.	Proposed to be Delegated	https://planning.rotherham.gov.uk/detail.asp?AltRef=RB2025/0358	Air Quality; Biodiversity; Cultural Heritage; Ground Conditions; Flood Risk; Landscape and Visual; Noise and Vibration; and Socio-economic	Yes	Potential construction and operational overlap.	Proximity of the application to the Proposed Development means there will likely be cumulative effects. The likelihood of operational phase overlap and potential for construction overlap means that there is potential for cumulative effects on air quality, biodiversity, cultural heritage, traffic, landscape, flood risk and socio-economic receptors.	Similarity of development increases potential for effects of the development	Yes