CASTLE WAY ENERGY

Castle Way Energy

EIA Scoping Report

BSSL Derbyshire 1 Ltd

Main Report

Planning Inspectorate Reference: EN0110037

June 2026

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Acronym	Definition
AADT	Annual average daily traffic
A&E	Accident & Emergency
AEP	Annual Exceedance Probability
AEWA	Agreement on the Conservation of African-Eurasian Migratory Waterbirds
AIL	Abnormal Indivisible Load
ALC	Agricultural Land Classification
AOD	Above Ordnance Datum
AQS	Air Quality Standards
AQMA	Air Quality Management Area
ATC	Automated Traffic Counts
BAP	Biodiversity Action Plan
BESS	Battery energy storage systems
bgl	Below Ground Level
BGS	British Geological Survey
BMV	Best and Most Versatile
BNG	Biodiversity Net Gain
CA	Conservation Areas
CCO	Cable Corridor Options
CCTV	Closed-Circuit Television
CEA	Cumulative Effects Assessment
CEMP	Construction Environmental Management Plan
CHIA	Cultural Heritage Impact Assessment
CH_4	Methane
CIEEM	Chartered Institute of Ecology and Environmental Management
CIfA	Code of Conduct
CIRIA	Construction Industry Research and Information Association
CLEA	Contaminated Land Exposure Assessment
CNP	Critical National Priority
CO_2	Carbon dioxide
CTMP	Construction Traffic Management Plan
cSAC	Candidate Special Area of Conservation
DAS	Discretionary Advice Service
DBA	Desk-Based Assessment
DC	Direct current
DCC	Derbyshire County Council
DCO	Development Consent Order
DDDC	Derbyshire Dales District Council
DECC	Department for Energy and Climate Change
DEFRA	Department for Environment Food and Rural Affairs
DEMP	Decommissioning Environmental Management Plan

Acronym	Definition
DESNZ	Department for Energy Security and Net Zero
DMRB	Design Manual for Roads and Bridges
DNI	Direct normal irradiance
DNO	Distribution Network Operator
DTMP	Decommissioning Traffic Management Plan
EcIA	Ecological Impact Assessment
eDNA	Environmental DNA
EfW	Energy from Waste
EHO	Environmental Health Officer
EIA	Environmental Impact Assessment
EIP	Environmental Improvement Plan
EMCCA	East Midlands Combined County Authority
EMF	Electromagnetic fields
EPA	Environmental Protection Act
EPUK	Environment Protection UK
ES	Environmental Statement
ESBC	East Staffordshire Borough Council
FCD	Field Capacity Day
FRA	Flood Risk Assessment
FRAP	Flood Risk Activity Permit
GHG	Greenhouse gas
GLTA	Ground Level Trees Assessment
GPA	Good Practice Advice
GVA	Gross Value Added
GW	Gigawatts
ha	Hectares
HDV	Heavy duty vehicles
HER	Historic Environment Records
HFC	Hydrofluorocarbons
HGV	Heavy Goods Vehicle
HSI	Habitat Suitability Index
HV	High voltage
IAQM	Institute of Air Quality Management
ICNIRP	International Commission on Non-Ionizing Radiation Protection
IDB	Internal Drainage Board
IMD	Index of Multiple Deprivation
IRZ	Impact Risk Zone
ISEP	Institute of Sustainability and Environmental Professionals
JNCC	Joint Nature Conservation Committee
kV	Kilovolt
LAQM	Local Air Quality Management
LCA	Landscape Character Assessment
LCRM	Land Contamination: Risk Management
LCT	Landscape Character Type
LCTA	Local Townscape Character Areas
LDV	Light development vehicles

Acronym	Definition
LEMP	Landscape and Ecology Management Plan
LFRMS	Local Flood Risk Management Strategy
LIA	Local Impact Area
LIDAR	Light Detection And Ranging
LLFA	Lead Local Flood Authority
LNRS	Local Nature Recovery Strategy
LOAEL	Lowest Observed Adverse Effect Level
LPA	Local Planning Authority
LSOA	Lower Super Output Area
LTCA	Local Townscape Character Area
LVIA	Landscape and Visual Impact Assessment
LWS	Local Wildlife Site
m	Metres
MAGIC	Multi Agency Geographic Information for the Countryside
mm	Millimetres
MoRPh	Modular River Physical
MSA	Mineral Safeguarding Area
MSOA	Middle Super Output Areas
MW	Megawatts
NAEI	National Atmospheric Emissions Inventory
NCA	National Character Area
NDC	Nationally Determined Contribution
NDHA	Non-Designated Heritage Asset
NF_3	Nitrogen trifluoride
NHLE	National Heritage List for England
NOEL	No Observed Effect Level
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
N_2O	Nitrous Oxide
NPPF	National Planning Policy Framework
NPPG	National Planning Practice Guidance
NPS	National Policy Statement
NPS EN-1	Overarching NPS for Energy
NPS EN-3	NPS for Renewable Energy Infrastructure
NPS EN-5	NPS for Electricity Networks Infrastructure
NRMM	Non-road mobile machinery
NSIP	Nationally Significant Infrastructure Project
NSPNN	National Policy Statement for National Networks
OBGP	Outline Biodiversity Gain Plan
OBSMP	Outline Battery Safety Management Plan
OCEMP	Outline Construction Environmental Management Plan
OCDTMP	Outline Construction and Decommissioning Traffic Management Plan
ODEMP	Outline Decommissioning Environmental Management Plan
ODS	Outline Drainage Strategy
OLEMP	Outline Landscape Environmental Management Plan

Acronym	Definition
ONS	Office for National Statistics
OOEMP	Outline Operational Environmental Management Plan
OS	Ordnance Survey
OSMP	Outline Soil Management Plan
OSWMP	Outline Site Waste Management Plan
OPRWMP	Outline Public Right of Way Management Plan
PA 2008	Planning Act 2008
PEIR	Preliminary Environmental Information Report
PFC	Perfluorocarbons
PIA 2025	Planning and Infrastructure Act 2025
PIR	Passive infrared
PM_{10}	Particulate Matter (under 10 micrometres)
$PM_{2.5}$	Particulate Matter (under 2.5 micrometres)
POC	Point of Connection
PRA	Preliminary Risk Assessment
PRoW	Public Rights of Way
PRTR	Pollutant Release and Transfer Register
pSPAf	Proposed Special Protection Area
PV	Photovoltaic
RAMs	Reasonable Avoidance Measures
RCP	Relative Concentration Pathways
RPG	Registered Parks and Gardens
RQF	Regulated Qualifications Framework
RTM	Remedial Targets Methodology
RVAA	Residential Visual Amenity Assessment
SAC	Special Area of Conservation
SCC	Staffordshire County Council
SDDC	South Derbyshire District Council
SF_6	Sulphur hexafluoride
SFRA	Strategic Flood Risk Assessment
SGHAT	Solar Glare Hazard Analysis Tool
SM	Scheduled Monument
SOAEL	Significant Observed Adverse Effect Level
SoS	Secretary of State
SPA	Special Protection Area
SPV	Special Purpose Vehicle
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage Systems
SWMP	Site Waste Management Plan
TA	Transport Assessment
tCO2e	Tonnes of carbon dioxide equivalent
TIKRC	Tara International Kadampa Retreat Centre
TPO	Tree Preservation Order
UKCP18	UK Climate Change Projections
UKHab	UK Habitat Classification

Acronym	Definition
UNESCO	The United Nations Educational, Scientific and Cultural Organization
UNFCC	United Nations Framework Convention on Climate Change
WHS	World Heritage Sites
WIA	Wider Impact Area
WSI	Written Scheme of Investigation
ZoI	Zone of Interest
ZTV	Zone of Theoretical Visibility

1.0 INTRODUCTION

1.1 Purpose of the EIA Scoping Report

1.1.1 BSSL Derbyshire 1 LTD, a Special Purpose Vehicle ('SPV') company and wholly owned subsidiary of Brockwell Energy (hereafter referred to as 'the Applicant') has commissioned this Environmental Impact Assessment ('EIA') Scoping Report for Castle Way Energy, a proposed solar development with co-located battery energy storage systems ('BESS') and associated cable corridors ('the Proposed Development'). This report forms a formal request for a Scoping Opinion from the Secretary of State ('SoS') for the Department for Energy Security and Net Zero ('DESNZ') under Regulation 10(1) of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 ('the EIA Regulations')[1].

1.1.2 The Proposed Development comprises the construction, operation and maintenance, and decommissioning of a renewable energy project on land located west of Derby ('the draft Order Limits'), within the following administrative areas:

- Derbyshire County Council ('DDC');
- South Derbyshire District Council ('SDDC');
- Derbyshire Dales District Council ('DDDC');
- Staffordshire County Council ('SCC'); and
- East Staffordshire Borough Council ('ESBC').

Proposed Development

1.1.3 The Proposed Development would enable the generation and export of up to 300 megawatts ('MW') of renewable electricity, as well as the storage of 200 MW of electricity for on-Site BESS. The precise generating capacity and storage capacity will be subject to detailed design.

1.1.4 The description of the Proposed Development is as follows:

"Castle Way Energy comprises the construction, operation and maintenance, and decommissioning of a new ground-mounted solar photovoltaic (PV) energy generating station and an associated on-site Battery Energy Storage System (BESS), on land to the west of Derby. The Proposed Development would allow for the generation and export of over 100 megawatts (MW) of renewable electricity.

The Proposed Development includes the associated infrastructure above and below ground and grid connection infrastructure for connection to the national grid at the existing National Grid Willington 400 kilovolt (kV) substation.

The Proposed Development also includes the establishment of a legacy fund for community benefit and the intent to provide an agrivoltaics research area to be delivered in partnership with an independent scientific research institute."

1.1.5 Full details of the Proposed Development are described in **Chapter 2: The Proposed Development** of this Scoping Report.

The draft Order Limits

1.1.6 The draft Order Limits are defined as the area within which the Proposed Development will be located, including its electrical infrastructure and temporary work areas.

1.1.7 The anticipated maximum area of land required for the construction, operation and maintenance of the Proposed Development, is shown on **Figure 1.1: draft Order Limits (Appendix 1.1: Figures)**. It is important to note that this may be subject to change as the Proposed Development design progresses, taking into account environmental and technical factors, and responses to engagement before the final DCO Order Limits are defined.

1.1.8 Full details of the draft Order Limits are described in **Chapter 3: Description of Site and Surroundings** of this Scoping Report.

Requirement for DCO

1.1.9 The Proposed Development constitutes a Nationally Significant Infrastructure Project ('NSIP') under s.14(1)(a) and s.15(2) of the Planning Act 2008 ('PA 2008')[2], as it proposes to generate up to 300 MW of electricity. The Infrastructure Planning (Onshore Wind and Solar Generation) Order 2025 amends s.15 of the PA 2008 to increase the threshold of onshore generating stations generating energy from sunlight in England from 50 MW to 100 MW; therefore, the Proposed Development requires an application for Development Consent to be submitted to the Planning Inspectorate, to be determined by the SoS for the Department for Energy Security and Net Zero.

Need for the Proposed Development

1.1.10 The Proposed Development would generate electricity from renewable sources, contributing to national targets for decarbonisation, including to the UK Government's legally binding target to reach net-zero emissions by 2050[3].

1.1.11 Produced by the UK Government in April 2022, The British Energy Security Strategy[4] announced the intent to increase UK solar capacity from 14 gigawatts ('GW') to 70GW by 2035. The Energy White Paper: 'Powering our Net Zero Future'[5] also establishes the UK Government's goal for a fully decarbonised, reliable and low-cost power system by 2050. The 'Powering Up Britain' policy paper[6] sets out a goal for a fivefold increase in solar power by 2035, further reiterating the UK Government's commitment to solar energy.

1.1.12 In addition, The Clean Power 2030 Action Plan policy paper[7] outlines the UK Government's approach to delivering Clean Power by 2030, including an ambition for 45 to 47 GW of installed solar power by 2030. The Overarching National Policy Statement for Energy ('NPS EN-1')[8] identifies that low carbon energy infrastructure, including the Proposed Development, as a Critical National Priority ('CNP').

1.1.13 The Proposed Development will respond to the projected increase in demand for electricity, improving UK energy security and resilience in line with national strategy.

The Applicant

1.1.14 The Applicant for the Proposed Development is BSSL Derbyshire 1 LTD, a wholly owned subsidiary of Brockwell Storage & Solar Limited ('Brockwell Energy'). Brockwell Energy is a leading multi-technology independent power producer specialising in renewable energy infrastructure. Since 2017, Brockwell has originated and built out more than £1bn of assets in the UK and has a pipeline of more than 3.5 GW across onshore wind, solar energy, and battery storage currently in development.

Need for EIA and the EIA Process

1.1.15 The EIA requirement for NSIPs is transposed into law and preserved post-Brexit 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'. Those developments listed in Schedule 1 must be subject to EIA, while developments listed in Schedule 2 must only be 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*' (Regulation 3(1) of the EIA Regulations). The selection criteria for Schedule 2 development are set out in Schedule 3.

1.1.16 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 is not a project listed in Schedule 1. It is considered that by virtue of the nature, size and location of the Proposed Development it would have the potential to meet the criteria in Schedule 3 of the EIA Regulations and therefore has the potential to give rise to likely significant environmental effects.

1.1.17 As a consequence, in accordance with Regulation 5(2)(a) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 ('APFP Regulations')[9] the Applicant has elected to prepare an Environmental Statement ('ES') in support of their DCO Application. The ES will set out the methods and findings of a comprehensive EIA undertaken in line with the EIA Regulations.

1.1.18 The EIA process is summarised in three phases that take place prior to the submission of the DCO:

- Scoping: the Applicant requests a Scoping Opinion from the SoS, who must consult defined engagement bodies before issuing their Scoping Opinion;
- Engagement: The Planning and Infrastructure Act 2025 ('PIA 2025') gained Royal Assent on the 31 December 2025, although not all sections of the PIA 2025 have yet come into force. When it does, s.5 of the PIA 2025 will remove the requirement for certain pre-application statutory consultation requirements, including section 42 consultation and the requirement to consult on the Preliminary Environmental Information Report ('PEIR'). Whilst the Applicant awaits the implementation of s.5 of the PIA 2025 and guidance on the implementation of these changes, pre-application engagement will be undertaken so that the Adequacy of Consultation milestone is met, and to ensure that the proposed approach remains robust, proportionate, and aligned with established best practice under the PA 2008, maintaining a clear and auditable record for submission and examination. Further information on the environmental setting and potential impact of the Proposed Development will be provided at both phases of Engagement. Further detail is set out in **Chapter 5: EIA Methodology**; and
- Preparation of the ES: The ES will be prepared on the basis of the adopted Scoping Opinion and responses to the pre-application engagement. It will form part of the DCO Application.

Notification that a DCO Application will be accompanied by an ES

1.1.19 This Scoping Report represents notice, pursuant to Regulation 8(1)(b) of the EIA Regulations, that the application for a DCO will be accompanied by an ES. The ES will include at least the information set out in Regulation 14 and any additional information specified in Schedule 4 relevant to the specific characteristics of the Proposed Development and to the environmental features likely to be significantly affected. It will include the information

reasonably required for reaching a reasoned conclusion on the significant effects of the Proposed Development.

EIA Scoping Report

1.1.20 The EIA Regulations set out the requirements for an applicant who proposes to request a Scoping Opinion from the SoS. The EIA Regulations (Regulation 10(3)) prescribe the information that a request for an EIA Scoping Opinion must include. **Table 1.1** presents those information requirements and where each can be found in this Scoping Report.

Table 1.1 Information Required to Accompany a Request for an EIA Scoping Opinion

Information Required	Location within this EIA Scoping Report
A plan sufficient to identify the land.	Figure 1.1: draft Order Limits (Appendix 1.1: Figures)
A description of the nature and purpose of the development, including its location and technical capacity.	Chapter 1: Introduction Chapter 2: The Proposed Development Chapter 3: Description of the Site and Surroundings
An explanation of the likely significant effects of the development on the environment.	Chapters 6-19 of this EIA Scoping Report

Purpose of the EIA Scoping Report

1.1.21 The purpose of this Scoping Report is to ensure that the subsequent EIA is focused on the key impacts likely to give rise to significant effects, and to obtain agreement on the EIA approach and scope. As well as identifying elements to be considered in the EIA, this Report also identifies those elements that are not considered necessary to assess further. This approach is in line with the general aim to undertake proportionate EIA, as advocated by industry best practice and as set out in paragraph 5.10 of the Planning

Inspectorate Advice Note Seven Environmental Impact Assessment: process, preliminary environmental information and environmental statements[10].

1.1.22 This Scoping Report seeks to establish the overall framework for the EIA for the Proposed Development in relation to the environmental impacts and associated effects, with the ES to be based on this EIA Scoping Report and the Scoping Opinion received. However, the exact scope of the EIA will also be influenced by the on-going design evolution of the Proposed Development, baseline data collection (e.g. field surveys etc.) and engagement with stakeholders. Where further evidence justifies a change to the scope of the EIA, this will be explained in the ES along with confirmation of whether the change has been agreed with relevant consultees.

1.1.23 This Scoping Report has been prepared to assist the Planning Inspectorate in adopting its Scoping Opinion on the Proposed Development. In accordance with Regulation 14(3)(a) of the EIA Regulations, the ES will be based on the Scoping Opinion adopted by the Planning Inspectorate. In addition to the above, Regulation 10(3)(d) of the EIA Regulations also requires "*such other information or representations as the person making the request may wish to provide or make"*.

1.1.24 The purpose of the EIA Scoping Report is therefore to:

- Provide a summary of the Proposed Development;
- Set out the proposed scope of assessments and methodologies to be undertaken in the ES; and
- Set out the proposed structure of the ES to be submitted with the DCO Application.

Contents of EIA Scoping Report

1.1.25 The Scoping Report is set out in accordance with guidance provided in the Planning Inspectorate's Advice Note Seven Environmental Impact Assessment: process, preliminary environmental information and environmental statements and the Technical Advice Page for Scoping Solar Development. **Table 1.2** lists the suggested requirements identified in Advice

Note Seven and details where they are located in this Scoping Report. The requirements of the EIA Regulations regarding the content of the ES are also detailed within the contents tabulated below.

Table 1.2 Contents of the Scoping Report

Suggested Contents	Location in the Scoping Report
The Proposed Development	
"an explanation of the approach to addressing uncertainty where it remains in relation to elements of the Proposed Development e.g. design parameters"	Chapter 2: The Proposed Development
"referenced plans presented at an appropriate scale to convey clearly the information and all known features associated with the Proposed Development"	Figure 1.1: draft Order Limits; and Figure 3.1: Environmental Constraints (Appendix 1.1: Figures)
EIA Approach and Topic Areas	
"an outline of the reasonable alternatives considered and the reasons for selecting the preferred option"	Chapter 4: Alternatives 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"	Table 22.1 in Chapter 22: Conclusion
"a detailed description of the aspects and matters proposed to be scoped out of further assessment with justification provided"	Chapters 6 to 19
"results of desktop and baseline studies where available and where relevant to the decision to scope in or out aspects or matters"	Chapters 6 to 19
"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"	Chapters 6 to 19

Suggested Contents	Location in the Scoping Report
"any avoidance or mitigation measures proposed, how they may be secured and the anticipated residual effects"	Chapters 6 to 19
Information Sources	
"references to any guidance and best practice to be relied upon"	Chapters 6 to 19
"evidence of agreements reached with consultation bodies (for example the statutory nature conservation bodies or local authorities)"	Chapters 6 to 19
"an outline of the structure of the proposed ES"	Chapter 5: EIA Methodology
Transboundary Effects	
"details of the potential for transboundary effects"	Chapter 5: EIA Methodology

Commitments Register

1.1.26 A Commitments Register has been prepared as per the Planning Inspectorate Advice Note – NSIPs: Commitments Register[11] (see **Appendix 1.2: Commitments Register**). The purpose of the Commitments Register is to track commitments made by the Applicant through the NSIP process. A version is submitted alongside this Scoping Report setting out where the Project is relying on commitments as the basis for scoping matters out or refining the scope of the assessment.

1.1.27 The Commitments Register will be updated at various points in the Project's lifecycle, in accordance with the Planning Inspectorate Advice Note – NSIPs: Commitments Register.

1.2 Planning Policy Context

National Policy

National Policy Statements

1.2.1 In accordance with s.104(2) of the PA 2008, the SoS must determine the application in accordance with the relevant National Policy Statements ('NPS'), except in limited circumstances. Where an NPS is not designated or not directly applicable, the SoS must consider other "important and relevant" matters under s.105.

1.2.2 The following NPSs are relevant to the Proposed Development:

- NPS-EN1;
- NPS for Renewable Energy Infrastructure ('NPS EN-3')[12]; and
- NPS for Electricity Networks Infrastructure (NPS EN-5)[13].

NPS EN-1

1.2.3 The NPS EN-1 establishes the overall national energy policy for major energy infrastructure. NPS EN-1 in combination with technology-specific NPSs EN-3 and EN-5, will form the primary basis for the SoS's decision-making on applications for major energy infrastructure.

1.2.4 Part 2 of NPS EN-1 sets out current national policy and legislative requirements relevant to energy infrastructure development, including the Climate Change Act 2008 (2050 Target Amendment) Order 2019[14], which commits the UK achieving Net Zero greenhouse gas emissions by 2050.

1.2.5 NPS EN-1 also establishes the role of CNP Infrastructure in delivering the Government's Clean Power 2030 ambitions and meeting the 2050 net zero target[15]. It identifies solar PV development as CNP infrastructure, and confirms strong policy support for its accelerated deployment, indicating the need for such infrastructure is likely to outweigh residual adverse impacts.

NPS EN-3

1.2.6 NPS EN-3 provides technology specific policy focusing on renewable energy generation. **Chapter 5: EIA Methodology** sets out policy specific to solar

NSIP development, directing the approach to assessment and consideration of impacts specific to solar development in addition to generation considerations presented in NPS EN-1. It should therefore be considered along NPS EN-1, as a primary policy basis for decisions on solar PV development.

NPS EN-5

1.2.7 NPS EN-5 provides technology-specific policy for electricity networks infrastructure, including transmissions systems (above or underground) and associated infrastructure such as substations and converter stations. It is relevant for the Proposed Development due to the inclusion of electricity network infrastructure, including substations and underground and/ or above ground cables.

1.2.8 NPS EN-5 sets out the assessment principles specific to electricity network infrastructure which supplement those detailed in NPS EN-1. Accordingly, both NPSs should be considered in conjunction. EN-5 confirms that such works are inherently necessary to support renewable energy deployment and should be afforded substantial weight in decision making.

National Planning Policy Framework

1.2.9 The National Planning Policy Framework ('NPPF') (2025)[16] sets out the Government's planning policies for England and the expectation of how these are applied. The NPPF strengthens the Government's commitment to delivering a secure, low carbon and resilient energy system, and places emphasis on the role of renewable energy in meeting national climate and energy security objectives.

1.2.10 Although the NPPF does not contain specific policies relating to NSIPs, the NPPF remains an important and relevant consideration under s. 105 of the PA 2008. Therefore, these policies will be considered where relevant.

Local Policy

1.2.11 Although NSIPs are not determined under the Town and Country Planning Act 1990, local planning policy remains an important and relevant

consideration. The Proposed Development spans multiple local authority administrative areas; therefore, the following adopted development plans will be taken into account where relevant:

- South Derbyshire Local Plan, 2011-2028 Part 1 (Adopted June 2016)[17] and Part 2 (Adopted September 2017)[18];
- East Staffordshire Local Plan, 2012-2031[19];
- Derbyshire Dales Local Plan, 2013-2033 (Adopted December 2017)[20];
- ESBC Local Plan, 2012-2031 (Adopted October 2015)[21];
- Derby and Derbyshire Minerals Local Plan – Part 1 and Part 2 (Adopted 2000, Amended 2002)[22];
- Emerging Derbyshire and Derby Minerals Plan 2022 – 2038 (January 2023)[23];
- Derby and Derbyshire Waste Local Plan (Adopted 2005)[24];
- The Staffordshire and Stoke-on-Trent Joint Waste Local Plan 2010-2026 (Adopted March 2013)[25]; and
- Minerals Local Plan for Staffordshire 2015-2030 (Adopted February 2017)[26].

2.0 THE PROPOSED DEVELOPMENT

2.1 Introduction

2.1.1 This chapter presents a description of the Proposed Development in sufficient detail to inform the approach to, and scope of, the EIA.

2.2 Iterative Design and Rochdale Envelope

2.2.1 The design of the Proposed Development is being progressed through an iterative process, whereby environmental, technical, stakeholder and land use considerations are continually fed back into the emerging layout. This approach ensures that the Proposed Development evolves in a manner that avoids or reduces environmental effects wherever practicable, while retaining sufficient flexibility to respond to ongoing surveys, stakeholder engagement and technological developments.

2.2.2 In accordance with the Planning Inspectorate's Advice Note Nine: Rochdale Envelope[27], the DCO application will incorporate a clearly defined set of maximum (and where relevant, minimum) design parameters within which the final detailed design will be delivered. Advice Note Nine recognises that certain elements of a nationally significant infrastructure project may not be fixed at the time of application, and therefore the EIA must assess the cautious worst-case scenario within an agreed envelope. This ensures that all likely significant environmental effects are robustly assessed without artificially inflating impacts beyond what is credible or deliverable.

2.2.3 The EIA will therefore assess a parameter-based design envelope, ensuring that the limits of deviation are as tightly defined as possible to remain compliant with the EIA Regulations. Technical authors will use these parameters to identify the cautious worst-case effects for each environmental topic, ensuring that any mitigation required is capable of addressing the upper bound of potential impacts. This approach allows the Proposed Development to evolve within the assessed envelope while ensuring that environmental protection is maintained throughout the design and consenting process.

2.2.4 The Planning Inspectorate's Advice Note Nine sets out several key principles that are directly relevant to the Proposed Development:

- The Application must acknowledge that elements of the design will continue to evolve within clearly defined parameters;
- The EIA must reflect this evolution and assess the likely significance of effects arising from a flexible design;
- The level of detail must be sufficient to enable a proper assessment of likely significant effects and to identify mitigation measures capable of addressing the worst-case scenario within the envelope; and
- The decision maker may impose requirements to ensure that the final design remains within the parameters assessed in the ES.

2.2.5 Given the current stage of design development, it is anticipated that several components of the Proposed Development will require flexibility during the EIA, including:

- The detailed layout, specification and mounting structure of the PV modules;
- The configuration and siting of inverters, transformers and switchgear;
- The arrangement and footprint of the BESS;
- The alignment and detailed routing of cabling, including the grid connection; and
- The detailed configuration of works at the existing Willington 400 kV substation.

2.2.6 Embedding flexibility within these elements will allow the final design to respond to environmental constraints, landowner requirements, engineering optimisation and ongoing technological advancements, while ensuring that the EIA captures the full range of likely significant effects within a robust and legally compliant Rochdale Envelope.

2.3 Description of the Proposed Development

2.3.1 The Proposed Development comprises the construction, operation and maintenance, and decommissioning of a new ground-mounted solar PV energy generating station and an associated on-site Battery Energy Storage System (BESS), on land to the west of Derby. The Proposed Development would allow for the generation and export of over 100 MW of renewable electricity.

2.3.2 The Proposed Development includes the associated infrastructure above and below ground and grid connection infrastructure for connection to the national grid at the existing National Grid Willington 400 kV substation.

2.3.3 The Proposed Development also includes the establishment of a legacy fund for community benefit and the intent to provide an agrivoltaics research area to be delivered in partnership with an independent scientific research institute.

2.4 Components of the Proposed Development

Solar PV Modules and Mounting Structures

2.4.1 The Proposed Development will comprise the installation of either fixed (static) or tracked solar PV panels which would convert sunlight into direct current ('DC') electricity.

2.4.2 The solar PV panels would be installed on support frame mounting structures which would be arranged into rows on an east-west axis facing south, typically set approximately 3 to 3.5 metres ('m') apart. The maximum height of the panels along the highest edge of the array would typically be 3.8m in height.

2.4.3 The solar PV support frame structures would consist of steel uprights and aluminium or steel cross bars. The steel uprights would comprise hollow steel posts with a u-shaped cross section which are ram-driven into the ground using specialist small-scale piling machines to a depth of typically up to 2.4m, depending on ground conditions. The rest of the support frame would then be fitted to the posts to create angled support tables ready for the solar panel installation.

2.4.4 Optionality is also retained to install bifacial single-axis tracker technology, also measuring a maximum of 3.8m in height.

2.4.5 An alternative solution comprising concrete footings would also be available in areas with sensitivities under the ground, called a 'no-dig' solution.

2.4.6 The solar PV panels would be mounted on the pre-constructed support frame table. The solar PV panels convert solar irradiance (sunlight) into DC electricity and can operate on sunny or cloudy days. The individual solar PV panels typically comprise dark blue, dark grey or black photovoltaic cells. PV technologies are constantly evolving, and it is not possible to specify the precise panel type, as this will depend on the best technology available to be procured at the time of construction.

2.4.7 The solar PV panels would be connected in strings, and cabling would be secured to the rear of the solar panel, protected by suitable trunking.

Inverters

2.4.8 Inverters convert the DC electricity produced by the solar PV panels into alternating current ('AC') that can be exported to the National Grid. Inverters can be located at regular intervals throughout the Proposed Development and are typically containerised with associated control and switchgear equipment, referred to as centralised inverters. Centralised inverter structures are typically up to 3.5m in height. Alternatively, inverters can be mounted underneath the rear of the panels, referred to as string inverters. The option selected will be determined by technical and environmental factors and will be dependent on the final technology supplier.

Transformers

2.4.9 Transformers are used to increase the voltage of the electricity produced before it reaches the National Grid Willington 400 kV substation. Transformers are typically co-located with the inverters at regular intervals. They are usually expected to be housed in containers that also include control equipment.

High Voltage ('HV') Switchgear and Control Equipment

2.4.10 A switchgear includes a range of electrical switches, fuses, and breakers to control, protect and isolate the electrical circuits and equipment. An inverter level switchgear is typically co-located with the inverters (if centralised inverters are used) and transformers.

Castle Way Energy Substation(s)

2.4.11 Electricity generated would be relayed from the on-Site transformers to either one or multiple Castle Way Energy substations. These would include equipment to control and operate the solar PV arrays and BESS, and to step up the voltage from the inverters' transformers (typically 33 kV) to the voltage at the National Grid Willington 400 kV substation, being 400kV.

2.4.12 The main elements of the Castle Way Energy substation(s) would include:

- Control building including indoor 33kV electrical switchgear, meters and busbars, with a maximum height of up to 4m;
- One or more 33kV outdoor switchgear(s), with a maximum height of up to 8m;
- One or more 33/400kV transformers installed over concrete foundations and separated by walls with a maximum height of up to 12m;
- Outdoor 400kV busbars connecting the output of the different transformers, with a maximum height of up to 12m; and
- 400kV switchgear with a maximum height of up to 8m, and connection to join the outdoor infrastructure with the 400 kV line to the National Grid Willington 400 kV substation.

Cabling

2.4.13 A grid connection corridor is required to connect the project to the National Grid Willington 400 kV substation. The cable route design is not yet fixed and is going through an optioneering process looking at the engineering requirements, local context and environmental and community constraints.

2.4.14 Underground electrical cabling would connect the PV arrays to the inverters and transformers and then onto the Castle Way Energy substation(s). Cables would be laid within trenches that typically follow the internal access tracks, these trenches would typically be up to 0.8m in width and 1.2m in depth.

Grid Connection

2.4.15 A 400kV grid connection will be provided from the Castle Way Energy substation(s) to the National Grid Willington 400 kV substation.

2.4.16 The 400kV grid connection is expected to be comprised of a mix of above ground and underground infrastructure. Underground cabling will be constructed by a combination of trench cut and backfilling, and horizontal directional drilling to navigate features such as roads, watercourses, or other environmentally sensitive features.

2.4.17 The construction corridor for underground cable is expected to be up to 40m wide to allow for a haul road, the trenches for cable laying, storage of topsoil and materials, and other temporary laydown areas. The draft Order Limits currently allow for a corridor up to approximately 100m wide to provide some flexibility to the final routing should it be required.

2.4.18 For entry into Willington 400kV Substation, both underground and overhead cable options are being explored as the design progresses due to a number of constraints in the area directly adjacent to the substation. If underground cabling is deemed appropriate this would be undertaken with trenchless technology such as an HDD, whereas overhead cabling would require 1-2 pylons to be constructed to allow entry to the substation.

BESS

2.4.19 The Proposed Development will include a BESS that will:

- Store excess power generated by the Proposed Development that could not be exported;
- Manage the export to make power available to the grid during times of peak demand; and

- Provide grid balancing services for National Grid.

2.4.20 BESS facilities are an essential part of a net zero carbon electricity transmission network and are particularly important to solar generating facilities where the peak times of generation lie outside periods of traditional peak demand, which are typically in the evenings.

2.4.21 The BESS would comprise battery containers along with associated inverters and transformers and is expected to be co-located with a Castle Way Energy substation. The battery containers contain battery modules, air conditioning units, a fire suppression system, and battery monitoring, management, and protection system. The BESS would be linked via cabling to the other electrical infrastructure equipment within the Castle Way Energy substation(s).

Storage Building

2.4.22 A small storage building would be co-located with the Castle Way Energy substation(s) and BESS and will allow for the storage of spare PV panels, cabling, fencing, and other equipment that could be required for routine maintenance operations. The storage building is expected to have a footprint of no greater than 20m x 10m, with a height of up to 4.5m.

Fencing

2.4.23 A perimeter security fence would be installed to enclose the Proposed Development's operational areas. The fence is likely to be either a wire-mesh or deer fence, and measure between 2m and 3m in height. The fence is expected to be designed in such a way to allow small animals to pass through the fenced areas.

2.4.24 High security fencing, weld mesh or palisade fencing, would be required around the Castle Way Energy Substation(s) and BESS facility.

Security

2.4.25 Pole-mounted, infra-red, security detection cameras would be mounted on poles of typically up to approximately 3m in height located at intervals along the perimeter fence and around electrical infrastructure and compounds. It is

anticipated that these cameras would have motion detection technology for recording.

2.4.26 Security lighting would be required around key electrical infrastructure only but would only be operated during periods of maintenance outside of daylight hours (which would not be a regular occurrence), or in the event of an emergency.

Access Tracks

2.4.27 The Proposed Development would require internal access tracks to connect the fields of solar arrays and allow for maintenance access to elements such as the solar PV panels, inverters, and transformers.

2.4.28 The access tracks would typically be formed by excavating 200 millimetres ('mm') and laying clean stone within a geogrid over a geotextile membrane, depending on ground condition. Excavated material would be stored in low mounds adjacent to the track for use in restoration or dispersed evenly across the adjacent soils.

Landscaping and Green Infrastructure

2.4.29 The Proposed Development would incorporate extensive landscape proposals forming a connected network of green infrastructure, including both new landscape interventions and enhancements to existing features including:

- Public Rights of Way ('PRoW');
- Native species hedgerow and hedgerow tree planting;
- Native species woodland planting;
- Enhancement of existing hedgerows;
- Species-diverse wildflower meadows;
- Species-diverse wildflower field margins;
- Grazing pasture; and
- Sustainable drainage system basins and wildlife ponds.

Research Areas

2.4.30 An area within the Proposed Development will be set aside for agricultural research in partnership with an independent third party. In this area, solar PV panels will be arranged within the parameters of all other solar PV areas and soil research will be undertaken, with the results fed into ongoing soil management across the Proposed Development.

2.5 Construction and Decommissioning Phases and Programme

2.5.1 The ES will outline the anticipated construction and decommissioning programme phasing and methodology and explain the assumptions made. This chapter will form the basis of the construction and decommissioning phase assumptions documented in each of the technical chapters of the ES. For the purpose of the EIA scoping process, the below sections provide assumptions for construction and decommissioning.

Indicative Construction Activities

2.5.2 Construction of the Proposed Development is expected to commence in 2029 and require an estimated 30 months to complete.

2.5.3 The types of construction activities are expected to include:

- Site preparation;
- The establishment of construction compound(s) and laydown areas;
- Import of construction materials, plant, and equipment to Site;
- Upgrading of existing site tracks / access roads and construction of new tracks and access;
- The upgrade or construction of crossing points (bridges / culverts) over drainage ditches;
- Setting out of fencelines, panel arrays, substations, landscaping, and associated infrastructure;
- Fencing installations;

- Site landscaping and habitat creation;
- Erection of PV module mounting structures;
- Mounting of PV modules;
- Installation of inverter, transformer, and substation(s);
- Installation of electric cabling;
- Installation of battery storage units;
- Construction of substation compound;
- Grid connection groundworks;
- Grid connection overhead cabling works;
- Erection of electricity transmission towers to carry overhead cables;
- Electrical cabling and connection to the National Grid Willington 400 kV substation; and
- Testing and commissioning.

Construction Traffic and Access

2.5.4 Construction Access into the solar development sites and for the cable route is still to be determined as boundaries are still being refined. It is proposed that all access points will be Design Manual for Roads and Bridges ('DMRB')[28] compliant with sufficient turning space for the required large vehicles to enter and exit from each solar development site. These will be confirmed with swept path analysis. Routes to and from the land that makes up the draft Order Limits will also be considered for both construction traffic and any AIL to determine an appropriate route for these vehicles. Construction vehicle numbers are still being considered and will be confirmed at a later date, but at this stage it is anticipated there will be approximately 80 daily two way HGV trips (40 arrivals and 40 departures) across the draft Order Limits. This is mostly to be made up of HGVs bringing materials (Solar Panels) to the solar development sites. In addition, there are also anticipated to be 320 two way staff trips (160 arrivals + 160 departures) per day. These numbers reflect movements to all parcels,

plus the cable route and therefore, it is expected that on a parcel-by-parcel basis, the flows would be much lower. The ability of the highway network to accommodate any additional trips during this scenario will also be assessed within the Transport Assessment ('TA').

Construction Environmental Management

2.5.5 An Outline Construction Environmental Management Plan ('OCEMP') would be prepared and submitted with the DCO application which would outline the principles, controls, and measures to be implemented during construction to reduce potential significant environmental effects from occurring.

2.5.6 Where the Applicant intends to rely on mitigation measures to scope out likely significant construction phase environmental effects from the EIA these measures will be detailed within the OCEMP. A Construction Environmental Management Plan ('CEMP') would be produced following grant of the DCO and prior to the start of construction based on the principles of the OCEMP; this is anticipated to inform a requirement attached to the DCO.

2.5.7 A series of other management plans would also be prepared, either as standalone plans, or in accordance with a required content list that will be set out in the OCEMP.

2.6 Operational and Maintenance Phase

Indicative Operational and Maintenance Activities

2.6.1 The Proposed Development comprises a temporary development with an operational lifespan of up to 40 years, which is the expected operational life of the solar PV panels.

2.6.2 Once the Proposed Development is constructed and operational, access to the Site would be limited to the Castle Way Energy substation(s), and for routine maintenance operations, vegetation management, and farm activities. Maintenance access to the Site would be by a small van, or similar, and the storage building would contain spare equipment and tools for routine repairs

and maintenance. Operational access would be via the existing public highway with limited traffic movements expected.

2.6.3 Should more major repairs be required, such as the replacement of transformers, more staff and specialist equipment (cranes and low loaders) would be required; however, this is not anticipated to be a regular occurrence.

Decommissioning Phase

2.6.4 When the operational phase ends, the Proposed Development will require decommissioning. All solar PV modules, mounting poles, inverters, transformers, BESS equipment, and fencing would be removed from the Site and recycled or disposed of in accordance with good practice and market conditions at that time. The Site will be returned to a condition suitable for return to its original use after decommissioning in agreement with the landowner. The future of the Castle Way Energy substation(s) and associated infrastructure would be agreed with the relevant Local Planning Authority ('LPA') and Distribution Network Operator ('DNO') prior to commencement of decommissioning. A Decommissioning Environmental Management Plan ('DEMP'), to include timescales and transportation methods, would be agreed in advance with the relevant LPA. This will be secured through a DCO requirement on the basis of the Outline Decommissioning Environmental Management Plan ('ODEMP') to be submitted with the DCO application.

2.6.5 Decommissioning is expected to take between 12 and 24 months and could be undertaken in phases.

2.6.6 The effects of decommissioning are often similar to or of a lesser magnitude than construction phase effects. As such it is not proposed to provide a separate decommissioning assessment within each technical chapter, unless there are specific issues related to decommissioning which could give rise to materially greater impacts than construction. Where this occurs an assessment of these impacts will be provided in the ES.

3.0 DESCRIPTION OF SITE AND SURROUNDINGS

3.1 Site Location and Description

3.1.1 The Proposed Development is located to the west of Derby. The draft Order Limits comprise five solar development sites and nine cable corridor routes options across five local authority administrative areas as shown in **Table 3.1**. The draft Order Limits are shown in **Figure 1.1: draft Order Limits (Appendix 1.1: Figures)**.

3.1.2 **Figure 1.1: draft Order Limits (Appendix 1.1: Figures)** represents the current extent of land being considered which will be refined as the design of the Proposed Development progresses. The final extent of the draft Order Limits will be assessed within the ES.

Table 3.1 Solar Development Site and Cable Route Option References in relation to Local Authority Administrative Boundaries

Solar Development Site / Cable Route Reference	Local Authority
A	SDDC / DCC
B	
C	
D	
E	SDDC / ESBC / DCC / SCC
National Grid Willington 400 kV substation	SDDC / DCC
Pale Blue	SDDC / DCC
Navy Blue	DDDC / SDCC / DCC
Green	SDDC / DCC
Yellow	
Orange	

Solar Development Site / Cable Route Reference	Local Authority
Purple	
Maroon	
Pink	
Grey	

3.1.3 Key environmental constraints on and in proximity to the Site are shown on **Figure 3.1: Environmental Constraints (Appendix 1.1: Figures)**.

3.1.4 The draft Order Limits extend to approximately 1,704 hectares ('ha'), a breakdown of the Site areas is included in **Table 3.2**. This encompasses the land required for the solar development, BESS, and all associated infrastructure including access tracks, cabling, construction areas and the grid connection to the National Grid Willington 400 kV substation.

Table 3.2 Site Area

Site Area	Hectares (ha)	Percentage (%)
Solar Development Sites	383.4	23
Grid Connection	18.7	1
Cable Route Corridor Options	1301.4	76
Total Area of the draft Order Limits (full Solar Development Site areas and the cable route corridor options)	1703.5	

3.2 Solar Development Sites

3.2.1 For ease of reference, the solar development sites have been subdivided into Solar Development Sites A to E as illustrated in **Figure 1.1: draft Order Limits (Appendix 1.1: Figures)**. Sites A to E are described as follows:

- Site A – the Site area comprises a coherent tract of open agricultural land situated between Sudbury, Aston and the surrounding rural settlements, characterised by large arable fields, hedgerow-defined field boundaries and small woodland blocks. The landscape is gently undulating and predominately rural in character. Access is provided via a network of local rural lanes including Muse Lane adjacent to the west and Breach Lane adjacent to the south-east with an unnamed road intersecting the most southern point of the site.
- Site B – the Site comprises a predominately agricultural tract of land located around Church Broughton to the south and Barton Hall to the north, characterised by large arable fields and a well-established pattern of hedgerow-defined field boundaries. The landscape is gently undulating and largely open, with long views across the surrounding countryside and limited built development aside from dispersed farmsteads such as an Unnamed Farm along Barton Court and Barton Brook Farm along Sapperton Lane. Scattered patches of individual and clusters of trees are present throughout the site.
- Site C – the Site is split across three distinct land parcels located between Dalbury, Trusley and Etwall. The north-western parcel, positioned to the west of Dalbury a consists of large arable fields and pasture enclosed by hedgerows, with a strongly rural character and limited built form aside from the adjacent unnamed farmstead to the north. The north-eastern parcel, situated to the east of Dalbury and extending toward All Saints' Church, comprises open farmland with gently undulating topography, a well-established field pattern, and a network of hedgerows and minor watercourses. The southern small parcel, located to the north of Etwall, forms a compact area of agricultural land adjacent to the A516 corridor, characterised by smaller field enclosures, drainage features and a slightly stronger interface with nearby settlement edges while remaining predominantly rural. Collectively, the three parcels form a dispersed but coherent group of countryside sites accessed via local rural

lanes with long views across the surrounding agricultural landscape and minimal urban influence.

- Site D – the Site is split across two distinct parcels comprising predominantly agricultural land located to the north east and south east of Hilton and Marston on Dove. The northern parcel, positioned immediately south of the A50 Foston - Hatton – Hilton Bypass corridor, comprises a series of large arable fields and pasture units within a gently undulating landscape, defined by hedgerow boundaries and intersected by minor drainage features, with limited built form aside from nearby farmsteads such as Hoon Villa Farm. The southern parcel, located further south east toward Marston on Dove, similarly consists of open farmland with a strong rural character, Hilton Cricket Club, hedgerow-defined field boundaries and is adjacent to Derby Road to the north and Marston Lane to the east.
- Site E – the Site comprises four distinct parts of a wider land parcel located around Stretton, Rolleston on Dove, Egginton and the A38 Derby Road corridor. The north-western and north-eastern parcels consist of large arable fields and pasture adjacent to the River Dove corridor, defined by hedgerow boundaries. The southern parts form smaller, separate parcels of agricultural land adjacent to the A38 Derby Road both parts are separated by the River Dove and adjacent to Monks Bridge.

3.3 Point of Connection ('POC')

3.3.1 The Willington 400kV Substation is a major National Grid electricity infrastructure node located south east of Willington and west of the River Trent, forming the principal POC for the Proposed Development. The National Grid Willington 400 kV substation occupies a large, level platform within a predominantly industrial utility landscape, bordered by existing transmission infrastructure including overhead lines, pylons and associated operational compounds. Surrounding land uses comprise a mix of agricultural fields, commercial premises and remnants of former power station infrastructure,

with access provided via established highways connecting to the A5132 and A38 corridors. The area is characterised by open views, engineered landform and extensive electrical infrastructure, making it a suitable and established location for grid connection works with limited additional landscape or amenity sensitivity.

3.4 Cable Route Corridor Options

3.4.1 There are nine cable route corridor options as part of the draft Order Limits which connect Sites A – E to the National Grid Willington 400 kV substation Grid Connection, illustrated in **Figure 3.2: Cable Route Corridor Option Colours (Appendix 1.1: Figures)**. The cable corridors will evolve through Scoping and Engagement, and will be refined for presentation within the ES. The nine cable route corridors can be described as follows:

- Pale blue route – Crosses open arable farmland between Etwall and Burnaston, running south east across large field parcels and passing close to scattered farmsteads such as Broomhill Farm and Dalebrook. The corridor remains largely rural, with minimal settlement interaction.
- Green route – Traverses agricultural fields west of Etwall and north of Hilton, passing near Bonehill Farm and Bearwardcote Hall. The route crosses gently undulating farmland with a strong rural character and limited built form.
- Navy blue route – Runs through open countryside south of Etwall and north of Hatton, crossing large arable fields and passing near Saltbrook Meadow Farm and the dismantled tramway. The corridor remains predominantly agricultural.
- Yellow route – Extends across broad arable fields between Hilton and Marston on Dove, passing close to Brookside Farm and Hargate Manor. The landscape is open and farmed, with long field boundaries and few built features.
- Orange route – Crosses mixed farmland south of Trusley and north of Sutton on the Hill, passing near Barton Blount Farm and Smerrills Farm.

The corridor intersects a patchwork of medium sized fields and hedgerow networks.

- Grey route – Runs through open arable land between Boylestone and Trusley, passing close to Coton Wood and Vindle Farm. The corridor is entirely rural, with expansive field patterns and isolated farm buildings.
- Pink route – Traverses large agricultural fields west of Radbourne and north of Trusley, passing near Harehill Manor and Bartonfields. The corridor follows a rural alignment with limited settlement influence.
- Maroon route - Extends across open farmland north of Hilton and south of Etwall, passing near Findern, Burnaston, and Park Farm. The corridor crosses gently rolling arable land with occasional farmsteads and drainage features.

3.5 Key Environmental Features of the draft Order Limits

3.5.1 This section provides a summary of the key environmental features of the Site and its surrounding area, including key features, designations, and sensitive receptor locations. This provides the context for evaluating the existing baseline conditions and for assessing the Proposed Development.

3.5.2 A full description of the baseline conditions relevant to the technical assessments is provided in each technical chapter of this report.

3.5.3 **Figure 3.1: Environmental Constraints (Appendix 1.1: Figures)**, illustrates and identifies the key environmental designations within, and in proximity to, each of the five Sites and POC.

Solar Development Site A

Built Heritage and Archaeology

3.5.4 Solar Development Site A is located within an area containing several heritage receptors. The closest is the Grade II Listed Muse Lane Farmhouse and Attached Garden Wall, approximately 130m east of the Site boundary. Additional designated assets within 1km (taken as a preliminary study area for

the purposes of this chapter, to demonstrate constraints within proximity of the draft Order Limits) include multiple Grade II farmsteads and the Sudbury Hall Conservation Area and Registered Park and Garden, located approximately 415m to the east.

3.5.5 Given its rural location and historical continuity, there is potential for undiscovered archaeological features, including prehistoric, Saxon, or later medieval finds.

Ecology and Water Environment

3.5.6 The local area supports Priority Species under CS Targeting, notably Lapwing, which is associated with open arable and pastoral habitats present within Site A. An unnamed watercourse is located in the north eastern corner, providing potential riparian habitat and ecological connectivity. The entire Site lies within Flood Zone 1, indicating a low probability of fluvial flooding. Field boundaries are predominantly hedgerows, which contribute to habitat connectivity.

Ground Conditions and Minerals

3.5.7 The whole Site lies within a sand and gravel safeguarding area, indicating potential constraints relating to sterilisation of mineral resources. Groundwater vulnerability is high, with the Site located on a Secondary A Superficial Drift Aquifer and a Secondary B Bedrock Aquifer, suggesting shallow permeable deposits overlying lower permeability fractured bedrock. A historic landfill (referred to as 'East of Breech Lane') lies approximately 125m to the south.

Landscape and Visual

3.5.8 Solar Development Site A lies within the Settled Farmlands Landscape Character Type ('LCT') (Derbyshire LCA, 2003), characterised by small woodland blocks, mature hedgerows with scattered hedgerow trees, and small to medium scale fields. The Site is not within, or in proximity, to any statutory or non-statutory landscape designations. The wider landscape forms part of the Needwood and South Derbyshire Claylands National Character Area ('NCA'), defined by gently rolling farmland and dispersed farmsteads.

Agricultural Land Classification ('ALC')

3.5.9 Agricultural land quality varies across Solar Development Site A, with the northern area classified as Grade 3b, moderate-quality farmland, and the

southern area as Grade 1, the highest quality farmland, representing Best and Most Versatile ('BMV') land[29].

PRoW and Nearby Sensitive Receptors

3.5.10 A network of PRoW interacts with the Site. Footpath 29 crosses the central area west–east, while Footpath 3 runs parallel to the southern boundary and Footpath 19 parallels the northern boundary.

3.5.11 Multiple Farms are located in proximity to the Site including an unnamed Farm and residential property adjacent to the north-western corner of the Site, Aston Heath Farm and Aston Bed & Breakfast are located approximately 50m to the south west. Broomhill Farm is located approximately 180m south-east.

Solar Development Site B

Built Heritage and Archaeology

3.5.12 Solar Development Site B lies within a highly sensitive historic environment, with several heritage receptors in close proximity. The northern part of the Site directly adjoins the Scheduled Monument comprising the Barton Blount medieval settlement remains, including a chapel, decoy pond and elements of the open field system. The site is also close to multiple Listed Buildings, including Grade I St Michael's Church, approximately 120m south east of the south western boundary, and Grade II* Barton Hall, approximately 190m east of the north eastern boundary.

3.5.13 Given the site's rural location, historical continuity, and the presence of a Scheduled Monument and several Listed Buildings in the surrounding area, there is an elevated potential for undiscovered archaeological features. These could include prehistoric, Saxon, or later medieval remains, as well as features associated with the wider historic landscape.

Ecology and Water Environment

3.5.14 The surrounding area supports Priority Species under CS Targeting, notably Lapwing, associated with open farmland habitats present across Site B. The south eastern part of Solar Development Solar Development Site B contains National Forest Inventory broadleaved woodland and immediately adjacent to

the eastern boundary. A cluster of Tree Preservation Orders ('TPOs') are located adjacent to the northern part of the Site along Barton Court road.

3.5.15 The entirety of Solar Development Site B lies within Flood Zone 1, indicating low fluvial flood risk; however, sporadic patches of surface water flooding (1–3.3% annual probability) occur across the eastern and southern parts. Longford Brook is located approximately 37m east of the Site, providing riparian habitat and ecological connectivity.

Ground Conditions and Minerals

3.5.16 Groundwater vulnerability is high across the whole of Site B, located on a Secondary A Superficial Drift Aquifer and a Secondary B Bedrock Aquifer, indicating shallow permeable drift deposits overlying lower permeability fractured bedrock.

Landscape and Visual

3.5.17 Solar Development Site B is located within the Settled Farmlands LCT (Derbyshire LCA, 2003). Key characteristics sensitive to development include mature hedgerows with scattered hedgerow trees defining small to medium scale fields, and the winding lane along the western boundary. Solar Development Site B is not within or near any statutory or non-statutory landscape designations. Topography is gently undulating and low lying, indicating lower susceptibility to visual prominence but maintaining sensitivity where views extend toward heritage assets and the rural settlement of Church Broughton.

ALC

3.5.18 All land within the Site is classified as ALC Grade 3b ("moderate"), representing moderate agricultural sensitivity.

PRoW and Nearby Sensitive Receptors

3.5.19 A network of PRoW intersects the site. Footpaths 7, 9 and 10 run north–south through the central part of Site B. Public Bridleway 1 crosses the north western part from north east to west. Footpaths 12 and 13 intersect the south western corner from west to south east. The site is located approximately 45m from the rural settlement of Church Broughton.

3.5.20 Multiple farmsteads lie adjacent to or near the boundary of Solar Development Site B, including properties along Barton Court and surrounding agricultural holdings.

Solar Development Site C

Western Land Parcel

Built Heritage and Archaeology

3.5.21 The western land parcel lies within a historically sensitive landscape containing several heritage receptors. The closest designated asset is Grade II* All Saints' Church, located approximately 250m east. The Trusley Conservation Area lies approximately 385m north. Given the rural setting and long-term agricultural use, there is potential for buried archaeology, including prehistoric, Saxon and medieval remains.

Ecology and Water Environment

3.5.22 The northern parcel lies within Flood Zone 1, although Flood Zones 2 and 3 occur along the southern and eastern boundaries associated with Trusley Brook. The brook corridor has been identified by SDCC as a Local Nature Recovery Strategy ('LNRS') buffer opportunity, increasing ecological sensitivity. Patches of surface water flood risk are scattered across the site. Traditional Orchard Priority Habitat lies approximately 85m north of the parcel. The wider area supports Priority Species, notably Lapwing.

Ground Conditions and Minerals

3.5.23 The land parcel lies on Secondary A Superficial Drift Aquifer and Secondary B Bedrock Aquifer, indicating permeable drift deposits over fractured bedrock. These conditions increase sensitivity to contamination pathways and construction disturbance. No historic landfills lie proximity to the parcel.

Landscape and Visual

3.5.24 The western parcel lies within two LCTs: Settled Farmlands LCT (Derbyshire LCA, 2003), sensitive due to mature hedgerows, scattered hedgerow trees, and the winding lane defining the northern boundary and Riverside Meadows LCT, sensitive due to dense watercourse trees, irregular field patterns, and remnants of ridge and furrow providing strong time depth.

3.5.25 The parcel is not within or near statutory landscape designations. Topography is flat and low lying, reducing visual prominence but maintaining sensitivity in open views.

ALC

3.5.26 The land parcel comprises ALC Grade 3b land ("moderate"), representing moderate agricultural sensitivity, and a pocket of non-agricultural land.

PRoW and Nearby Sensitive Receptors

3.5.27 A network of PRoW interacts with the parcel:

- Footpath 5 intersects the central area north–south;
- Footpath 46 runs parallel to the western boundary north–south, connecting to Footpaths 4 and 46 further south; and
- Footpath 3 runs adjacent to the north eastern boundary.

3.5.28 The northern part of the parcel is adjacent to Goldhurst Farm buildings.

Eastern Land Parcel

Built Heritage and Archaeology

3.5.29 The eastern parcel is in proximity to several designated heritage assets. The closest are Grade II* Listed Building Church of All Saints, approximately 200m north, and Grade II Listed Building The Old Rectory, approximately 160m north. The Etwall Conservation Area lies approximately 320m south east. As with the western parcel, there is potential for buried archaeology due to the Site C's rural history and time depth.

Ecology and Water Environment

3.5.30 The parcel lies adjacent to the Mickelover–Etwall Trail Local Wildlife Site ('LWS') along the south eastern boundary and contains part of the LWS along its eastern edge. The wider area supports Priority Species, including Lapwing. The south western part of the parcel lies within Flood Zones 2 and 3a, associated with Etwall Brook, which also benefits from a flood defence. The northern part lies within Flood Zone 1. Surface water flood risk is present in patches across the Site. The Hilton Gravel Pits SSSI lies approximately 1.2km south west.

Ground Conditions and Minerals

3.5.31 The parcel lies on a Secondary A Superficial Drift Aquifer and Secondary B Bedrock Aquifer, indicating permeable drift deposits over fractured bedrock. A historic landfill, Marsh Cottage Farm Landfill, lies approximately 60m west.

Landscape and Visual

3.5.32 The eastern parcel lies within two LCTs: Settled Farmlands LCT (Derbyshire LCA, 2003), sensitive due to mature hedgerows, scattered hedgerow trees, and the winding lane defining the northern boundary and Riverside Meadows LCT, sensitive due to dense watercourse trees, irregular field patterns, and remnants of ridge and furrow providing strong time depth.

3.5.33 The parcel is not within or near statutory landscape designations. Topography is flat and low lying, reducing visual prominence but maintaining sensitivity in open views.

ALC

3.5.34 The parcel contains a mix of ALC Grade 3b and a pocket of non-agricultural land, representing moderate quality agricultural land.

PRoW and Nearby Sensitive Receptors

3.5.35 Two PRoW cross the parcel:

- Footpath 3 intersects the central area from north west to south east; and
- Footpath 5 intersects the central area west–east.

3.5.36 The parcel lies approximately 300 m north west of the settlement of Etwall. Etwall Manor and its grounds lie adjacent to the western boundary. The Tara International Kadampa Retreat Centre (‘TIKRC’) is a sensitive religious site that is located approximately 360m south of the Site. The Site is also in proximity to isolated residential properties and farmsteads.

Solar Development Site D

Northern Land Parcel

Built Heritage and Archaeology

3.5.37 The northern parcel lies within a historically sensitive landscape, with several heritage receptors located within 1km. The closest Listed Building is

approximately 415m north east. The Scheduled Monument: Hoon Mount platformed bowl barrow lies approximately 480m north, introducing sensitivity to changes in setting and long distance views.

Ecology and Water Environment

3.5.38 The parcel lies approximately 1.5km west of the Hilton Gravel Pits Site of Special Scientific Interest ('SSSI'). Priority Species under CS Targeting, particularly Lapwing, are known to occur in the surrounding landscape. The entire parcel is within Flood Zone 1, though two small patches of surface water flood risk (1–3.3% annual probability) occur along the southern boundary. Longford Brook is located approximately 37m east, providing riparian habitat and ecological connectivity.

PRoW and Nearby Sensitive Receptors

3.5.39 Nearby receptors include Hoon Villa Farm and several farmsteads within 150m of the parcel.

Southern Land Parcel

Built Heritage and Archaeology

3.5.40 The southern parcel is closer to a larger cluster of designated assets, including multiple Listed Buildings within 1km. The nearest is Grade II Sudale and Hazeldene, approximately 300m east. A Grade I Listed Building – St Mary's Church, Hilton with Marston on Dove lies approximately 485m south. Given the rural context and long-term agricultural use, there is potential for buried archaeology, including prehistoric, Saxon and medieval remains.

Ecology and Water Environment

3.5.41 The southern parcel lies between two SSSIs: Hilton Gravel Pits SSSI (1.3km north east) and Old River Dove, Marston on Dove SSSI (1.7km south). Priority Species, including Lapwing, are recorded locally. A significant constraint is that most of the parcel lies within Flood Zone 3a, indicating a high probability of fluvial flooding (≥1% annual chance). Surface water flood risk is also present across the parcel (0.1–>3.3% annual probability).

PRoW and Nearby Sensitive Receptors

3.5.42 The parcel is close to multiple farms and rural properties, with the settlement of Hilton located approximately 600m east.

3.5.43 Public Bridleway 1 runs adjacent to the western boundary.

Both Land Parcels

Ground Conditions and Minerals

3.5.44 Both parcels lie within a sand and gravel safeguarding area. Groundwater vulnerability is medium–high, with both parcels located on Secondary A Superficial Drift Aquifer and Secondary B Bedrock Aquifer, indicating permeable drift deposits over fractured bedrock. A historic landfill, Hoon Ridge Landfill Site, lies approximately 350m east of the northern parcel.

Landscape and Visual

3.5.45 Both parcels lie within the Lowland Village Farmlands LCT (Derbyshire LCA, 2003). Neither parcel lies within or near statutory landscape designations. Topography across both parcels is flat and low lying, reducing visual prominence but maintaining sensitivity where views extend toward heritage assets and settlement edges.

Northern Land Parcel – Visual Context

3.5.46 Hoon Villa Farm adjoins the south eastern corner, although mature tree belts provide screening. The parcel is approximately 20m west of commercial property, JB Alloys, and 120m south of a residential property.

Southern Land Parcel – Visual Context

3.5.47 The parcel lies approximately 600m west of Hilton, with local farms to the north and south. Hilton Cricket Club occupies the north eastern part of the parcel.

ALC - Northern Land Parcel

3.5.48 Majority of parcel contains Grade 1, excellent quality agricultural land, with sporadic patches of non-agricultural land in the south.

ALC - Southern Land Parcel

3.5.49 The northern section of the parcel contains Grade 1, excellent quality agricultural land and the southern section Grade 3b, moderate quality agricultural land.

Solar Development Site E

Built Heritage and Archaeology

3.5.50 Solar Development Site E lies within a highly sensitive historic environment with several heritage receptors in close proximity. The Scheduled Monument: Monks Bridge lies immediately adjacent, positioned between the two southern parcels, creating a significant constraint relating to setting, views and ground disturbance. Multiple Listed Buildings fall within 1km of the site, the nearest being both Monks Flood Bridge (Grade II) and Monks Flood North Bridge (Grade II), which are adjacent to the most southern parcels. The Trent and Mersey Canal Conservation Area lies approximately 105m south, contributing further to heritage and landscape sensitivity. Given the rural context and long-term agricultural use, there is potential for buried archaeology, including prehistoric, Saxon and medieval remains.

Ecology and Water Environment

3.5.51 The River Dove intersects both parcels, forming a major ecological and hydrological feature. The majority of the site lies within Flood Zone 3b, with areas of Flood Zone 2 along the north western boundary, indicating a high probability of fluvial flooding. A formal flood defence is present along the western boundary, providing some protection. Surface water flood risk is widespread across the site. Nearby LWS include the River Dove LWS and Egginton Church Wood LWS. Parts of the Site contain Priority Habitat Inventory – Coastal and Floodplain Grazing Marsh. The Old River Dove SSSI is located approximately 2.1km north west. The wider area supports Priority Species, notably Lapwing, under CS Targeting.

Ground Conditions and Minerals

3.5.52 Solar Development Site E lies within a sand and gravel safeguarding area. Groundwater vulnerability is medium–high, with the Site located on Secondary A Superficial Drift Aquifer and Secondary B Bedrock Aquifer, indicating permeable drift deposits over fractured bedrock. Two historic landfills sit within proximity of the Site: CEGB Waste Disposal Site (122m south) and Highbridge Landfill (100m south).

Landscape and Visual

3.5.53 Solar Development Site E is located within two LCTs: Riverside Meadows LCT (Derbyshire LCA, 2003) and Riparian Alluvial Lowlands LCT (Staffordshire LCA, 2000). Key sensitivities include the prevailing historic field pattern, remnants of ridge and furrow, and the riparian landscape associated with the River Dove. Although the Site is not within or near statutory or non-statutory landscape designations, it is visually sensitive due to proximity to receptors including Dovecliff Hall Hotel & Restaurant to the north west, residential properties along Church Road to the east, and commercial premises (Vislor Dog Training – Burton and the Greyhound Trust) between the northern parcels. The adjacent settlement of Stretton lies immediately west. Topography is flat and low lying, reducing visual prominence but maintaining sensitivity in open views across the Dove valley.

ALC

3.5.54 Solar Development Site E comprises ALC Grade 2 land, representing very good quality agricultural land.

PRoW and Nearby Sensitive Receptors

3.5.55 Two PRoW 18 and 16, intersect the eastern part of the Site, running north–south. The Site is adjacent to residential areas in Stretton to the west and properties along Church Road to the east. Commercial receptors include Vislor Dog Training – Burton and the Greyhound Trust between the northern parcels.

POC

3.5.56 The National Grid Willington 400 kV substation area contains a range of environmental sensitivities. A Scheduled Monument (a cursus and mini hedges of Neolithic/Early Bronze Age date) is located approximately 115m south, while the Trent and Mersey Canal Conservation Area lies just 45m north of the Site. The wider historic environment includes the Repton Conservation Area, approximately 1.3km south and containing multiple Grade I–II Listed Buildings, with additional Listed Buildings within 1km of the Site boundary, the closest being Grade II Hall Cottages and The Hall, approximately 240m south. The River Trent lies 390m south, contributing to

the area's ecological and landscape sensitivity. A historic landfill, Potlocks Farm Landfill, is located approximately 275m north, and numerous TPOs are present in the surrounding landscape. The Site is also adjacent to the five disused cooling towers, which form a dominant industrial feature in local views. The area lies within Flood Zone 1, though patches of surface water flood risk occur across the Site. Public access receptors include PRoW Willington Footpath 4, which runs adjacent to the northern boundary, and Footpath 12 located further beyond.

4.0 ALTERNATIVES AND DESIGN EVOLUTION

4.1.1 Regulation 14(2)(d) of the EIA Regulations states that an ES must provide "a description of the reasonable alternatives studied by the applicant, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment".

4.1.2 Schedule 4 of the EIA Regulations identifies the information for inclusion in an ES, of which paragraph 2 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".

4.1.3 It should be noted that the EIA Regulations and NPS EN-1 place no specific obligation on a developer to study alternatives, but simply to describe them in the manner specified, where they have been considered.

4.1.4 At this stage in the process the design team are still examining a variety of options associated with the Proposed Development. An initial site search was undertaken using the following parameters which identified parcels for solar development and also land that was not suitable. The initial parameters were as follows:

- The starting point for the project site search exercise was the grid connection agreement for the National Grid Willington 400 kV substation.
- An initial 15km search radius was applied to this POC, which sought to exclude any urban areas, brownfield land with alternative strategic planning uses already identified, and relevant desk-based environmental designations.

- Following this, land was identified and pursued by the Applicant. Where parcels were identified, further environmental assessment work was undertaken to identify site suitability.
- The selected options to date have been influenced by engineering, efficiency, stakeholder engagement, including willingness to offer land by agreement and environmental factors.
- The cable route corridors submitted as part of the draft Order Limits have been identified at this stage based on the location of the solar sites. These corridors will continue to evolve as design work progresses and will also be influenced by stakeholder engagement and environmental factors.

4.1.5 The alternatives considered will be set out within the ES but are likely to include alternative Solar Development Site, design iterations for the PV array layout, alternative indicative substation and BESS locations, alternative cable route corridors and alternative options for landscape and biodiversity management/ mitigation.

4.1.6 A *'no development'* alternative would not deliver the additional electricity generation capacity associated with the Proposed Development and will therefore not be considered further.

4.1.7 The ES will include a detailed description of the alternatives considered, including their specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.

5.0 EIA METHODOLOGY

5.1 Introduction

5.1.1 EIA is the process that must be followed for certain types of development before consent can be granted. While the approach to EIA is not standardised, established and recognised methodologies published by professional institutions provide guidance on the assessment of environmental effects per discipline. The EIA process is intended to identify, consult upon, and assess the likely significant environmental effects of a development proposal. Where appropriate, the environmental effects of the Proposed Development have been assessed with reference to definitive standards, legislation, and guidance relevant to each of the technical topics covered.

EIA Legislation and Guidance

5.1.2 The ES will be prepared in accordance with the EIA Regulations, which set out the statutory requirements for the assessment of likely significant environmental effects arising from NSIPs. The EIA is informed by relevant case law and established principles of proportionality and the need to assess a worst-case scenario within the defined parameters.

5.1.3 In line with the EIA Regulations, the approach to scoping, assessment and reporting has been guided by the Planning Inspectorates' Advice Note Seven: 'EIA: process, preliminary environmental information and environmental statements' and Advice Note Nine: 'Rochdale Envelope'.

5.1.4 In line with the EIA Regulations, the approach to scoping, assessment and reporting has been guided by the Planning Inspectorate's following advice notes:

- Advice Note Seven: EIA: process, preliminary environmental information and environmental statements;
- Advice Note Nine: Rochdale Envelope;
- Advice Note Seventeen: Cumulative Effects Assessment – providing expectations for identifying, screening and assessing cumulative effects,

including the need for transparent project lists and proportionate methodologies[30];

- NSIP: Commitments Register – advice explains the purpose and use of a Commitments Register[31];
- NSIP: Technical Advice Page for Scoping Solar Development[32]; and
- The Institute of Sustainability and Environmental Professionals ('ISEP') Advice Note on AI Usage in EIA (2025)[33] – setting out expectations for transparency, verification and professional oversight where Artificial Intelligence tools are used in the preparation of EIA documentation.

5.1.5 Please note that **Appendix 5.1: AI Usage Statement** provides details on how AI has been used in preparing this report.

5.1.6 The ES is further informed by the following national planning guidance:

- NPPF (2025); and
- National Planning Practice Guidance ('NPPG')[34].

5.1.7 The following have also been considered in shaping the EIA methodology, including:

- Recent EIA case law relevant to proportionally, cumulative assessment and the definition of significant effects; and
- Topic-specific technical guidance, standards and assessment criteria related to each technical topic.

5.1.8 Each technical assessment has been undertaken in accordance with relevant national and local planning policy, sector-specific guidance and recognised professional standards. Full references to the guidance and methodologies applied are provided within the respective technical chapters of the ES.

5.2 Environmental Statement

ES Structure

5.2.1 The preparation of the EIA for the Proposed Development is being led by Iceni Projects, supported by the technical consultants detailed in **Table 5.1**.

Table 5.1 EIA Project Team

Chapter		Author
1	Introduction and EIA Methodology	Iceni Projects
2	Description of Site and Surroundings	Iceni Projects
3	The Proposed Development	Iceni Projects
4	Alternatives and Design Evolution	Iceni Projects
5	Agricultural Land and Soils	Kernon Countryside Consultants
6	Air Quality	Waterman Group
7	Archaeology	Iceni Projects
8	Built Heritage	Iceni Projects
9	Climate Change and Greenhouse Gases	Iceni Projects
10	Ecology and Biodiversity	Avian Ecology
11	Glint and Glare	PagerPower
12	Ground Conditions and Contaminated Land	Waterman Group
13	Human Health	Iceni Projects
14	Landscape and Visual Impact	Iceni Projects
15	Noise and Vibration	Waterman Group
16	Socio-Economics	Iceni Projects
17	Transport and Access	Iceni Projects
18	Water Environment and Flood Risk	Waterman Group
19	Cumulative Effects	Iceni Projects
20	Summary of Residual Effects	Iceni Projects

Competent Experts

5.2.2 In line with Regulation 14(4)(a) of the EIA Regulations, the EIA will be undertaken by a suitably qualified project team of competent experts, and the qualifications and experience of the team will be set out in the ES. ISEP has awarded Iceni Projects the EIA Quality Mark in recognition of our commitment to excellence in EIA activities.

Technical Chapter Assessment Approach

5.2.3 In order to provide a clear robust assessment, each of the technical chapters presented within the ES will follow the structure set out below:

- Introduction;
- Legislation, Policy, and Guidance;
- Methodology;
- Baseline Conditions;
- Assessment of preliminary effects (including consideration of embedded mitigation measures);
- Additional Mitigation, Monitoring and Enhancement;
- Assessment of residual effects; and
- Assessment of cumulative effects.

5.2.4 The following sections of this report provide a description of the approach to be taken in each technical chapter of the above sections.

Legislation, Policy and Guidance

5.2.5 This section of each technical chapter will describe the legislation, planning policy, and guidance relevant to the assessment of the topic area. It is not intended to provide an analysis of the Proposed Development's compliance with legislative requirements, nor an appraisal of the Proposed Development against the identified planning policies. Instead, the section is intended to inform the reader of the relevant documents that have shaped the approach to the assessment, including signposting to the sections of the chapter where these requirements have been taken into account. It also identifies the factors that the decision-maker will need to consider when determining the acceptability of the Proposed Development.

EIA Assessment Methodology

5.2.6 The ES will set out the methodology used in the EIA, state the assumptions applicable to all disciplines, and summarise the EIA scoping process

undertaken and the public engagement process. Bespoke methodologies, limitations and assumptions will be provided in the technical chapters of the ES.

5.2.7 The significance of an environmental effect of the Proposed Development will then be determined by the interaction of the magnitude of effects and sensitivity of receptors, whereby the resulting effects can be positive (beneficial) or negative (adverse). Generic criteria to be used in carrying out this process are detailed below. Some technical chapters may use discipline-specific criteria with their own terms for magnitude, sensitivity and significance and, where used, this will be explained in the relevant chapter.

5.2.8 An environmental effect can be categorised as either permanent or temporary. The duration of temporary effects comprises the following periods, however, will be discussed in individual topic chapters where this differs:

- Short-term (a period of up to 1 year);
- Medium-term (a period of between 1 year and up to 5 years); and
- Long-term (a period of more than 5 years).

Prediction of Impact Magnitude

5.2.9 The methodology for determining the scale of magnitude or impact is set out in **Table 5.2** below.

Table 5.2 Criteria for Assessing Magnitude

Magnitude of Impact	Criteria for Assessing Magnitude
High	Total loss or major/ substantial alteration to key elements/ features of the baseline (pre-development) conditions such that the post development character/ composition/ attributes will be fundamentally changed.
Medium	Loss or alteration to one or more key elements/ features of the baseline conditions such that post development character/ composition/ attributes of the baseline will be materially changed.
Low	A minor shift away from baseline conditions. Change arising from the loss/ alteration will be discernible/ detectable but not material. The underlying character/

Magnitude of Impact	Criteria for Assessing Magnitude
	composition/attributes of the baseline condition will be similar to the pre-development circumstances/ situation.
Very Low	Very little change from baseline conditions. Change barely distinguishable, approximating to a 'no change' situation.

5.2.10 The sensitivity of a receptor is based on the relative importance of the receptor using the scale set out in **Table 5.3** below.

Table 5.3 Criteria for Determining Sensitivity

Sensitivity of Receptor	Criteria for Determining Sensitivity
High	The receptor/ resource has little ability to absorb change without fundamentally altering its present character, or is of international or national importance.
Medium	The receptor/ resource has moderate capacity to absorb change without significantly altering its present character, or is of high importance.
Low	The receptor/ resource is tolerant of change without detriment to its character, is of low or local importance.
Very Low	The receptor/ resource is tolerant of change without detriment to its character, or does not make a significant contribution to local character or distinctiveness and is not designated.

Assessment of Effect Significance

5.2.11 After the magnitude of the impact and the sensitivity of the receptor/ resource have been determined, the effect significance is classified using the matrix in **Table 5.4**, which illustrates the interaction between impact magnitude and receptor sensitivity.

Table 5.4 Effect Significance Matrix

Receptor Sensitivity	Magnitude of Impact			
	High	**Medium**	**Low**	**Very Low**
High	Major Beneficial / Adverse	Major Beneficial / Adverse	Moderate Beneficial / Adverse	Minor Beneficial / Adverse
Medium	Major Beneficial / Adverse	Moderate Beneficial / Adverse	Minor Beneficial / Adverse	Negligible
Low	Moderate Beneficial / Adverse	Minor Beneficial / Adverse	Negligible	Negligible
Very Low	Minor Beneficial / Adverse	Negligible	Negligible	Negligible

5.2.12

Effect Significance

5.2.13 The general terminology used to describe the classification of effects is presented in **Table 5.5** and **Table 5.6**. These consider the magnitude of impact and the sensitivity of a receptor. The nature of effect is also identified, i.e. whether it is adverse or beneficial in nature.

Table 5.5 Significance Categories of Effects Being Considered

Type of Effect	Description
Major	These effects (adverse or beneficial) may represent key factors in the decision-making process. Potentially associated with sites and features of national importance or likely to be important considerations at a regional or district scale. Major effects may relate to resources or features which are unique and which, if lost, cannot be replaced or relocated.
Moderate	These effects (adverse or beneficial) are likely to be important at a local scale and (if adverse) on their own could have a material influence on decision-making.

Type of Effect	Description
Minor	These effects (adverse or beneficial) are mostly local issues and may be of relevance in the detailed design of the project but are unlikely to be critical in the decision-making process.
Very Low	Effects which are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error, these effects are unlikely to influence decision-making, irrespective of other effects.

Table 5.6 Nature of Effect

Type of Effect	Description
Adverse	Detrimental or negative effects to an environmental/ socio-economic/ human health resource or receptor.
Negligible	Effects which are below the levels of perception, within normal bounds of variation or within the margin of forecasting error, these effects are unlikely to influence decision-making, irrespective of other effects.
Beneficial	Advantageous or positive effect on an environmental/ socio-economic/ human health resource or receptor.

5.2.14 Following the classification of an effect using the methodology summarised in **Table 5.4**, a statement is made as to whether the effect is 'significant' or 'not significant'. As a general rule, the following criteria are applied:

- Moderate or major effects are deemed to be 'significant';
- Minor effects are considered to be 'not significant'; and
- Negligible effects are considered to be 'not significant'.

5.2.15 This may differ in the case of some technical assessments. Where this is the case, it will be clearly described in the technical chapter.

5.2.16 Professional judgement will also apply, including consideration of whether an effect is direct or indirect, cumulative, the duration and frequency, and the likelihood of the effect occurring. Where the approach to classifying effects and/ or defining significance differs from that outlined above for any of the

technical assessments, this is clearly described in the relevant chapter of this ES.

5.2.17 Where mitigation measures have been identified to either eliminate or reduce significant adverse effects, these have been adopted in a number of ways:

- Incorporated into the Proposed Development, for example, either through an amendment during the design evolution process as a result of initial modelling and studies (referred to as 'embedded mitigation' hereafter);
- Implemented as a monitoring/ management measure during the construction phase (e.g. through a CEMP) (also considered 'embedded mitigation') or
- Operational or managerial standards/ procedures and further design (i.e. through Requirements) (referred to as 'additional mitigation').

5.2.18 This ES reports the 'residual' effects (those effects which remain following the implementation of suitable mitigation measures), and these are classified following the terminology defined above. The likely residual effects for each technical discipline are summarised within a table as part of the concluding sections of each of the technical chapters of this ES.

Determining the Baseline Conditions

Existing Baseline Conditions

5.2.19 This section will describe the existing environmental characteristics and conditions relevant to the topic being assessed. Baseline conditions will be established through engagement, desk-based studies, site visits and surveys, and, where appropriate, modelling, drawing upon existing datasets, published reports, and Site-specific field data. The baseline will identify any sensitive receptors requiring consideration within the assessment. Baseline conditions for each environmental topic are presented within the relevant technical chapters of this Scoping Report (**Chapters 6-19**). It is anticipated that the baseline information informing the ES will primarily comprise data obtained and surveys undertaken between Q2 2026 and Q2 2027, although earlier data may also be used where it remains relevant and robust. Where third-party

information is relied upon, the source, assumptions, and any associated limitations will be clearly identified.

5.2.20 Each chapter of the ES will set out its spatial scope for study by identifying its specific study area. This will vary by topic depending on the nature of the potential impacts within the assessment and location of receptors.

5.2.21 Each chapter will also assess the Proposed Development over the duration of the project (its temporal scope). **Chapter 2: The Proposed Development** of this Scoping Report provides more information, however for the avoidance of doubt the temporal scope is as follows:

- Construction phase – expected to be 30 months – this will be defined as all works related to the construction of the Proposed Development through to completion of implementation of the Proposed Development;
- Operational phase – up to 40 years is assumed for the purpose of assessment – the opening year is defined as all installations being brought into use and the Proposed Development becoming operational. It should be noted that some mitigation measures may not be in effect until after the opening year; and
- Decommissioning phase – 12-24 months – decommissioning will occur once the operational phase has ceased and the Site will be restored in line with a DEMP.

Future Baseline Conditions

5.2.22 The ES will also consider the likely evolution of baseline conditions in the absence of the Proposed Development, insofar as this can reasonably be assessed based on available environmental information and scientific knowledge, including the potential influence of climate change (the 'future baseline'). The likely significant environmental effects identified within the ES will be assessed in relation to changes to both the existing and future baseline environments arising from the construction and operation of the Proposed Development.

5.2.23 It is anticipated that the future baseline is likely to be similar to the current baseline, assuming existing land uses remain the same.

Assessment of Likely Significant Effects

5.2.24 This section of each ES chapter will describe the likely significant environmental effects of the Proposed Development on the baseline conditions at the Site and within the surrounding study area relevant to that topic. The assessment will set out the nature, extent and significance of predicted effects, taking account of the design parameters defined within the Rochdale Envelope.

5.2.25 Each chapter will identify receptors which would experience the effects identified.

5.2.26 Embedded mitigation measures, i.e. those incorporated directly into the Proposed Development design, will be clearly identified and considered as part of the assessment.

5.2.27 The assessment will consider the construction, operational and decommissioning phases. As previously noted, effects arising during decommissioning are expected to be similar to, or of a lesser magnitude than, those associated with construction. However, a separate decommissioning assessment will be provided where specific activities fall outside the parameters assumed for construction and could give rise to greater effects. Where an assessment will take place, this will be clearly identified in the technical sections of this report.

5.2.28 The EIA Regulations do not prescribe a single method for determining significance. Accordingly, each technical discipline will apply an appropriate, topic specific methodology, drawing on recognised industry guidance and professional standards where available. Where no formal guidance exists, the technical specialists will develop clear and robust assessment criteria to ensure a transparent and structured evaluation.

5.2.29 In general, the significance of effect will be derived by considering the magnitude of impact and the sensitivity of the receptor. Factors influencing the magnitude of an effect may include:

- whether the effect is adverse or beneficial;

- whether it is temporary or permanent;
- the spatial extent of the effect;
- the duration of the effect;
- whether the effect is reversible; and
- the likelihood of the effect occurring.

5.2.30 Where appropriate, a magnitude–sensitivity matrix will be used to classify the level of effect (e.g., major, moderate, minor). Where a matrix is not used, the assessment will rely on a reasoned professional judgement, clearly explaining how magnitude and sensitivity have been combined to determine significance. For certain topics, such as ground conditions, an environmental risk assessment approach may be used.

5.2.31 Each chapter will clearly identify which effects are considered significant in EIA terms. Thresholds for significance may vary between disciplines and will be defined within the relevant methodology section of each chapter.

5.2.32 In all cases, the ES will set out the basis for each judgement, ensuring that the rationale for identifying significant effects is transparent, traceable and understandable to the reader.

Transboundary Effects

5.2.33 Schedule 4 of the EIA Regulations requires the Applicant to consider transboundary effects i.e. effects on any other European Economic Area ('EEA') States. Based on the findings set out in the subsequent sections of this Scoping Report the Applicant considers that the spatial extent of any likely significant effects which could potentially arise from the Proposed Development would not extend to any neighbouring EEA State. This conclusion is based on the Applicant's knowledge and experience of effects from similar projects, the findings from other EIAs of Solar PV developments of a similar scale, and transboundary screening decisions issued by the Planning Inspectorate for other Solar NSIPs. It is noted that effects relating to the Global Climate, which is the sole receptor for greenhouse gas emissions, and the effects of climate change on the environment, society and natural and

economic resources, are transboundary in nature. It is the intention that Climate Change and GHGs be scoped into the ES, with the effects of the Proposed Development on the Global Climate considered as part of the assessment. This Chapter of the ES, which will also consider the resilience of the Proposed Development to the projected effects of global climate change, will therefore assess the relevant transboundary effects. On this basis it is proposed that further consideration of transboundary effects is scoped out of the ES and that Regulation 32 of the EIA Regulations will not need to be engaged by the SoS.

Approach to Mitigation

5.2.34 The EIA Regulations require the ES to describe the measures envisaged to prevent, reduce and, where possible, offset any significant adverse environmental effects. In line with best practice, the Proposed Development will also consider mitigation, monitoring and enhancement measures that may reduce or avoid non-significant effects where these contribute to good environmental design or deliver wider environmental benefits.

5.2.35 The Proposed Development will apply the established mitigation hierarchy, selecting measures as high up the hierarchy as practicable:

- Avoid – preventing an impact from occurring;
- Reduce – minimising the magnitude, duration or extent of an impact;
- Remediate – restoring affected environments; and
- Offset / Compensate – providing alternative environmental gains where impacts cannot be avoided or reduced.

Embedded Mitigation

5.2.36 A significant proportion of mitigation will be integrated directly into the design of the Proposed Development through the iterative design process. These embedded measures will be described within the ES and secured, where appropriate, through detailed management plans in turn secured by the DCO; outline versions of these reports will be submitted with the DCO application

such as the OCEMP, Outline Landscape and Ecology Management Plan ('OLEMP') and other topic specific plans.

5.2.37 Embedded mitigation may include:

- Design refinements to avoid sensitive receptors;
- Layout optimisation to reduce landscape, ecological or heritage impacts;
- Incorporation of ecological enhancement features;
- Drainage and water management measures; and
- Construction phase controls embedded into the design and delivery strategy.

5.2.38 These measures will be taken into account in the assessment of likely significant effects, ensuring that the ES reflects the realistic performance of the Proposed Development as designed.

Management Plans

5.2.39 As noted above, monitoring and management plans to control potential impacts on the environment from the Proposed Development will be prepared and submitted in outline with the DCO application. These will be considered embedded mitigation and comprise legislation and best practice guidance and enable the DCO application to secure the relevant commitments.

5.2.40 Requirement(s) will be included in the DCO to ensure that detailed management plans are provided and secured in accordance with the outline plans, at the appropriate point during the construction, operation or decommissioning of the Proposed Development.

5.2.41 These will include the following plans:

- OCEMP;
- Outline Operational Environmental Management Plan ('OOEMP');
- ODEMP;
- OLEMP;

- Outline Construction and Decommissioning Traffic Management Plan ('OCDTMP');
- Outline Soil Management Plan ('OSMP');
- Outline Battery Safety Management Plan ('OBSMP');
- Outline Site Waste Management Plan ('OSWMP'); and
- Outline Public Right of Way Management Plan ('OPRWMP').

Additional Mitigation, Monitoring and Enhancement

5.2.42 Where residual effects remain after embedded mitigation has been applied, the ES will identify additional mitigation, monitoring or enhancement measures. These measures will be set out within each technical chapter, together with an explanation of how they will reduce or manage the identified effects.

5.2.43 An important objective of the Proposed Development is to deliver biodiversity enhancement, including measures that will be assessed through the Ecological Impact Assessment ('EcIA') and presented within a Biodiversity Net Gain ('BNG') Assessment Report. As the DCO application is expected to be submitted after 2 November 2026 (the anticipated commencement date for mandatory BNG requirements for DCO applications), mandatory BNG requirements will apply to the Proposed Development.

5.2.44 The ES will include an updated Commitments Register (**Appendix 1.2: Commitments Register**), summarising all embedded and additional measures proposed across the Proposed Development. This schedule will also identify the mechanisms for securing mitigation through the DCO, ensuring that the final design and construction remain within the parameters assessed.

Summary and Residual Effects

5.2.45 This section of each technical chapter will provide a clear narrative description of the residual environmental effects remaining after the implementation of all embedded and additional mitigation, monitoring and enhancement measures. The assessment will identify how the application of these measures alters the

nature, magnitude or duration of effects, and will set out the final level of effect for each receptor or topic. Residual effects will therefore represent the cautious worst-case outcomes of the Proposed Development within the parameters defined by the Rochdale Envelope.

Conclusions

5.2.46 The conclusions section will summarise the key findings of the assessment for each topic, including a clear statement on whether the Proposed Development is likely to give rise to significant environmental effects in EIA terms. Where significant residual effects are identified, the chapter will explain the basis for this judgement and the extent to which mitigation has influenced the outcome. This ensures that the ES provides a transparent and robust account of the Proposed Development's environmental performance and the effectiveness of the mitigation strategy.

Cumulative Effects

5.2.47 The EIA Regulations require the ES to include a description of the likely significant effects of the development on the environment, including cumulative effects. Accordingly, each technical chapter will assess the likely significant cumulative environmental effects arising in combination with other projects in the surrounding area. Refer to **Chapter 21: Cumulative Effects Assessment** of this Scoping Report for further information.

5.3 Topics to be Scoped out of the ES

5.3.1 The topics proposed to be scoped out of the ES and are described in **Chapter 20: Topics to Be Scoped Out** of this Scoping Report.

5.4 Engagement

Approach to Engagement and the Changes to Statutory Requirements

5.4.1 Effective and meaningful engagement with stakeholders is an essential aspect of developing good design for the Proposed Development and in producing a balanced and comprehensive EIA.

5.4.2 Guidance from the Ministry of Housing, Communities and Local Government ('MHCLG')[35]on pre-application engagement for major infrastructure projects encourages good quality engagement from project inception, to enable stakeholders to gain an understanding of the proposals at an early stage in the process and to inform design development from the outset.

5.4.3 The Applicant will have regard to the guidance set out in the Planning Inspectorate's Advice Note on EIA Notification and Consultation[36] in identifying the relevant consultees for the Proposed Development and ensuring compliance with the requirements of the EIA Regulations, PA 2008 and the Infrastructure Planning (Application: Prescribed Forms and Procedures) Regulations 2009.

5.4.4 The PIA 2025 has introduced a number of reforms to how pre-application engagement is undertaken. When brought into force, section 5 of the PIA 2025 will remove certain pre-application requirements, including the requirement for an Applicant to undertake statutory engagement pursuant to sections 42, 43, 44, 45, 47 and 49 of the PA 2008.

5.4.5 Whilst the Applicant awaits the publication of Government guidance and the implementation of secondary legislation which will bring section 5 of the PIA 2025 into force, the Applicant intends to carry out two phases of pre-application engagement with local communities and stakeholders, to provide an opportunity for feedback on the formative stage of the design:

- The first phase of engagement 'Phase 1 Engagement' will take place for a duration of 6 weeks from the 16 June 2026 to the 28 July 2026; and

- The second phase of engagement, where the Applicant will present more detailed design proposals, will take place in Winter 2026.

5.4.6 The Applicant will have regard to relevant emerging statutory guidance and comply with any changes to legislation that come forward during the pre-application stage.

Engagement to Date

5.4.7 Engagement with statutory consultees and stakeholders has already commenced to introduce the project proposals, including:

- The Planning Inspectorate;
- SDCC;
- DDDC;
- DCC;
- ESBC;
- SCC;
- Amber Valley Borough Council;
- Historic England;
- National Highways; and
- Environment Agency.

5.4.8 Letters have been issued to the following stakeholders to introduce the Proposed Development:

- Members of Parliament whose Parliamentary Constituency is covered by draft Order Limits;
- Councillors at each of the Host Authorities whose Ward is covered by the draft Order Limits; and
- Parish Councils covered by draft Order Limits; and
- Residents within 100m of the draft Order Limits.

5.4.9 In addition to engagement with the relevant statutory consultees, the Applicant has undertaken discussions with the affected landowners.

Scoping Engagement

5.4.10 In accordance with Regulation 10(6) of the EIA regulations, the Planning Inspectorate (on behalf of the SoS) is required to consult with statutory bodies on this EIA Scoping Report, using feedback provided by stakeholders to inform the Scoping Opinion which will be adopted by the SoS.

6.0 AGRICULTURAL LAND AND SOILS

6.1 Introduction

6.1.1 This chapter covers the likely significant effects of the Proposed Development on Agricultural Land and Soils. In particular the assessment considers:

- the likely effects on agricultural land, as measured under the system of ALC[37];
- the likely effects on soils as a resource distinct from its agricultural land quality; and
- the likely effects on farm businesses, the local and wider economy and related considerations such as food production.

6.1.2 The assessment is based on data publicly available at the time of the assessment.

6.2 Legislation, Planning Policy and Guidance

6.2.1 There is no legislation directly applicable to the use of agricultural land for non-agricultural purposes, or for a mixed use of energy generation and agricultural use.

6.2.2 Policy of relevance includes:

- NPS EN-1 (2026), which advises that the use of land of the BMV, defined as land within ALC Grades 1, 2 and 3a, should be minimised where possible;
- NPS EN-3 (2026), which sets out advice on the use of agricultural land, including land of BMV quality, and on the use of soils;
- NPS EN-5 (2026), which advises in respect of underground cabling works and restoration back to comparable ALC quality;
- NPPF (February 2025), which requires that the economic and other benefits of BMV land be recognised; and

- South Derbyshire Local Plan Part 1, especially policies BNE4 and SD6, which seek to avoid the use of BMV land where possible, and East Staffordshire Local Plan (2012-2031) Strategic Policies 1 and 8 which seek to protect from the loss of BMV land and to consider food production.

6.2.3 Guidance of relevance has included:

- ISEP "A New Perspective on Land and Soil in Environmental Impact Assessment" (2022)[38]; and
- ISEP Guide "Solar PV on agricultural land: essential components of Environmental Assessment and Reports" (December 2025)[39].

6.3 Engagement

6.3.1 No engagement has taken place to date as part of the preparation of this chapter on Agricultural Land and Soils. A wider engagement process is on-going, including with the Environment Agency.

6.4 Study Area

6.4.1 The principal area studied is the area of land identified for the installation of the ground-mounted solar PV energy generating station and associated works including access tracks and BESS. This is the area within which there is the potential for ground disturbance to affect land quality and soils, and where land use change could affect farming businesses.

6.4.2 The area studied also includes areas under which cabling is potentially to be buried. These areas could be affected by short-term, temporary works for the installation of the cables and small items of related infrastructure such as jointing bays and inspection structures.

6.4.3 Potentially a wider area will be considered as part of the assessment where related effects such as severance, impacts on farm businesses, the wider land-based local economy will be identified and considered. This is likely to include other land farmed by businesses affected by the proposals. The extent of this area will be identified during the data collection stage.

6.5 Sensitive Receptors

6.5.1 Sensitive receptors are identified in **Table 6.1**.

Table 6.1 Potentially Sensitive Receptors

Effect	Receptor	Applicable Stage
Loss of agricultural land	Agricultural land, especially land of BMV quality.	Principally at construction and decommissioning phases.
Soils	All soils, but especially high clay soils which are more susceptible to being damaged.	All phases of the Proposed Development, but particularly construction and decommissioning.
Farm businesses	Occupying farming enterprises	Principally affected at construction, with the effect lasting for the duration of the Proposed Development.
Wider rural economy	Wider effects on related supply businesses and national food security	The duration of the Proposed Development.

6.6 Baseline Environment and Future Baseline

Agricultural Land Quality

6.6.1 Published information on land quality is limited to a predictive classification. This gives an indication of the likely land quality but it is not to be relied upon for site specific analysis. The Predictive ALC Map for England (Defra, 2026)[40] shows the Site as a mixture of predictive grades. The majority of the Site, especially the northern parcels, is predicted to be Subgrade 3b "moderate" quality agricultural land, as shown on **Figure 6.1: Predictive ALC Grade (Appendix 1.1: Figures)**, which is not BMV land. There is some predictive Grades 1 and 2 land in the southern parcels.

6.6.2 Wide areas are currently within the draft Order Limits within which a generally narrow cable route will be identified. The cable works are short-term and temporary and the cable route corridors are not shown on **Figure 6.1: Predictive ALC Grade (Appendix 1.1: Figures)**.

Soils

6.6.3 The soils are shown on the National Soil Map[41], now available on ArcGIS, as a mixture of different soils, as follows.

Table 6.1 Soil Types

	Soil Type	Description
543	ARROW	Deep permeable coarse loamy soils affected by groundwater.
711c	BROCKHURST 2	Slowly permeable seasonally waterlogged reddish fine loamy over clayey and clayey soils.
813e	COMPTON	Stoneless mostly reddish clayey soils affected by groundwater.
813c	FLADBURY 2	Stoneless clayey soils variably affected by groundwater some with sandy subsoils.
711m	SALOP	Fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging.
561a	WHARFE	Deep stoneless permeable fine loamy soils.
572f	WHIMPLE 3	Slowly permeable seasonally waterlogged fine loamy and fine silty over clayey soils.
831c	WIGTON MOOR	Permeable fine and coarse loamy soils variably affected by groundwater, the drier soils being on slightly raised sites.

6.6.4 These are shown on **Figure 6.2: Soils (Appendix 1.1: Figures)**.

Farming Circumstances

6.6.5 The land is mostly farmed as a mixture of arable cropping, pastural use or agri-environmental uses.

Future Baseline

6.6.6 In the absence of the Proposed Development the current baseline is not expected to change significantly. There will inevitably be changes in farming circumstances as ownerships and crops/ land use decisions vary, but the land is expected to continue to be farmed.

6.7 Design, Mitigation and Enhancement Measures

6.7.1 The design and layout will seek to minimise the physical disturbance and loss (by sealing-over or irreversible downgrading) of agricultural land, especially land of BMV quality. The areas where land quality is potentially affected is mostly limited to areas for construction compounds, tracks and areas for the BESS and substations. Once detailed ALC data is available, the design of the Proposed Development will seek to minimise disturbance of these areas, so far as possible and in recognition of other design and operational considerations. Where these areas cannot be avoided, detailed advice on soil management to ensure that disturbed areas can be restored upon decommissioning to comparable ALC grade will be provided (within a OSMP or ODEMP). An OSMP will be prepared as part of the DCO submission.

6.7.2 The resting of arable land from continual arable cropping will likely result in an improvement in soil quality, through increased organic matter content.

6.8 Description of Potential Likely Significant Effects

6.8.1 Across much of the draft Order Limits, the land quality is predicted to be poorer quality. There is potential for this to be disturbed or lost and this may give rise to adverse effects.

6.8.2 Parts of the draft Order Limits are predicted to be of BMV quality. Until detailed ALC data has been determined it is not possible to assess the potential significance of the effects, but there is the potential for loss (temporary or permanent) of land of BMV quality.

6.8.3 Some of the soils are clayey soils, and some are seasonally waterlogged. There is the potential for adverse effects on soil structure as a result of soils being trafficked (i.e. driven over) or moved, as part of the construction and decommissioning works. These impacts will normally be temporary and capable of rectification. There is the potential for adverse effects from operational management, but this is mostly likely to be limited to works of repair or panel replacement, if needed.

6.8.4 Farm business effects could include reduced farming areas, severance, disturbance and effects on drainage. These potential effects will be identified during the collection of baseline information and will be assessed. Typically, landowners only agree to the inclusion of land that is not likely to adversely affect farm businesses significantly.

6.8.5 The potential wider effects on the land based rural economy and food security are not likely to be significant. Agricultural use will be capable of continuing in the form of sheep grazing, for the duration of the operational phase, and this will result in agricultural labour, and wider economic activity, and the differences with the current mixed pastoral and arable uses are not likely to be significant.

6.9 Impacts Scoped Out of the Assessment

6.9.1 No potential agricultural effects are scoped out of the assessment.

6.10 Assessment Methodology

6.10.1 Baseline data will be collected by the following methodology:

- Agricultural land quality will be determined by ALC field survey. This is likely to be completed at a detailed level of one auger per hectare, plus soil pits as needed;

- Soils data will be collected as part of the ALC assessment, recording soil types and depths at each auger sampling point;
- Local farm impacts will be collected through interviews, face-to-face or by telephone, with affected landowners or farmers, together with a walk-over survey to determine circumstances and validate information collected; and
- Wider implications will be determined by study of available data on land quality, land use and land-based economic circumstances.

6.10.2 Sensitivity will be determined against the following assessment criteria.

Table 6.2 Assessment Criteria for Sensitivity

Value (Sensitivity)	Description	
	Agricultural Land Quality	Soils Sensitivity to Structural Damage
High	Land of ALC Grades 1, 2 and 3a	High clay soils where the Field Capacity Day* ('FCD') is >150.
Medium	Land of ALC Subgrade 3b	Medium textured soils where the FCD is <225.
Low	Land of ALC Grades 4 and 5	Soils with a high sand fraction where the FCD is <225.
Negligible	Indirect or unproven links to agricultural land	No soils are considered to be of negligible sensitivity.

*This is the number of days per annum when the soils are saturated with water. The FCD is determined under the ALC climate data assessment.

6.10.3 Magnitude will be determined against the following criteria.

Table 6.3 Assessment Criteria for Magnitude

Impact Magnitude	Description
Large	The Proposed Development would directly lead to the loss (including permanent sealing or land quality downgrading) of over 50 ha of soil-related features; or potential for improvement in one or more soil functions over an area of more than 50 ha.

Impact Magnitude	Description
	Full-time farm businesses would be rendered unviable.
Medium	The Proposed Development would directly lead to the loss (including permanent sealing or land quality downgrading) over an area of between 20 ha and 50 ha of soil-related features; or potential improvement in one or more soil functions over an area of between 20 ha and 50 ha. Substantial change to a full-time farm business, or closure of a part-time farm business.
Small	The Proposed Development would directly lead to the loss (including permanent sealing or land downgrading) of less than 20 ha of soil-related functions; or potential for improvement in one of more soil functions over an area of less than 20 ha; temporary, reversible effects on land quality or soils. Minor changes to a full-time farm business, or substantial changes to a part-time business.
Negligible	No discernible loss or reduction or improvement of soil functions or volumes. Minor changes to agricultural businesses.

6.10.4 The significance of effect will be assessed against the following matrix.

Table 6.4 Assessment of Significance

		Sensitivity (or value / importance)			
		High	**Medium**	**Low**	**Negligible**
Magnitude of Change	Large	Major	Moderate	Minor	Minor
	Medium	Moderate	Minor	Minor	Negligible
	Small	Minor	Minor	Negligible	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

6.10.5 Effects that are of moderate or major adverse significance will be significant for EIA terms.

6.11 Limitations and Assumptions

6.11.1 There are no limitations to this scoping assessment. Assumptions that have been made are as set out in the text. Data collection from affected landowners will be validated where possible but will be taken on trust.

7.0 AIR QUALITY

7.1 Introduction

7.1.1 This chapter of the ES Scoping Report has been produced by Waterman Infrastructure & Environment ('Waterman') and sets out the proposed scope of assessment and methodologies to be undertaken in the ES.

7.1.2 The Air Quality chapter of the ES will present an assessment of the likely significant effects of the Proposed Development on air quality during the construction, operational, management and decommissioning phases. In addition, this chapter sets out the air quality baseline, and methodology for undertaking the identification and evaluation of the magnitude of effects arising from the Proposed Development in relation to:

- Nitrogen Dioxide ('NO_2') concentrations and predicted change at existing sensitive receptors;
- Particulate Matter ('PM_{10}' and '$PM_{2.5}$') concentrations and predicted change at existing sensitive receptors; and
- Nitrogen Oxides ('NO_X') concentrations and predicted change at ecologically sensitive receptors.

7.1.3 The assessment will be undertaken by a competent and qualified air quality consultant.

7.2 Legislation, Planning Policy and Guidance

7.2.1 The air quality ES chapter will have regard to the following legislation, policy and guidance:

Legislation

- The Environment Act 1995[42];
- Air Quality (England) Regulations 2000 (as amended) (SI 2000/928)[43];
- Air Quality Standards Regulations 2010 (SI 210/1001)[44];
- The Air Quality Strategy, 2023[45];

- Environment Act 2021[46]; and
- The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023[47].

Planning Policy

- NPS EN-1 (2026), which requires likely significant effects must be assessed and appropriate mitigation identified where necessary;
- NPS EN-3 (2026), which identifies matters relevant to renewable energy infrastructure, including consideration of environmental effects such as those on air quality during construction and operation;
- NPS EN-5 (2026), which identifies matters relevant to electricity network infrastructure, including construction effects on air quality associated with cabling and grid connection works;
- NPPF, December 2024 (amended 2025), paragraphs 110, 187, 198, 199 & 200, which seeks to ensure the development is appropriate for its location and does not contribute to unacceptable levels of air pollution;
- PPG, Section: Air Quality, 001 Reference ID: 32-001-20191101 onwards, last updated November 2019[48], which provides guidance on how air quality should be considered with respect to planning decisions;
- South Derbyshire Local Plan 2011-2028 Part I and Part 2, which includes policies relevant to protecting amenity and environmental quality including air quality;
- Adopted Derbyshire Dales Local Plan, which includes policies relevant to controlling pollution and protection of sensitive receptors; and
- East Staffordshire Local Plan 2012-2031, which includes policies relevant to protecting amenity, health and environmental quality from adverse pollution effects.

Air Quality Policy

- Department for Environment, Food and Rural Affairs (Defra), Clean Air Strategy, 2019[49];
- Department for Environment, Food and Rural Affairs (Defra) UK plan for tackling roadside nitrogen dioxide concentrations, July 2017[50];
- Department for Environment, Food and Rural Affairs (Defra) Environmental Improvement Plan ('EIP') 2023, January 2023[51];
- South Derbyshire Air Quality Strategy, 2024-2028[52];
- Derby and Derbyshire Air Quality Strategy[53]; and
- East Staffordshire Air Quality Strategy, 2024-2029[54].

Guidance

- Department for Environment Food and Rural Affairs (DEFRA) $PM_{2.5}$ Targets: Interim Planning Guidance[55];
- Environmental Protection UK & Institute of Air Quality Management Guidance; Land-Use Planning & Development Control: Planning for Air Quality, 2017[56];
- World Health Organization, Global Air Quality Guidelines. September 2021[57];
- Local Air Quality Management (LAQM) Technical Guidance, 2022 (LAQM.TG(22))[58];
- Institute of Air Quality Management: Guidance on the Assessment of Dust from Demolition and Construction, Version 2.2 January 2024[59]; and
- Institute of Air Quality Management: A guide to the assessment of air quality impacts on designated nature conservation sites 2020[60].

7.3 Engagement

7.3.1 Engagement will be undertaken with the Environmental Health Officers ('EHOs') at SDDC, DDDC and ESBC, as well as any other local stakeholders including at county level if required to agree the assessment methodology.

Study Area

7.3.2 The study area has been defined as up to 2km from the nearest boundary of the draft Order Limits including the proposed cabling routes. A 2km area is considered to suitability capture baseline conditions.

7.3.3 Baseline conditions within the 2km study area have been determined using the following sources:

- Defra's modelled background concentrations of Air Quality Standards (AQS) pollutants (UK-AIR)[61]. These estimates are produced using detailed modelling tools and are available as concentrations at central 1km x 1km National Grid square locations across the UK, and include projections to future years;
- Data from the National Atmospheric Emissions Inventory ('NAEI')[62], Environment Agency ('EA')[63] and Defra's Pollutant Release and Transfer Register ('PRTR')[64] data;
- Multi Agency Geographic Information for the Countryside ('MAGIC')[65], which incorporates Natural England's interactive maps;
- SDDC's latest air quality monitoring data, derived from the latest available air quality annual status report published in 2025[66];
- DDDC's latest air quality monitoring data, derived from the latest available air quality annual status report published in June 2025[67]; and
- ESBC's latest air quality monitoring data, derived from the latest available air quality annual status report published in 2025[68].

7.4 Sensitive Receptors

7.4.1 For the purposes of the air quality assessment, sensitive receptors are defined as locations where people or ecological features may be exposed to changes in air quality, dust soiling or dust deposition[a]. The sensitivity of receptors to air pollution depends on several factors, such as how long and how often exposure occurs, the vulnerability of the affected population or land use and the potential for long-term health or environmental effects. Receptors subject to continuous or extended exposure, or those used by more vulnerable groups, are considered more sensitive than those experiencing only occasional or short-term exposure.

7.4.2 Sensitive human receptors may include residential properties, schools, and healthcare facilities. Sensitive ecological receptors may include statutory and non-statutory designated sites, ancient woodland and other habitats sensitive to dust deposition or traffic related emissions such as nitrogen deposition. These are locations which would be considered to have a high/very high sensitivity.

7.4.3 Sensitive receptor locations will be identified within the study area with representative locations likely to experience the greatest potential effects. These are expected to include receptors in closest proximity to construction works (i.e., sensitive receptors within 250m of the draft Order Limits and within 50m of construction traffic trackout routes up to 250m from the access locations will be considered), Site access points and affected road links (roads which exceed the Environment Protection UK/Institute of Air Quality Management ('EPUK'/IAQM' screening criteria). This approach will allow the assessment of worst-case impacts.

[a] Dust deposition is the process by which airborne particulate matter settles out of the air onto surfaces. Dust soiling is considered to be the visible staining or dirtying of a surface caused by deposited dust.

7.5 Baseline Environment and Future Baseline

Local Air Quality Management (LAQM)

7.5.1 In accordance with their legislative duties under the LAQM, ESC has declared one Air Quality Management Area ('AQMA'). The ESC Burton-Upon-Trent AQMA is located approximately 2.3km south-west of Solar Development Site E and encompasses an area of Burton-Upon-Trent along Derby Road, Derby Street, part of Princess Way Roundabout, Horninglow Street, Horninglow Road, Bridge Street, Wellington Street, part of Borough Road, part of Wellington Street roundabout, part of Waterloo Street and part of Byrkley Street. Due to this distance, it is not anticipated the Proposed Development would directly affect this sensitive area or be affected by poor air quality from the AQMA, however this will be investigated during the detailed assessment undertaken as part of the ES.

7.5.2 DDDC has one active AQMA, located in Ashbourne which is located approximately 13km to the north of the draft Order Limits, and one revoked AQMA in Cubley. The draft Order Limits are not located within these AQMAs.

7.5.3 At the time of writing, SDDC currently does not have any declared AQMAs. The draft Order Limits are therefore not located within an AQMA.

Local Authority Monitoring

SDDC

7.5.4 In 2024, SDDC did not undertake any automatic monitoring of NO_2 and particulate matter (PM_{10}, $PM_{2.5}$). In lieu of monitoring background data for particulate matter (PM_{10}, $PM_{2.5}$) the Defra background map concentrations have been used to inform baseline conditions.

7.5.5 Air quality monitoring is undertaken by SDDC using passive methods. In 2024, annual mean NO_2 monitoring was undertaken within SDDC at 24 locations using diffusion tubes. Historical monitoring data for the diffusion tubes located within the study area do not show any exceedances of the annual mean NO_2 AQS objective.

DDDC

7.5.6 DDDC did not undertake any automatic monitoring of NO_2, PM_{10} or $PM_{2.5}$. In lieu of monitoring background data for particulate matter (PM_{10}, $PM_{2.5}$) the Defra background map concentrations have been used to inform baseline conditions.

7.5.7 Passive diffusion tube monitoring of annual mean NO_2 was undertaken at 28 sites throughout the district in 2024. Historical concentrations at monitoring locations in closest proximity to the study area (DT39 located in Brailsford) has not shown any exceedances of the annual mean AQS objective for NO_2.

ESBC

7.5.8 In 2024, ESC undertook automatic monitoring of NO_2 and particulate matter (PM_{10}, $PM_{2.5}$) at two monitoring sites. The ESC automatic monitoring sites are located outside of the study area and are not considered further.

7.5.9 Air quality monitoring is also undertaken by ESC using passive methods. In 2024, annual mean NO_2 monitoring was undertaken within ESC at 41 locations using diffusion tubes. Historical monitoring data for the diffusion tubes located within the study area do not show any exceedances at locations in closest proximity to the study area (Tutbury).

Pollution Sources

7.5.10 A review of the National Atmospheric Industrial Emissions Inventory ('NAIE')[69], Environment Agency's Public Registers Online service and National Pollutant Release Transfer ('NPRT') publicly available databases does not indicate the presence of any large industrial sources within the study area which are likely to impact the Proposed Development.

DEFRA Background Maps

7.5.11 Defra publishes national air quality maps which provide modelled annual mean background concentrations of pollutants at a 1km × 1km grid resolution across the UK, with projections available for the period 2021 to 2040. The maps are based on a base year of 2021 and make the assumption that

background concentrations will decline over time, reflecting anticipated reductions in emissions from vehicles and other sources.

7.5.12 The grid square averages of the 2026 pollutant concentrations across the study area are shown below in **Table 7.1**.

Table 7.1 DEFRA Background Map 2026 Concentrations (μg/m^3)

Pollutant	AQS objective	POC	Site A	Site B	Site C	Site D	Site E
NOx	-	10.4	6.0	6.7	7.3	9.7	10.9
NO_2	40μg/m^3	8.1	4.8	5.3	5.8	7.6	8.4
PM_{10}	40μg/m^3	11.5	10.3	10.2	10.8	12.2	12.0
$PM_{2.5}$	20μg/m^3	6.7	5.7	5.8	6.0	6.5	6.5

7.5.13 All pollutant background concentrations are below the applicable AQS objectives.

Future Baseline

7.5.14 Future baseline conditions are anticipated to show a reduction in pollutant concentrations over time due to improvements in vehicle technology and new policies such as low emission zones and electric vehicle infrastructure provision requirements for new developments. As such future baseline pollutant concentrations are anticipated to be lower than those presented in Section 7.7.

7.6 Design, Mitigation and Enhancement Measures

Construction Phase

7.6.1 Construction phase impacts will be mitigated by best practice measures to be implemented via a CEMP and the Construction Traffic Management Plan ('CTMP'). With the implementation of these measures, the likely significant impacts would be negligible.

Operational Phase

7.6.2 During the operational phase, the Proposed Development is not expected to give rise to significant direct emissions to air; however, where BESS infrastructure is included potential air quality effects associated with accidental fire incidents would represent an abnormal scenario and any associated impacts would be mitigated through appropriate fire prevention and emergency measures such as an OBSMP.

7.7 Description of Potential Likely Significant Effects

7.7.1 Potential likely significant effects associated with the Proposed Development considered in determining the scope of the assessment are set out below. The potential for likely significant effects will depend on the scale, duration and location of activities, the nature and quantity of emissions generated and the proximity and sensitivity of receptors. In addition to background air quality pollutant concentrations, prevailing meteorological conditions and the effectiveness of embedded and good practice mitigation measures.

7.7.2 Potential likely significant effects associated with the Proposed Development include the following:

- Construction phase effects to human and ecological receptors (NOx, NO_2, PM_{10}, $PM_{2.5}$) from changes in construction traffic and construction plant emissions; and
- Construction phase effects from dust emissions generated by construction activities such as earthworks, material handling and trackout.

7.8 Impacts Scoped Out of the Assessment

7.8.1 Following consideration of the potential likely significant effects identified above, the following are proposed to be scoped out of further assessment:

- Construction effects of the Proposed Development for plant (non-road mobile machinery (‘NRMM’)) has been scoped out of the assessment as

it is not anticipated that construction plant will generate any significant emissions. In addition, construction impacts would be temporary, direct, local and short term in nature;

- Operational phase traffic has been scoped out of the assessment as the Proposed Development is not anticipated to generate traffic exceeding the EPUK/IAQM criteria for detailed assessment; and
- Operational phase effects associated with accidental major fire incidents related to BESS infrastructure as a Battery Safety Management Plan will be provided.
- Decommissioning phase effects are not considered to significant differ from the construction phase effects that will be assessed, and it is proposed to scope this phase of development out.

7.9 Assessment Methodology

Construction Assessment

7.9.1 Construction phase dust effects will be assessed qualitatively in accordance with the IAQM guidance. The assessment will consider potential dust soiling, human health effects from particulate matter and trackout associated with construction activities as follows:

- Demolition – any activity involved in the removal of an existing structure (or structures). This may also be referred to as de-construction, specifically when a building is to be removed a small part at a time;
- Earthworks – soil-stripping, ground-levelling, excavation and landscaping;
- Construction – any activity involved with the provision of a new structure (or structures), its modification or refurbishment. A structure will include a residential dwelling, office building, retail outlet, road, etc; and
- Trackout – the transport of dust and dirt from the construction/demolition Site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network. This arises when heavy duty vehicles (‘HDVs’) leave the construction/demolition Site with dusty

materials, which may then spill onto the road, and/or when HDVs transfer dust and dirt onto the road having travelled over muddy ground on-Site.

7.9.2 The assessment will consider the scale and nature of dust generating activities, the duration and location of works, the distance to sensitive receptors and the sensitivity of those receptors.

7.9.3 Construction traffic will be screened against the relevant EPUK/IAQM criteria to confirm whether a detailed assessment is required. Where the criteria are not exceeded, detailed dispersion modelling of construction traffic emissions will not be undertaken.

7.9.4 Mitigation measures will be identified with reference to the assessed level of dust risk and will be secured through the CEMP. The measures will mitigate any potential significant adverse impacts associated with the construction phase and, following the implementation of the mitigation measures, effects are anticipated to be negligible.

Operational Assessment: Detailed Air Quality Modelling Assessment Methodology

7.9.5 Operational phase road traffic emissions will be considered using the EPUK/IAQM screening criteria to determine the requirement of a detailed assessment. The criteria are set out below to justify the proposed scope of the assessment.

7.9.6 In accordance with the EPUK/IAQM guidance, detailed air quality assessments should be undertaken where there is expected to be a change in light development vehicles (‘LDV’) of 100 annual average daily traffic (‘AADT’) within or adjacent to an AQMA, or 500 AADT elsewhere. The air quality assessment study area should also include locations where there are expected to be changes in HDV movements of 25 AADT within or adjacent to an AQMA, or 100 AADT elsewhere.

7.9.7 The draft Order Limits are not located within or adjacent to an AQMA, as such the less stringent criteria apply. Operational vehicle movements associated with the Proposed Development are expected to be limited to routine

inspection, maintenance and security activities, which are typical for solar farm developments.

7.9.8 It is not anticipated the above thresholds will be exceeded therefore detailed modelling of operational road traffic impacts has been scoped out of the assessment.

Assessment of Sensitivity

7.9.9 Receptors have varying sensitivities to changes in the environment. For the purpose of the assessment, sensitivity will be determined in accordance with the IAQM guidance as Very High, High, Medium or Low, as detailed in **Table 7.2** for both the construction and operational phases of the Proposed Development.

Table 7.2 Receptor Sensitivity

Receptor Sensitivity	Construction Phase Receptors	Operational Phase Receptors
Very High/High	Dust Soiling: indicative examples include dwellings, museums and other culturally important collections, medium- and long-term car parks and car showrooms	Locations where the Annual Mean AQS objectives apply, e.g., All locations where members of the public might be regularly exposed to operational phase pollutants. Building façades of residential properties, schools, hospitals, care homes etc.
	Human Health: Indicative examples include residential properties. Hospitals, schools and residential care homes are considered as having equal sensitivity to residential areas for the purposes of this assessment	
	Ecological: indicative examples include a Special Area of Conservation ('SAC') designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large Site	

Receptor Sensitivity	Construction Phase Receptors	Operational Phase Receptors
	containing concrete (alkali) buildings	
Medium	Dust Soiling: indicative examples include parks and places of work	Locations where both annual mean and short term AQS objectives apply (1-hour mean NO_2, 24-hour mean PM_{10}), e.g. Hotels, Gardens of residential properties, Kerbside sites (for example, pavements of busy shopping streets), those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more. Any outdoor locations where members of the public might reasonably expect to spend one hour or longer.
	Human Health: indicative examples include office and shop workers, but will generally not include workers occupationally exposed to PM_{10}, as protection is covered by Health and Safety at Work legislation	
	Ecological: indicative example is a SSSI with dust sensitive features	
Low	Dust Soiling: indicative examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks and roads	All locations where members of the public might reasonably be exposed for a period of 15 minutes or longer, e.g. Kerbside sites where the public would not be expected to have regular access.
	Human Health: indicative examples include public footpaths, playing fields, parks and shopping streets	
	Ecological: indicative example is a local Nature Reserve with dust sensitive features	

Effect Magnitude

7.9.10 Since construction activities are not expected to generate any beneficial air quality impacts, the following categories will be excluded from the construction

dust assessment: Major Beneficial Impact, Moderate Beneficial Impact, and Minor Beneficial Impact.

7.9.11 Construction activities are anticipated to result in adverse air-quality impacts. These have been classified as Negligible Effect, Minor Adverse Effect, Moderate Adverse Effect, and Major Adverse Effect, as shown in **Table 7.3**.

Table 7.3 Risk of Dust Impacts and Effects

Risk of Dust Impacts	Effects
Negligible	Negligible Effect
Low Risk	Minor Adverse Effect
Medium Risk	Moderate Adverse Effect
High Risk	Major Adverse Effect
Negligible	Negligible Effect

7.9.12 The significance of the effects during the operational phase of the Proposed Development will be based on the EPUK/IAQM guidance. The guidance provides a basis for a consistent approach that could be used to professionally judge the overall significance of the air quality effects based on severity of air quality impacts (effect magnitude) at each individually assessed receptor.

7.9.13 The effect magnitude represents the degree of change to which a receptor will be exposed because of the construction or operational activity undertaken. **Table 7.4** sets out the scale of effect magnitude relevant to assessment of air quality which will be applied in the assessment.

Table 7.4 Effect Magnitude

Long term average Concentration at receptor in assessment year	% Change in Concentration relative to Air Quality Assessment Level (AQAL)			
	1	**2-5**	**6-10**	**>10**
75% of less of AQAL	Negligible	Negligible	Medium	Large
76-94% of AQAL	Negligible	Medium	Large	Large
95-102% of AQAL	Medium	Large	Large	Very Large
103-109% of AQAL	Large	Large	Very Large	Very Large

Long term average Concentration at receptor in assessment year	% Change in Concentration relative to Air Quality Assessment Level (AQAL)			
	1	**2-5**	**6-10**	**>10**
110% or more of AQAL	Large	Very Large	Very Large	Very Large
Note: Changes of less than 0.5%, combined with a relative change of 0.0µg/m^3 when rounded to 1 decimal place, are described as 'No Change'.				

7.9.14 It is recognised that likely significant air quality impacts can operate over a range of geographical areas and therefore a geographical scale may be taken into account in describing the scale/magnitude of the likely significant impact.

Effect Significance

7.9.15 The level of significance of effects is determined by combining the likely magnitude of impact with the sensitivity of the receptor during the construction and operational phases.

7.9.16 The significance of effects will be determined by combining the sensitivity of each receptor with the magnitude of the predicted impact. Sensitivity has been defined using project-specific criteria aligned with IAQM principles, with the 'High' category encompassing receptors with continuous or vulnerable occupancy (formerly 'Very High' and 'High'). Magnitude categories follow standard EIA conventions ranging from Very Large to Negligible. The resulting significance matrix set out in **Table 7.5** provides a transparent and precautionary framework for determining whether predicted impacts are Significant or Not Significant in EIA terms.

7.9.17 It is assumed for the purposes of the assessment effects of 'moderate' significance or greater will be considered significant in EIA terms.

Table 7.5 Significance of Effect Matrix

Sensitivity of Receptor	Magnitude of Impact				
	Very Large	**Large**	**Medium**	**Low**	**Negligible**
Very High/High	Major	Major or Moderate	Moderate	Moderate or Minor	Negligible
Medium	Moderate	Moderate	Minor	Minor	Negligible

Low	Moderate	Minor	Minor	Negligible	Negligible

7.10 Limitations and Assumptions

7.10.1 The proposed methodology of assessment assumes the traffic generated from the construction phase and operational phases of the Proposed Development will not exceed the IAQM criteria for locations not within or adjacent to an AQMA. Should these criteria be exceeded the method of assessment will be updated to reflect this.

7.10.2 The proposed assessment methodology is yet to be agreed with the EHO; therefore, there may be updates to the proposed assessment methodology following discussions with the EHO.

8.0 ARCHAEOLOGY

8.1 Introduction

8.1.1 This chapter presents the scope of the forthcoming detailed environmental assessment for Archaeology, which will assess the potential for likely significant effect on archaeological assets arising from the Proposed Development. Historic structures are addressed in detail within Chapter 9 and are only considered within the archaeological assessment where they add to the context and to the archaeological potential for associated buried remains. This chapter presents the policy and legislative context, the approach to collecting baseline data and an overview of the relevant baseline conditions within the Proposed Development. It sets out the scope of assessment including, with justification, assets that are proposed to be scoped in for detailed assessment and concludes by outlining the method that will be used to undertake the detailed assessment.

8.1.2 In line with the EIA Regulations, this Scoping Report chapter has been compiled by appropriately qualified, experienced, and competent experts.

8.2 Legislation, Planning Policy and Guidance

8.2.1 The following legislation if relevant to the historic environment assessment:

- Ancient monuments and Archaeological Areas Act (1979) (as amended)[70]; and
- Burial Act 1857 (as amended)[71].

8.2.2 The following policy is relevant to the historic environment assessment:

- NPS EN-1 (2026) - requires the assessment of archaeological assets and potential likely to be affected by a development, with appropriate measures taken to avoid, reduce or mitigate significant impacts on the historic environment;

- NPS EN-3 (2026) - requires the identification, assessment and appropriate management of archaeological assets and potential that may be affected by renewable energy development;
- NPS EN-5 (2026) - requires that assessment and appropriate mitigation of impacts on archaeological assets and areas of archaeological potential arising from electricity network infrastructure development;
- NPPF (2025) - requires the significance of archaeological assets to be understood and considered in planning decisions, with harm avoided, minimised or appropriately mitigated;
- DDDC Local Plan (Adopted 2017) - requires development to identify, assess and appropriately mange impacts on archaeological assets and archaeological potential in accordance with local and national planning policy;
- ESBC Local Plan 2012 – 2031 (Adopted 2015) - requires development proposals to identify, assess and conserve archaeological assets and potential, ensuring that any impacts are appropriately avoided, mitigated or recorded;
- SBC Local Plan (Adopted 2016) - requires development proposals to identify, assess and conserve archaeological assets and potential, ensuring that any harm is avoided, minimised or appropriately mitigated through investigation, preservation or recording; and
- SBC Local Plan 2011 – 2031 (Adopted 2014) - requires that archaeological assets are understood, recorded and protected during economic development planning.

8.2.3 The following policy is relevant to the historic environment assessment:

- Code of Conduct ('CIfA' 2023)[72]; which requires archaeologists to act with professional integrity in identifying, assessing and appropriately manage archaeological assets, ensuring work is undertaken competently, transparently and in accordance with the public interest in the historic environment;

- Commercial Renewable Energy Development and the Historic Environment, Historic England Advice Note 15 (Historic England, 2021)[73] which provides guidance for renewable energy developments on identifying, assessing and managing impacts on archaeological assets and the wider historic environment, promoting early consideration of archaeology in project design to avoid or minimise harm and secure appropriate mitigation where impacts are unavoidable;
- Conservation Principles, Policies and Guidance (Historic England, 2008)[74]; which sets out a values-based framework for understanding and managing heritage significance, including archaeological heritage assets, by assessing their evidential, historical, aesthetic and communal value to inform appropriate conservation and decision-making;
- Managing significance in decision-making in the historic environment, Historic Environment Good Practice Advice in Planning Note 2 ('GPA') (Historic England, 2015)[75]; which explains how to assess and manage the significance of heritage assets, including archaeological remains, in decision-making by ensuring proportionate evidence-gathering, clear understanding of significance, and appropriate consideration of harm and mitigation in the planning process;
- Preserving Archaeological Remains, Decision-taking for Sites under Development (Historic England, 2016)[76]; which provides guidance on how archaeological remains should be assessed and managed within the planning process, promoting preservation in situ where possible and, where not, appropriate investigation, recording and mitigation of loss;
- NPPG (2024); which provides detailed guidance on identifying, assessing, and managing archaeological heritage assets within the planning system, including how to determine significance, assess impacts of development, and apply appropriate mitigation or preservation measures in line with national policy;
- Standards and guidance for historic environment DBA (CIfA 2020); which sets out the professional requirements for undertaking desk-based

archaeological assessments, including the identification, collation and interpretation of historic environment data to establish archaeological potential and inform decision-making; and

- Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment (CIfA 2020); which sets out requirements for the competent commissioning and delivery of archaeological and historic environment advice to ensure work is appropriately specified, proportionate, and undertaken by suitably qualified professionals.

8.3 Engagement

8.3.1 Initial engagement with Archaeological Advisory Teams to SCC and DCC was undertaken in December 2025 in relation to the agreed scope set out in the Written Scheme of Investigation ('WSI') for a geophysical survey. The WSI's were approved by DCC and SCC on the 7th of January 2026.

8.3.2 Continued engagement with relevant stakeholders, including Historic England and Archaeological Advisory Teams to the LPAs, will be undertaken throughout the application process, including at key milestones after scoping and engagement, to discuss key archaeological considerations.

8.3.3 The scope, methodology and results of any archaeological assessment and intervention will be discussed with relevant stakeholders, including Historic England and archaeological advisory teams to the LPAs.

8.4 Study Area

8.4.1 The 'study area' refers to the land within a 1km radius of the draft Order Limits. For the cable corridors, the extent of the study area is restricted to the corridor boundaries (see **Figure 8.1** and **Figure 8.2 in Appendix 1.1: Figures**).

8.4.2 The study area has been identified for the purpose of understanding the designated and non-designated assets. This study area is deemed sufficient to inform the context of the archaeological environment associated with the archaeological assets that may be impacted by the Proposed Development,

and to provide a baseline for the known archaeological assets within the Site. The study area is also in line with the relevant professional regulations and standards and guidance, as follows:

8.4.3 The range of sources containing potential information that need to be consulted in undertaking Desk-Based Assessment ('DBA') will vary according to a number of factors:

- the size and location of the Site;
- the nature and quality of existing information; and
- the exact purpose and scope of the study.

8.4.4 The extent of the study area has not yet been agreed with the LPAs and may be subject to review and refinement to inform the ES.

8.4.5 Historic Environment Records ('HERs') from SCC and DCC has been obtained to inform the understanding of potential impacts and identify the potential for as-yet unknown archaeological remains within the study area.

8.5 Sensitive Receptors

8.5.1 The potential sensitive receptors include all of the known and as-yet unknown archaeological assets within the Site. Designated and undesignated archaeological assets within the study area will be identified as part of the DBA, that will inform the technical appendix to the Archaeological ES Chapter.

8.6 Baseline Environment and Future Baseline

8.6.1 The archaeological baseline conditions have been established by carrying out a high-level review of the archaeological dataset relevant to the Proposed Development. The following sources have been utilised to define the baseline of the archaeological assessment:

- Derbyshire and Staffordshire HER;
- British Geological Society data;
- Geographical and basic topographical layout using Google Maps and Light Detection And Ranging ('LIDAR') imagery; and

- Historic England Aeiral Archaeology Mapping Explorer.

8.6.2 The following archaeological assets are located within the study area and are shown in below **Table 8.1**.

Table 8.1 Archaeological Assets

ID Number	Description	Designation	Period	Site Location
MDR14248	Probable settlement and field system	Non-Designated Asset	Prehistoric	Site A
MDR800	Cropmarks seen on aerial photographs	Non-Designated Asset	Prehistoric	Site A
EDR2692	Excavation recorded Bronze Age cremation	Non-Designated Asset	Prehistoric	Site A
EDR1739	Geophysical survey – medieval field system, quarry, hollow way, ridge and furrow	Non-Designated Asset	Medieval	Site A
MDR8155	Fieldwalking of earthworks - medieval field system, quarry, hollow way, ridge and furrow	Non-Designated Asset	Medieval	Site A
MDR795/EDR731/EDR1130	Possible Medieval Deserted Village	Non-Designated Asset	Medieval	Site A
MDR8165	Geophysical survey – ridge and furrow	Non-Designated Asset	Medieval	Site A
EDR1689 /EDR1691	Watching brief – linear features interpreted as ridge and furrow	Non-Designated Asset	Medieval	Site A

ID Number	Description	Designation	Period	Site Location
MDR8101/ EDR1735	Ridge and furrow, house platform, and linear banks	Non-Designated Asset	Medieval	Site A
MDR13035	Foston Park – ridge and furrow	Non-Designated Asset	Medieval	Site A
MDR804/ EDR1729 / EDR5076)	Geophysical survey at Sudbury Hall	Non-Designated Asset	Post-medieval	Site A
MDR794	Sudbury Park – enclosed	Non-Designated Asset	Post-medieval	Site A
MDR14542	WWII military camp	Non-Designated Asset	Post-medieval	Site A
MDR14543	WWI military camp within Fostern Park	Non-Designated Asset	Post-medieval	Site A
MDR14236	Suggested Site of Barton Park	Non-Designated Asset	Medieval	Site B
MDR2668 1016778	Barton Blount – Deserted Medieval Village	Designated Asset	Medieval	Site B
MDR25003	St Michael's Church Graveyard	Non-Designated Asset	Medieval	Site B
MDR2669	Shrunken Village of Church Broughton	Non-Designated Asset	Post-medieval	Site B
MDR2664	Barton Fields Forge	Non-Designated Asset	Post-medieval	Site B

ID Number	Description	Designation	Period	Site Location
MDR2677	Airfield	Non-Designated Asset	Post-medieval	Site B
MDR2681	Shrunken village of Dalbury Lees	Non-Designated Asset	Medieval	Site C
MDR2682	Deserted Medieval Village at Ash	Non-Designated Asset	Medieval	Site C
MDR2675	Cropmarks	Non-Designated Asset	Medieval	Site C
MDR23764	Earthworks	Non-Designated Asset	Medieval	Site C
MDR2690	Possible location of a shrunken village visible of aerial photography	Non-Designated Asset	Medieval	Site C
MDR24310	The graveyard of St Helen's Church	Non-Designated Asset	Medieval	Site C
MDR15181/ EDR3821)	Ridge and furrow through trial trenching	Non-Designated Asset	Medieval	Site C
MDR23279	The former Ice House of Etwall Hall	Non-Designated Asset	Post-medieval	Site C
MDR23113	Burial vault	Non-Designated Asset	Post-medieval	Site C
MDR10005	Disused railway	Non-Designated Asset	Post-medieval	Site C
MDR2667 NHLE 1011203	Bronze Age Bowl Barrow	Designated Asset	Prehistoric	Site D

ID Number	Description	Designation	Period	Site Location
	– Hoon Mount			
MDR14533	Iron Age/Roman field boundary	Non-Designated Asset	Prehistoric	Site D
MDR8011	Cropmarks	Non-Designated Asset	Prehistoric	Site D
MDR24772	The cemetery at St Mary's Church	Non-Designated Asset	Medieval	Site D
MDR14531	Trackway	Non-Designated Asset	Post-medieval	Site D
MDR14585	WWII military camp	Non-Designated Asset	Post-medieval	Site D
MDR14140	WWII military depot	Non-Designated Asset	Post-medieval	Site D
MDR22959/ MDR22960/EDR4668	Bronze Age burnt mound, Neolithic pits and beaker pottery	Non-Designated Asset	Prehistoric	Site E
MST1430/ EST15	Possible Iron Age settlement	Non-Designated Asset	Prehistoric	Site E
MST1429	Iron Age enclosures, possible ring ditches and linear features	Non-Designated Asset	Prehistoric	Site E
MST6342/ EST1020	Linear cropmark, possibly Bronze Age	Non-Designated Asset	Prehistoric	Site E
MDR13325/ MDR14523	Iron Age/Roman enclosure cropmarks	Non-Designated Asset	Prehistoric	Site E

ID Number	Description	Designation	Period	Site Location
MDR23181/ EDR4982	Iron Age weaving site and traces of an Iron Age roundhouse	Non-Designated Asset	Prehistoric	Site E
MDR14521	Iron Age/Roman field boundary	Non-Designated Asset	Prehistoric	Site E
MDR23182/ EDR4982	Neolithic activity	Non-Designated Asset	Prehistoric	Site E
MDR14518	Iron Age/Roman field boundary and trackway	Non-Designated Asset	Prehistoric	Site E
MDR2586	Neolithic settlement	Non-Designated Asset	Prehistoric	Site E
MDR8149/EDR1727	Prehistoric activity dating to between the Bronze Age and Neolithic	Non-Designated Asset	Prehistoric	Site E
MDR11340	Potential Bronze Age barrow	Non-Designated Asset	Prehistoric	Site E
MST1142/ MDR10207	Projected course of the Roman road of Ryknild Street	Non-Designated Asset	Roman	Site E
MST6339	Earthwork thought to be surviving section of the Agger	Non-Designated Asset	Roman	Site E
MST6342	Linear cropmark, thought to be associated	Non-Designated Asset	Roman	Site E

ID Number	Description	Designation	Period	Site Location
	with the Roman Road			
MST4512 NHLE 1003809	Scheduled remains of Narrow Road bridge over river Dove	Designated Asset	Medieval	Site E
MDR22803	Field boundary	Non-Designated Asset	Medieval	Site E
MDR23183/ EDR4982	Possible Saxon Hall	Non-Designated Asset	Medieval	Site E
MDR2586	Saxon agricultural settlement	Non-Designated Asset	Medieval	Site E
MST20966	Field boundaries	Non-Designated Asset	Post-medieval	Site E
MST4779	Former field system	Non-Designated Asset	Post-medieval	Site E
MDR14526	Earthworks of bank and mound	Non-Designated Asset	Post-medieval	Site E
MDR22805	Ridge and furrow	Non-Designated Asset	Post-medieval	Site E
MDR12143	Cropmarks of potential Prehistoric activity identified on aerial photographs	Non-Designated Asset	Prehistoric	National Grid Willington 400 kV substation
MDR12143	Possible Prehistoric features such as ring ditches and enclosures	Non-Designated Asset	Prehistoric	National Grid Willington 400 kV substation
MDR2584/MDR15821	Cropmarks of possible Iron Age/Roman field boundaries	Non-Designated Asset	Prehistoric	National Grid Willington 400 kV substation

ID Number	Description	Designation	Period	Site Location
	and enclosures			
MDR4333/ EDR1700/ EDR1701/ EDR1704/ EDR2672/ EDR4819/ EDR4893	Neolithic and Bronze Age settlement activity confirmed through archaeologic al investigations	Non-Designated Asset	Prehistoric	National Grid Willington 400 kV substation
MDR12144/ EDR2674	Iron Age ditch	Non-Designated Asset	Prehistoric	National Grid Willington 400 kV substation
MDR4329	Cropmarks of enclosures and linear features, likely Iron Age/Roman	Non-Designated Asset	Prehistoric	National Grid Willington 400 kV substation
MDR4311	Possible prehistoric activity comprising of pit alignments	Non-Designated Asset	Prehistoric	National Grid Willington 400 kV substation
MDR4367/MDR4310	Cropmarks indicating Potlock Neolithic Cursus	Non-Designated Asset	Prehistoric	National Grid Willington 400 kV substation
MDR4344	Possible enclosure	Non-Designated Asset	Prehistoric	National Grid Willington 400 kV substation
MDR4303	Prehistoric Landscape covering the areas of Frizams Lane, Twyford and Stenson and Willington	Non-Designated Asset	Prehistoric	National Grid Willington 400 kV substation

ID Number	Description	Designation	Period	Site Location
MDR4368	Several potential prehistoric features	Non-Designated Asset	Prehistoric	National Grid Willington 400 kV substation
MDR7697	Trackway and pit alignment	Non-Designated Asset	Prehistoric	National Grid Willington 400 kV substation
MDR4312	Possible prehistoric features, likely Neolithic and Bronze Age	Non-Designated Asset	Prehistoric	National Grid Willington 400 kV substation
MDR7698	Possible double-ditched enclosure and pit alignment	Non-Designated Asset	Prehistoric	National Grid Willington 400 kV substation
MDR8089	Possible prehistoric features including barrow	Non-Designated Asset	Prehistoric	National Grid Willington 400 kV substation
MDR7694	Possible prehistoric enclosure	Non-Designated Asset	Prehistoric	National Grid Willington 400 kV substation
MDR4329	Cropmarks of enclosures and linear features, likely Iron Age/Roman	Non-Designated Asset	Roman	National Grid Willington 400 kV substation
MDR14498	Possible Roman field boundary	Non-Designated Asset	Roman	National Grid Willington 400 kV substation
MDR14500	Boundary ditches and banks	Non-Designated Asset	Medieval	National Grid Willington 400 kV substation
MDR2572	Rectangular earthwork, unknown	Non-Designated Asset	Medieval	National Grid Willington

ID Number	Description	Designation	Period	Site Location
	date but suggestions that is medieval			400 kV substation
MDR14515/ MDR14513	Medieval fishpond	Non-Designated Asset	Medieval	National Grid Willington 400 kV substation
MDR14514	Medieval moat	Non-Designated Asset	Medieval	National Grid Willington 400 kV substation
MDR14500	Boundary ditches and banks	Non-Designated Asset	Post-medieval	National Grid Willington 400 kV substation
MDR8084	Post-med field boundaries	Non-Designated Asset	Post-medieval	National Grid Willington 400 kV substation
MDR15821	Cropmarks of possible IA/Roman field boundaries and enclosures	Non-Designated Asset	Prehistoric	Cable corridor – Pink Route
MDR2584	Cropmarks of possible IA/Roman field boundaries and enclosures	Non-Designated Asset	Prehistoric	Cable corridor – Pink Route
MDR4333/EDR1700/EDR1701/EDR1704/EDR2672/EDR4819/EDR4819/EDR4893	Neolithic and Bronze Age features confirmed through archaeological investigations	Non-Designated Asset	Prehistoric	Cable corridor- Maroon Route
MDR10207	The projected route of Ryknield	Non-Designated Asset	Prehistoric	Cable corridor – Pink Route +

ID Number	Description	Designation	Period	Site Location
	Street Roman Road			Maroon Route
MDR2675	Area of cropmarks, including linear ditches, potential for ring ditches and enclosures as well as ridge and furrow	Non-Designated Asset	Medieval	Cable corridor – Navy Blue Route
MDR2681	Shrunken village of Dalbury Lees evidenced by earthworks	Non-Designated Asset	Medieval	Cable corridor – Maroon Route
MDR7932	Probable cropmark field boundaries	Non-Designated Asset	Post-medieval	Cable corridor – Grey Route
MDR7931	Probable cropmark field boundaries	Non-Designated Asset	Post-medieval	Cable corridor – Grey Route
MDR14140	WWII military depot	Non-Designated Asset	Post-medieval	Cable corridor – Grey Route

8.6.3 Additionally, extensive evidence from aerial photography of ridge and furrow have been identified located outside and inside each of the Sites.

8.6.4 Previous non-intrusive archaeological investigations have been conducted in parts of the Proposed Development as part of the DCO application. The geophysical survey for Sites A - E suggest potential for as-yet unknown archaeological remains within the Site. Some possible archaeological anomalies have been detected, possibly relating to enclosures and field boundaries, and there is potential for further unknown remains to be identified during ground works or archaeological investigation. The results of the geophysical survey are not yet available for full analysis.

8.6.5 Additional non-intrusive survey on the remaining draft Order Limits may be required. Depending on the results of the geophysical survey, proportionate and targeted trial trenching may be required to inform the ES baseline.

8.6.6 A full detailed baseline will be included in the forthcoming Archaeological DBA produced at ES stage.

8.6.7 If required, an appropriate mitigation strategy will be identified, discussed and agreed as appropriate. This may include trial trench evaluation, strip, map and record/sample excavation or watching brief.

8.7 Design, Mitigation and Enhancement Measures

8.7.1 An appropriate mitigation strategy will be identified, discussed and agreed as appropriate. All work will be undertaken in engagement with the Archaeology Advisory Teams to the LPAs and with the Inspectors of Ancient Monument at Historic England. This will be further detailed in the baseline reporting.

8.7.2 It is expected that the programme of archaeological mitigation will include a range of standard industry-recognised mitigation measures in addition to the mitigation measures set out in the OCEMP, OOEMP, ODEMP, OLEMP, and OCDTMP. These measures will be used, where appropriate, to manage and reduce potential impacts on buried archaeological assets, depending on their significance and the level of impact from the Proposed Development, as informed by the results of the non-intrusive and intrusive surveys:

- Archaeological strip, map and record/sample;
- Archaeological watching brief; and
- Mitigation by design.

8.7.3 A further review of the archaeological mitigation strategies will be implemented during the different phases of the Proposed Development. How these will be applied to the different receptors will be included in the Archaeology ES Chapter, when there is more information about the actual archaeological survival on the Proposed Development (via field evaluation) and the extent of the impacts of the Proposed Development.

8.8 Description of Potential Likely Significant Effects

8.8.1 In assessing the likely effects of the Proposed Development on archaeology receptors, the intention is to identify how, and to what degree, it would affect the significance of the identified archaeological assets.

8.8.2 All effects that may result in a high magnitude of change upon known or unknown archaeological remains within the Site will be scoped into the assessment. This will primarily consist of works that penetrate the ground surface as they have the potential to damage and/or remove archaeological deposits, features and finds. These will likely all occur during the enabling and construction phases and include activities such as (but not limited to) piling, excavation of service trenches, foundations or any other element, probing, coring ground levelling, road construction, compound constructions and below ground demolition.

8.8.3 The level of impact on archaeological receptors will be fully assessed within the Archaeological DBA, which will form a technical appendix to the ES, and the results included within the Archaeology ES Chapter. Where possible, there will be an attempt to mitigate by design any impacts on particularly sensitive receptors. Where adverse effects on sensitive receptors are determined to be 'significant' for the purposes of the EIA Regulations, then they will be subject to further mitigation and justification.

8.9 Impacts Scoped Out of the Assessment

8.9.1 The scope of impact from the installation of the solar panels is assessed to be limited and dispersed. Solar arrays are generally installed on mounting structures supported by narrow steel piles (typically 80 mm C-section sections) that are either driven or screwed into the ground, rather than placed within pre-excavated slots. The supporting frames are usually constructed from 3–5 mm rectangular steel members and are positioned with suitable spacing between each structure. In locations where piling is not appropriate due to ground conditions or the presence of buried archaeological remains,

above-ground concrete ballast systems may be used instead. Consequently, any impact on below-ground deposits is localised, dispersed, and confined to relatively small areas.

8.9.2 Decommissioning of power control infrastructure, on-Site cabling, and access tracks may result in impact through excavation. These impacts are expected to be of low magnitude and mitigated through requirements of the ODEMP, to be formalised through the Detailed DEMP. Therefore, this would not constitute a significant effect and as such, these activities are scoped out of further assessment.

8.9.3 Whilst the impacts relating to the construction and operation of the Proposed Development have the potential to cause significant effects without mitigation. The significant effects during operation may include but not be limited to maintenance, landscaping, utility repairs or groundworks, as well as visual and setting impacts on monuments, reducing their significance. It is anticipated that the decommissioning phase would not create further significant effects owing to the mitigation in place for the construction and operation of the Proposed Development. As such, decommissioning activities have been scoped out of further assessments.

8.10 Assessment Methodology

8.10.1 The ES Chapter will set out an assessment of the impacts of the groundworks and construction works associated with the Proposed Development on any identified or potential archaeological remains. This will be followed by an assessment of the overall significance of effect upon archaeological receptors, both before and after mitigation. The significance of effect reflects both the importance of the resource and the degree to which the resource would be impacted.

8.10.2 The ES Chapter will provide a reasonable worst-case assessment based on the maximum building envelope, as the construction of the Proposed Development is the phase during which buried archaeological receptors may be impacted groundworks and associated ground disturbance.

8.10.3 The process of impact assessments applied to buried receptors involves the following steps:

- Assessing the potential for unknown archaeological assets based on known baseline preliminary evidence:
    - Understanding the archaeological receptors. This includes describing the receptors, its surroundings and defining its heritage significance (referred to in the ES Chapter as 'sensitivity' to avoid confusion with the significance of effect);
    - Understanding the level and degree of impact (magnitude of change) to the significance of the archaeological receptors;
    - Determining the significance of effect on archaeological receptors caused by the Proposed Development, by considering the magnitude of the impact and assessing the significance of the change.

8.10.4 The likely significance of effects of the Proposed Development on known archaeological receptors as well as currently unknown receptors that may be present on the Proposed Development will be assessed. A full assessment of the planning policy context at national, and local level will be set out together with the relevant methodology and assessment criteria.

8.10.5 The ES Chapter will present the potential effects associated with the Proposed Development to below ground archaeological receptors.

8.10.6 In line with the NPS (EN-1, EN-3 and EN-5 and NPPF, local planning policies and industry standards and guidance, an Archaeological DBA will be prepared to establish the archaeological significance and value of known buried receptors, the potential for the presence of unknown buried heritage receptors and to review the potential impact of the Proposed Development upon any such receptors. The Archaeological DBA will establish the archaeological baseline conditions at the Proposed Development.

8.10.7 Significance values, or sensitivity, of an archaeological receptor are guided by its designated status and its heritage interest. Each identified archaeological

asset can be assigned a value in accordance with the criteria set out in the NPS for National Networks ('NSPNN' EN-1, EN-3 and EN-5), Historic England's 'Conservation Principles' and NPPF Annex 2, as per **Table 8.2** below. Using professional judgement and the results of engagement with relevant stakeholders, archaeological assets are also assessed on an individual basis. Regional variations and individual qualities are also considered where applicable. This includes aspects such as the regional scarcity of specific asset type, or whether assets can be considered to the of schedulable quality i.e. due to them being of national importance.

Table 8.2 Significance/ Sensitivity Classification

Value	Description
International / National (very high)	The highest status of asset and indicative of national importance: e.g. World Heritage Sites ('WHS'), Scheduled Monuments ('SMs'), Grade I and II* Listed Buildings, Grade I and II* Registered Parks and Gardens ('RPGs'), Protected Wrecks, Heritage assets of national importance, well preserved historic landscapes with exceptional coherence, time depth, or other critical factor(s)
National / Regional / County (high)	Archaeological sites that may be designated or undesignated, may contain well preserved or in situ structures, buildings of historical significance, historic landscapes with a reasonably defined extent, or reasonable evidence of occupation/settlement or activities (ritual, industrial etc.). e.g. Grade II RPGs, Conservation Areas ('CAs'), Designated historic battlefields, Grade II Listed Buildings, burial grounds, protected heritage landscapes such as Ancient Woodland, heritage assets of regional or county importance.
Sub-regional / District (medium)	Designated or undesignated archaeological sites with reasonable evidence of human activity. Assets may be of limited historic value but may contribute to district or local knowledge and/or research objectives. May contain structures or buildings of potential historic merit. e.g. Historic village settlements, associated historic field systems and boundaries, historic road systems.
Local Area / Parish (Low)	Heritage assets with a local level cultural or education value only. e.g. Historic field systems and boundaries, agricultural features such as ridge and furrow, ephemeral archaeological evidence, artefacts of poor contextual stratigraphy.
Negligible	Historic assets with very little or no surviving archaeological interest or stratigraphic integrity. Buildings and landscapes of no historical significance.

Value	Description
	e.g. Destroyed objects, buildings of no architectural merit, relatively modern landscape features or disturbances such as quarries, field boundaries, drains etc.
Unknown	Insufficient information exists to assess the importance. Significance of below ground archaeological remains is often unknown until their nature and extent

8.10.8 The assessment of the magnitude of change will be made in consideration of any design (embedded, mitigation) or archaeological mitigation, as per **Table 8.3.** Any impact upon archaeological assets can be positive or negative; direct or indirect; and/or cumulative. Impacts can affect the physical fabric of the asset of their setting. Direct physical impacts are considered permanent and result in the total, or partial loss of a buried heritage asset.

Table 8.3 Magnitude of Change

Value	Description
High	Change such that the value of the heritage asset is totally altered or destroyed through physical impact or comprehensive alteration to its setting affecting its value, seriously impeding the ability to understand and appreciate the asset.
Medium	Change such that the heritage value of the asset is affected due to alterations to its physical form or noticeable change to its setting through alterations resulting in erosion in the ability to understand and appreciate the asset.
Low	Change such that the heritage value of the asset is slightly affected through physical alteration to its physical form or slight change to its setting affecting the ability to understand and appreciate the asset.
Very Low	Changes that barely affect the value of the asset or its setting, resulting in no real change in the ability to understand and appreciate the asset.
No Change	No alteration or change to the value of the asset or its setting.

8.10.9 The significance of effect, intended as the overall effect on the asset caused by any impact arising from the Proposed Development is determined by consideration of the significance/sensitivity of the asset and the magnitude of the impact, with a level of professional judgement included in the determination, as per **Table 8.4.** This is identified by the degree of change that would be experienced by the asset and its setting if the Proposed

Development were to be completed as compared with a 'do nothing' situation. Effects can be neutral, adverse, or beneficial. Residual major or moderate effects are deemed to be 'significant' for the purposes of the EIA Regulations, in accordance with standard EIA practice. Minor and negligible effects are deemed to be 'not significant.'

Table 8.4 Significance of Effect

	Magnitude of Change				
Value	**High**	**Medium**	**Low**	**Very Low**	**No Change**
Very High	Major	Major	Moderate	Moderate	Neutral
High	Major	Moderate	Minor	Minor	Neutral
Medium	Moderate	Moderate	Minor	Negligible	Neutral
Low	Moderate	Minor	Negligible	Negligible	Neutral
Very Low	Minor	Negligible	Negligible	Negligible	Neutral

8.11 Limitations and Assumptions

8.11.1 Archaeological DBAs are based on factual archaeological data, yet given the nature of archaeological receptors, they are speculative pieces of work. The true archaeological potential of any site can only be determined via a programme of field evaluation, such as geophysical survey and archaeological trial trenching.

8.11.2 It is assumed that data provided by third parties is accurate at the time of the reporting, including but not limited to the information supplied by the HER sources

8.11.3 At the current stage, a conservative worst-case scenario has been applied whereby all the archaeological remains within the Proposed Development will be entirely removed. The Rochdale Envelope approach will as such be applied, implementing flexibility and uncertainty ensuring that the maximum possible impact is calculated.

9.0 BUILT HERITAGE

9.1 Introduction

9.1.1 This chapter presents the scope of environmental assessment for built or above-ground heritage assets.

9.1.2 Heritage assets are defined in NPS EN-1 paragraph 5.9.3 as buildings, monuments, sites, places, areas or landscapes identified as *"that hold value to this and future generations because of their historic, archaeological, architectural or artistic interest"*. It includes designated heritage assets and non-designated heritage assets. The sum of the heritage interests that a heritage asset holds is referred to as its significance. For the purposes of this assessment and to avoid conflict with the EIA use of the term 'significance', the heritage significance will be referred to as 'value'.

9.1.3 This chapter presents the policy and legislative context, the approach to collecting baseline data and an overview of the relevant baseline conditions within the Site and surrounding area. It sets out the scope of assessment including, with justification, heritage assets that are proposed to be scoped in for detailed assessment and concludes by outlining the method that will be used to undertake the detailed assessment.

9.1.4 In line with the 2017 EIA Regulations, this Scoping Report chapter has been compiled by appropriately qualified, experienced, and competent experts.

9.2 Legislation, Planning Policy and Guidance

9.2.1 A summary of specific policy, legislation against which the Proposed Development will be assessed against, and technical guidance that has informed the assessment methodology, can be found below.

Legislation

- Infrastructure Planning (Decisions) Regulations 2010 – specific reference to Regulation 3; and
- Planning (Listed Building and Conservation Areas) Act 1990.

National Planning Policy

- NPS EN-1 (2026) with specific reference to Section 5.9 Historic Environment;
- NPS EN-3 (2026) – specific reference to:
  - Section 2.3 Factors Influencing Site Selection and Design; and
  - Section 2.10 Solar Photovoltaic Generation.
- NPS EN-5 (2026) with specific reference to:
  - Section 2.2 Factors Influencing Site Selection and Design; and
  - Section 2.4 Consideration of Good Design for Energy Infrastructure.
- NPPF, (2025) – specific reference to Section 16: Conserving and Enhancing the Historic Environment.

Local Planning Policy

9.2.2 The Site covers South Derbyshire and Derbyshire Dales and as such both of their Local Plans are taken into consideration. Relevant policies include:

- South Derbyshire Local Plan (2016) - Policy BNE2: Heritage Assets; and
- Derbyshire Dales Local Plan (2017) - Policy PD2: Protecting The Historic Environment; and
- East Staffordshire Local Plan (2012-2031) - SO9: Heritage (Historic Environment – Sustainable Management and Use).

Other Relevant Guidance

- PPG, specifically the Historic Environment section (2019);
- Historic England (2015) Historic Environment Good Practice Advice in Planning 2: Managing Significance in Decision-Taking in the Historic Environment (‘GPA2’);

- Historic England (2017) Historic Environment Good Practice Advice in Planning Note 3. The Setting of Heritage Assets, Second Edition ('GPA3');
- Historic England (2021) Historic Environment Advice Note 15. Commercial Renewable Energy Development and the Historic Environment ('HEAN15', Historic England);
- Historic England (2008) Conservation Principles, Policies and Guidance;
- ISEP (2021) Principles of Cultural Heritage Impact Assessment[77]; and
- The United Nations Educational, Scientific and Cultural Organisation (UNESCO) (2022) Guidance and Toolkit for Impact Assessments in a World Heritage Context[78].

9.3 Engagement

9.3.1 Engagement with relevant stakeholders, including Historic England and local authority conservation officers from SDDC, has commenced and will be undertaken throughout the pre-application process, including at key milestones such as after receipt of the Scoping Opinion, to discuss key heritage considerations.

9.4 Study Area

9.4.1 The scope of this assessment has been identified to be proportionate to the value of identified heritage assets and the nature of change proposed, in line with NPS EN-1 paragraph 5.9.12.

9.4.2 A study area of up-to 2km radius from the draft Order Limits has been identified within which above ground heritage assets have been reviewed. The radius of the study area is based on a review of the data sources listed in the baseline section, including Zone of Theoretical Visibility ('ZTV') analysis, which is shown overlaid onto Heritage Asset Mapping at **Figure 9.1: Heritage Asset Mapping** (**Appendix 1.1: Figures**), and is considered to be proportionate as required in policy.

9.4.3 In order to define the study area, the potential for significant effects to heritage assets to arise beyond 2km has been reviewed. ZTV data shows limited visibility from designated heritage assets beyond this radius, which is shown at **Figure 9.2: Heritage Asset Mapping and ZTV** (**Appendix 1.1: Figures**) and fieldwork has been undertaken to confirm desk-based assumptions. The scope of assessment has been guided by, but is not strictly limited to, the 2km study area boundary. Additional assets which fall beyond a 2km radius have been scoped in whereby the ZTV shows possible visibility and the assets themselves are highly sensitive (i.e. a Grade I listed country house or Grade II* listed church).

9.4.4 Due to the anticipated scale of the solar arrays (c.3m) and the intervening distance and likely screening, it is considered unlikely that significant effects to heritage assets beyond 2km would arise.

9.4.5 Cable routing may be below and/or above ground. Should cable routing be below ground, any effects to built heritage assets would be temporary during construction only. Should cable routing be above ground, it is anticipated that this would include the presence of pylons during operation which are generally lightweight structures that are already established sporadically within the study area and in the wider landscape. As such a radius of 1km from potential cable routes is proposed as it is unlikely that significant effects would arise to heritage assets beyond this. However, the draft cable route corridors are largely embedded within the 2km study area identified for the draft Order Limits and so the potential effects would generally be assessed up-to 2km.

9.4.6 A screening process has then been undertaken within the study area to scope out any heritage assets which are unlikely to be affected by the Proposed Development. This has been based on an initial understanding of the value and contribution of setting to value of each asset. Within this 2km study area, non-designated heritage assets ('NDHAs') are considered within a 1km radius only and a selective approach has been taken to scoping in designated heritage assets beyond 1km radius, based on the likelihood of potential significant effects. For assets within a 1-2km radius, those that are highly designated assets (Grade I or II* listed, SMs, etc.) are likely to have higher

sensitivity to change, and as such the likelihood of significant effects, as per our methodology, are much greater.

9.4.7 The ZTV data has refined the scope by providing an understanding of the potential visibility of the Proposed Development. Where there is no visibility and the distance makes significant effects from noise, dust or traffic movement unlikely, heritage assets within the study area have been scoped out. In areas of lower visibility, assets have been identified that have the potential to be scoped out, subject to further on-Site analysis. The proposed scope of heritage assets for assessment is presented in the next section and at **Table 9.1**.

9.5 Sensitive Receptors

9.5.1 The relevant heritage assets have been mapped using Geographical Information System ('GIS') as shown in **Figure 9.1: Heritage Asset Mapping (Appendix 1.1: Figures)** and are considered to be possible sensitive receptors.

9.5.2 There are no built heritage assets identified within the draft Order Limits, however a small section of Trent and Mersey Canal Conservation Area does sit within the cable route corridors at the POC.

9.5.3 As shown in **Figure 9.1: Heritage Asset Mapping (Appendix 1.1: Figures)**, there are three SMs adjacent to the draft Order Limits of Site B, Solar Development Site E and the POC. Barton Blount Medieval Settlement Remains sits to the north of Site B, Monks Bridge sits to the south of Site E and Cursus and Mini Henges of Neolithic Date sit to the south-east of the POC.

9.5.4 There are three Grade I listed buildings within the 1km study area of Sites B, D and E, and a further six Grade I listed buildings within the 2km study area, which are concentrated within Twyford Conservation Area (south of the POC).

9.5.5 There are 6 Grade II* Listed Buildings within the 1km study area and a further 6 within 2km, with the majority of these being Churches.

9.5.6 There are 67 Grade II listed buildings within the 1km study area which generally consist former farmhouses, churches, halls and cottages. Amongst these, there are six bridges as well as structures associated with churches such as lychgates. Within the 2km study area there are 116 Grade II Listed Buildings.

9.5.7 There are four Conservation Areas within the 1km study area, Sudbury, Trusley, Etwall and Trent and Mersey Canal, which contains a large portion of the Grade II listed buildings. There is a further 3 Conservation Areas within the 2km study area.

9.5.8 There are 26 Non-Designated Heritage Assets (above ground heritage assets only) within a 1km radius of the study area and none of these are located within the draft Order Limits.

9.5.9 A complete list of the aforementioned heritage assets within the study area which are proposed for assessment are included in section 9.13. In the interests of proportionality certain heritage assets have been grouped for the purposes of assessment, this approach has been taken where the value of assets and/or potential effects are similar, especially in the case of a high concentration heritage assets within a conservation area.

9.6 Baseline Environment and Future Baseline

9.6.1 To determine the baseline environment, and to provide an understanding of the value of the heritage assets and the contribution of such value to their setting, the following actions will be undertaken.

9.6.2 Extensive fieldwork is to be undertaken in June 2026 and will also be undertaken in a winter context in order to fully understand any seasonal changes to settings and visibility. This fieldwork will include Order Limit walkthroughs and photographic recording.

9.6.3 Desk-based and archival research is planned to ensure a comprehensive understanding of the value and settings of identified built heritage assets. This includes the analysis of historic cartography, national Ordnance Survey (‘OS’) maps and local 19th century Tithe Mapping. The Derbyshire HER and historic

aerial photography will also be used to aid a comprehensive understanding of value. These sources inform the baseline understanding on the historic representation of the current landscape and its uses.

9.6.4 GIS software has been used to collate and interrogate digital data. This has included mapping both designated and non-designated heritage assets within identified study areas and, once received, overlaying with ZTV data.

9.6.5 Fieldwork in the form of a site walkovers and photographic recording will be undertaken in both summer and winter to fully understand any seasonal changes to settings, visibility and the existing role of power infrastructure in the landscape.

9.6.6 A ZTV prepared as part of the Landscape and Visual Impact Assessment ('LVIA') will continue to be used to assist with further scoping and understanding potential visual effects on identified heritage assets.

9.6.7 Consented or emerging development in the context of scoped in heritage assets will be reviewed to establish the future baseline and potential for cumulative effects.

9.7 Design, Mitigation and Enhancement Measures

9.7.1 In a built heritage context, the key statutory and policy tests are to preserve or enhance the setting and value of heritage assets. Therefore, good design generally means mitigating potential harm to heritage assets and their settings, i.e. by understanding and taking into account the key features which contribute to the value of heritage assets in the design, such as key views. NPS EN-1 paragraph 5.9.15 encourages, where possible, to prepare proposals which can make a positive contribution to the historic environment, taking account of the value of heritage assets affected. Examples of this include:

- "Enhancing, through a range of measures such a sensitive design, the significance of heritage assets or setting affected;
- Considering where required the development of archive capacity which could deliver significant public benefits; and

- Considering how visual or noise impacts can affect heritage assets, and whether there may be opportunities to enhance access to, or interpretation, understanding and appreciation of, the heritage assets affected by the scheme."

9.7.2 In this case, design mitigation, such as the use of tactical landscaping and planting, also has the potential to reduce the visual influence of existing power infrastructure in the settings of heritage assets thus may lead to some localised enhancements. During construction, embedded measures such as an OCEMP will set out key mitigation measures, alongside the aforementioned design mitigation.

9.8 Description of Potential Likely Significant Effects

9.8.1 There is potential for indirect significant effects to designated and non-designated heritage assets during both the construction and operation stage, as summarised in **Table 9.1.** Effects arising during the construction stage will be temporary, limited to the construction period only and reversible. At this stage, it is anticipated that the effects during decommissioning would be similar to the effects during construction and these phases are considered together. All effects will be local and indirect, unless otherwise specified. The following aims to provide an overview of the scope of these indirect significant effects.

Table 9.1 Summary of Potential Likely Significant Effects

Receptor	Phase	Description of Potential Effect
Designated Heritage Assets within 1km of Site	Construction / Decommissioning	Potential temporary visual effects to the setting of heritage assets on account of the appearance of infrastructure such as cranes in which may affect the contribution of setting to value or the appreciation of such value. Temporary increase in noise, dust and traffic movements as a result of construction activity which may be

Receptor	Phase	Description of Potential Effect
		relevant where it affects the tranquillity or character of the setting of a heritage asset (in cases where this characteristic contributes to the value of the asset). This includes on-Site construction activity and the delivery of infrastructure.
	Operation	Potential visual effects to the setting of heritage assets from introduction of solar arrays and associated built infrastructure, such as BESS and substations. This includes potential effects on long or open views of church towers or within designed gardens or parkland whereby these views make a contribution to the value of the asset. Potential effects to historic landscape character where it contributes to the value of heritage assets, such as encroachment on land historically associated with heritage assets (i.e. farmland).
Non Designated Heritage Assets within 1km	Construction / Decommissioning	Potential temporary visual effects to the setting of heritage assets on account of the appearance of infrastructure such as cranes in which may affect the contribution of setting to value or the appreciation of such value. Temporary increase in noise, dust and traffic movements as a result of construction activity which may be relevant where it affects the tranquillity or character of the setting of a heritage asset (in cases where this characteristic contributes to the value of the asset). This includes on-Site construction activity and the delivery of infrastructure.
	Operation	Potential visual effects to the setting of heritage assets from introduction of solar arrays and associated built

Receptor	Phase	Description of Potential Effect
		infrastructure, such as BESS and substations. This includes potential effects on long or open views of church towers or within designed gardens or parkland whereby these views make a contribution to the value of the asset. Potential effects to historic landscape character where it contributes to the value of heritage assets, such as encroachment on land historically associated with heritage assets (i.e. farmland).
Highly designated Heritage Assets within 1-2km radius of Site	Construction / Decommissioning	Potential temporary visual effects to the setting of heritage assets on account of the appearance of infrastructure such as cranes in which may affect the contribution of setting to value or the appreciation of such value.
	Operation	Potential visual effects to the setting of heritage assets from introduction of solar arrays and associated built infrastructure, such as BESS and substations. This would generally apply to long or open views of church towers, within designated gardens or parkland and farmhouse or country estates whereby these views of the surrounding land make a contribution to the value of the asset.

9.9 Impacts Scoped Out of the Assessment

9.9.1 **Table 9.2** describes the impacts which have been scoped out as it is considered unlikely that significant effects would arise.

Table 9.2 Summary of Built Heritage Impacts Scoped Out

Receptor	Phase	Justification
Direct Effects	Construction, Decommissioning and Operation	There is no potential for any direct effects on designated or non-designated assets as none have been identified within the Site.
Non-designated Heritage Assets further than 1km	Construction / Decommissioning	There will be limited, temporary noise, vibration and visual effects during construction and as such it is unlikely for there to be the potential for significant effects.
	Operational	Due to the distance away from the Draft Order Limits potential effects through changes to the setting through addition of development, encroachment on farmland and visual effects (such as from solar arrays and associated built infrastructure) are unlikely.
Grade II Listed Buildings further than 2km	Construction / Decommissioning	There will be limited, temporary noise, vibration and visual effects during construction and as such it is unlikely for there to be the potential for significant effects.
	Operational	Due to the distance away from the Draft Order Limits potential effects through changes to the setting through addition of development, encroachment on farmland and visual effects (such as from solar arrays and associated built infrastructure) are unlikely.

9.10 Assessment Methodology

9.10.1 Under the requirements of NPS EN-1 (2026), NPS EN-3 (2026), NPS EN-5 (2026), the NPPF (2025), and of other guidance mentioned above, such as ISEP's CHIA (2021) and Historic England's GPAs, the process of heritage impact assessments can be summarised as involving three parts:

- Understanding the heritage significance of identified designated and non-designated heritage assets, including the contribution made by their settings;
- Understanding the nature and extent of likely significant effects to heritage value of identified heritage assets; and
- Making a judgement on the impact that the proposals may have on heritage value and setting.

Value

9.10.2 Legislative and policy requirements for the assessment of effects on heritage assets require the assessor to establish whether the value (heritage significance) is preserved, better revealed/enhanced or harmed as a result of the Proposed Development. For the purposes of this assessment and to avoid conflict with the EIA use of the term 'significance', the heritage significance will be referred to as 'value'.

Magnitude of Impact

9.10.3 The magnitude of impact is a combination of (i) the size and scale of the potential change; and (ii) the duration of the change and its reversibility i.e. effects during the construction phase are likely to be temporary effects, whereas effects during operation would span for the duration of the Proposed Development. The magnitude of impact can be high, medium, low or negligible (as per **Table 9.4)** or nil. The consideration of magnitude of impact takes into account environmental measures embedded in the proposed design.

Defining the Effect

9.10.4 The significance of the effects on heritage assets is established by combining judgements about the value of the receptors affected with the magnitude of the change, in order to identify the likely significant effect. For the purposes of EIA, major and moderate effects are considered to be significant effects (as per **Table 9.5**).

9.10.5 Once the significance of the likely significant effect has been classified, consideration is given to whether the qualitative nature of the resultant effect is, therefore, 'significant beneficial', 'significant adverse' or 'not significant'.

9.10.6 Beneficial effects occur when the Proposed Development would enhance the value (including contribution of the setting to value) of heritage assets. In line with NPS EN-1 (paragraphs 5.9.15 and 5.9.27) this can include taking opportunities, where possible, for proposals to make a positive contribution, for example by enhancing value or setting through sensitive design or enhancing access to, or interpretation, understanding and appreciation of, the heritage assets affected by the Proposed Development.

9.10.7 Adverse effects occur when the Proposed Development would harm the value (including contribution of the setting to value) of heritage assets. Within NPS EN-1 (paragraphs 5.9.28 - 5.9.33) and the NPPF (paragraphs 212 -215), impacts affecting the value of designated heritage assets are considered in terms of harm, and there is a requirement to determine whether the level of harm to designated heritage assets amounts to 'substantial harm' or 'less than substantial harm'. There is no direct correlation between the classification of effect and the level of harm caused to heritage value, however in general terms, major adverse may equate to substantial harm and moderate or minor adverse may equate to different levels on the spectrum of less-than-substantial harm.

9.10.8 For any harm to non-designated heritage assets, NPS EN-1 (paragraph 5.9.34) and NPPF (paragraph 216) require balanced judgement with regard to scale of harm or loss and value.

9.10.9 Neutral effects occur when the Proposed Development would: preserve (or not materially affect) the value (including contribution of setting to value) of heritage assets. Neutral effects can also occur where there is considered to be an equal balance between beneficial and adverse heritage effects. The approach to balancing heritage harms and heritage benefits to reach a 'net' position is established in recent case law.

9.10.10 When considering any likely significant effects, it should be described how any likely significant adverse effects would be avoided, reduced, mitigated or compensated for, as per the mitigation hierarchy (NPS EN-1 paragraph 5.9.11).

9.10.11 Pursuant to NPS EN-1 (paragraphs 5.9.19 – 5.9.21 and 5.9.32) and NPPF (paragraphs 213-215), any harmful impact to the value (including contribution of setting to value) of a designated heritage asset, requires clear and convincing justification, and should be weighed against the public benefits of the Proposed Development. NPS EN-1 (paragraph 5.9.37) states that specifically when considering development affecting the setting of a designated heritage asset, the Secretary of State should give appropriate weight to the desirability of preserving the setting of such assets and treat favourably applications that preserve those elements of the setting that make a positive contribution to, or better reveal the value of, the asset. The greater the negative impact to value, the greater the benefits that will be needed to justify approval.

9.10.12 NPS EN-3 (paragraph 2.3.8) places this requirement in context of renewable energy infrastructure: when considering whether 'public benefits would outweigh loss or harm to value of designated heritage assets, the positive role that large-scale renewable projects play in the mitigation of climate change, the delivery of energy security and the urgency of meeting the Clean Power 2030 Mission and net zero target' should be taken into account.

9.11 Methodology Tables

Table 9.3 Sensitivity Classification

Heritage Value	Designation of Receptor
Very High	Site acknowledged of international importance / World Heritage Site
High	Grade I or Grade II* Listed Asset / Scheduled Monument
Medium	Grade II Listed Asset / Conservation Area
Low	Locally Listed Asset / Designated Heritage Assets comprised by poor preservation

Heritage Value	Designation of Receptor
Very Low	Non-Designated Heritage Asset (not recognised as locally listed) / Locally Listed Asset with little or no surviving interest

Table 9.4 Magnitude of Change Classification

Magnitude of Change	Typical Criteria
High	Total loss, major alteration or fundamental change to key characteristics of features of the baseline
Medium	Partial loss, material alteration or visible but contextual change to key characteristics or features of the baseline
Low	Minor loss, alteration or discernible but non-material change to key characteristics or features of the baseline
Negligible	Barely distinguishable or very limited change from baseline conditions
Nil	No effect

Table 9.5 Overall Effect

Receptor Sensitivity	Magnitude of Impact			
	High	**Medium**	**Low**	**Negligible**
High	Major	Moderate	Moderate / Minor	Minor
Medium	Moderate	Moderate	Minor	Minor / Negligible
Low	Moderate / Minor	Minor	Minor / Negligible	Negligible
Negligible	Minor	Minor / Negligible	Negligible	Negligible

9.12 Limitations and Assumptions

9.12.1 It is assumed that there will be some level of access to all identified heritage assets to fully understand their value and setting, particularly if not visible from publicly accessible vantage points. In the event that access is not available,

such as when heritage assets are in use as private residences, professional judgement will be used, based on available research and data including various primary and secondary research resources including, cartographic studies, archival resources, topographical studies, and ZTV analysis.

9.13 List of Designated and Non-Designated Heritage Assets in the Study Area

9.13.1 **Table 9.6** presents the proposed scope of assessment within the study area, as defined in Section 9.4 and 9.5 of this chapter.

Table 9.6 Proposed Scope of Assessment

Heritage Asset	Designation	Scoped In/Out
1km radius		
Solar Development Site A		
Muse Lane Farmhouse	Grade II	In
Broomhill	Grade II	In
Sapperton Manor Cart Shed at Sapperton Manor Farm Buildings at Sapperton Manor	Grade II Grade II Grade II	In (grouped)
Lees Hall	Grade II	In
Ice house at the Cave	Grade II	In
Sudbury Hall and Registered Park and Garden, including associated heritage assets	Conservation Area Registered Park and Garden (GII)	In (grouped) [*including assets beyond 2km radius*]
84 and 85 Main Road	Grade II	Subject to on-Site analysis
Foston Hall and Attached Archway Stable Block to Foston Hall	Grade II Grade II	In
Foston Mill	NDHA	In

Heritage Asset	Designation	Scoped In/Out
Solar Development Site B		
Church of St Michael and All Angels	Grade I	In
Barton Blount Medieval Settlement Remains	Scheduled Monument	In
Barton Hall Stable Block at Barton Hall Garden Walls, Iron Work, Summer House and Bridge at Barton Hall	Grade II * Grade II Grade II	In (grouped)
Chapel of St Chad	Grade II	In In
Gostyfields Farmhouse	Grade II	In
Barton Park House	Grade II	In
Church Cottages	Grade II	In
Cromwell House Farmhouse	Grade II	In
Old Hall	Grade II	In
Mount Pleasant	Grade II	In
Bartonfields (North) and attached outbuilding	Grade II	Subject to on-Site analysis
Lodge Hill Farm and associated NDHA's	NDHA	In
Methodist Church Chapel Lane	NDHA	In
Royal Oak Cottage and Ye Olde Post Office	NDHA	In
The Cottage Main Street	NDHA	In

Heritage Asset	Designation	Scoped In/Out
Corner Cottage Boggy Lane	NDHA	In
The Etchells	NDHA	In
Solar Development Site C		
The Old Rectory	Grade II	In
Manor Farmhouse	Grade II	In
Church of All Saints	Grade II*	In
Top Farm Farmhouse	Grade II	In
White House Farmhouse	Grade II	In
Rookhills Farmhouse	Grade II	In
Terrel Hays Farmhouse	Grade II	In
Trusley and associated heritage assets	Conservation Area	In
All Saints Church	Grade II*	In
Etwall Lodge	Grade II	In
Garden Wall to Lane Next to Church, Etwall Park	Grade II	Out
Ashe Hall	Grade II	In
Etwall and associated heritage assets	Conservation Area	Subject to on-Site analysis
Solar Development Site D		
Church of St Mary Lychgate North East of Church of St Mary	Grade I Grade II	In (grouped)
The Hall	Grade II	Subject to on-Site analysis
Sudale and Hazeldene	Grade II	In
Old Hall Wakelyn	Grade II	In
Hoon Ridge	Grade II	In
Hoon Mount Platformed Bowl Barrow	Scheduled Monument	In

Heritage Asset	Designation	Scoped In/Out
Hilton Mill	NDHA	In
Pair of Estate Cottages	NDHA	In
Hoonhay Manor	NDHA	In
Wesleyan Methodist Chapel, Hilton	NDHA	In
Solar Development Site E		
Church of St Wilfrid	Grade I	In
Footbridge (on former Eggington Estate)	Grade II*	In
Benby House Farmhouse	Grade II	In
Canal Bridge at OS 279279	Grade II	In
High Bridge	Grade II	In
High Bridge House	Grade II	In
Pinfold or Pound	Grade II	Out
Whitehouse Farmhouse	Grade II	Subject to on-Site analysis
Dove Cliffe	Grade II	In
Monks Flood North Bridge	Grade II	In
Monks Flood Bridge	Grade II	In
Monks Bridge	Scheduled Monument	In
Trent and Mersey Canal Canal Aqueduct at SK 268269	Conservation Area	In
Church of St Mary	Grade II*	Out
Trent and Mersey Canal Milepost at SK 259260	Grade II	Out
Claymills pumping Station	Grade II*	Out
Former Primitive Methodist Chapel, Duck Street	NDHA	In
POC – National Grid Willington 400 kV substation		
Trent and Mersey Canal	Conservation Area	In

Heritage Asset	Designation	Scoped In/Out
Cursus and Mini Henges of Neolithic Date	Scheduled Monument	In
Willington Hill Farmhouse	Grade II	In
The Green Man	Grade II	Out
Hall Cottages and The Hall	Grade II	Out
Church of St Michael	Grade II	Out
Pilsbury House	Grade II	Out
44 Repton Road	Grade II	Out
3 and 5 Bargate Lane	Grade II	Out
Willington Bridge	Grade II	Out
Trentside Cottage	Grade II	Out
Nos. 46, 46a-48 Hall Lane	NDHA	Out
The Grange, Willington	NDHA	Out
Grange cottages and workshop in former boatyard, Willington	NDHA	Out
Findern Primary School, Buckford Lane	NDHA	Out
Former Wesleyan Methodist Chapel, Repton Road	NDHA	Out
1-2km radius (selected and highly designated heritage assets only)		
Meynell Hunt Kennels and Stables and associated heritage assets	Grade II	Subject to on-Site analysis
Leathersley Farm House	Grade II	In
Harehill Farmhouse	Grade II	Subject to on-Site analysis

Heritage Asset	Designation	Scoped In/Out
Rose and Crown Public House	Grade II	Subject to on-Site analysis
Church of St John the Baptist	Grade II*	In
Little Hassett	Grade II	In
Badgers Green and Attached Water Pump	Grade II	In
Mount Pleasant	Grade II	In
Sutton Mill	Grade II	Subject to on-Site analysis
Cheetham Arms Farmhouse	Grade II	Subject to on-Site analysis
Crinkle Crankle Wall to West of Sutton Hall	Grade II	Out
Sutton Hall and Attached Outbuildings	Grade II*	In
Church of St Michael Tombstone 12 Metres South East of South Porch Pair of Tombstones 10 Metres South East of South Porch Lychgate to South of the Church of St Michael	Grade II* Grade II Grade II Grade II	In (grouped)
Primitive Methodist Chapel	Grade II	In
Homestead Farmhouse	Grade II	In
The Elms	Grade II	In
Woodhouse Farmhouse	Grade II	Subject to on-Site analysis
Set of 8 Garden Urns and Accompanying Steps	Grade II	Out
Radbourne Hall	Grade II	In
Smerrils Farmhouse	Grade II	Subject to on-Site analysis
Lodge Cottage at Hilton Lodge	Grade II	Out
Hilton Lodge	Grade II	Out

Heritage Asset	Designation	Scoped In/Out
Hilton Fields Farmhouse	Grade II	In
Church of St Michael and associated heritage assets	Grade II*	In
Primitive Methodist Chapel	Grade II	In
Sutton Mill	Grade II	In
Sutton Hall and Attached Outbuildings	Grade II*	In
Walnut Farm and associated heritage assets	Grade II	Out
Rose Cottage and Attached Barn	Grade II	Out
39 Uttoxeter Road	Grade II	Out
Tutbury Crossing Signal Box	Grade II	Out
Tutbury and associated heritage assets *[including assets beyond 2km radius]*	Conservation Area	Subject to on-Site analysis (grouped)
Park Hill	Grade II	In
1 Chapel Lane	Grade II	Out
3 Beacon Road	Grade II	Out
2 Beacon Road	Grade II	Out
Craythorne Hall	Grade II	Subject to on-Site analysis
Bridge Farmhouse	Grade II	Out
Milepost at SK 258256	Grade II	Out
Workshop, Agitator Engine House, Chief Engineers Office, Tinsmith's Shop and Dynamo House to Claymills Pumping Station	Grade II	In
Bladon Castle Lodge	Grade II	Subject to on-Site analysis
Bladon Castle	Grade II*	Subject to on-Site analysis
Wetmore Hall Farmhouse	Grade II	In

Heritage Asset	Designation	Scoped In/Out
Folly Made up from Fragments of Burton Abbey	Grade II	Out
Medieval Arch From Burton Bridge in Newton Park	Grade II	Out
Gardener's House in Newton Park	Grade II	Subject to on-Site analysis
Newton Park Hotel	Grade II	In
The Lodge and Attached Walls	Grade II	In
The Cedars	Grade II	In
The Cottage	Grade II	In
Alsmhouses and attached walls, 28-34 Main Street	Grade II	In
Brickmakers Arms	Grade II	In
Beehive Cottage	Grade II	In
The Croft	Grade II	In
Barn at Trent Farm	Grade II	In
The Poplars	Grade II	In
Church of St Mary the Virgin	Grade II*	In
Repton and associated heritage assets	Conservation Area	Subject to on-Site analysis (grouped)
Twyford and associated heritage assets	Conservation Area	Subject to on-Site analysis (grouped)
31 Burton Road	Grade II	Out
Tower House	Grade II	In
Willow Farmhouse and Attached Outbuildings	Grade II	Out
Corner House	Grade II	Out
Church of All Saints Wall and Gateway to All Saints Churchyard	Grade II Grade II	Out
Somerville House and Attached Outbuilding	Grade II	Out

Heritage Asset	Designation	Scoped In/Out
Number 19 and Attached Outbuilding Cowhouse to South East of Number 19	Grade II Grade II	Out
Hargate House Farmhouse	Grade II	Out

10.0 CLIMATE CHANGE AND GREENHOUSE GASES

10.1 Introduction

10.1.1 The Climate Change and Greenhouse Gases ('GHGs') chapter will determine how the Proposed Development will contribute and react to a changing climate. The assessment will be split into the following:

10.1.2 The GHG Emissions assessment will focus on the direct and indirect release of GHGs during the construction, operation and maintenance, and decommissioning phases of the Proposed Development, taking a lifecycle approach; and

10.1.3 The Climate Change Resilience assessment will consider the ability of the Proposed Development to operate as intended when accounting for the anticipated effects of projected climate change, including associated weather effects. An In-Combination Climate Change Impact assessment will also be undertaken to consider the impact of the operation of the Proposed Development in combination with projected future climate change on surrounding environmental receptors.

10.2 Legislation, Planning Policy and Guidance

International Legislation

10.2.1 The following international legislation is relevant to the Proposed Development in the context of climate change:

- The United Nations Framework Convention on Climate Change ('UNFCC') Paris Agreement (2016)[79], which requires all signatories to strengthen efforts to mitigate climate change in order to keep global warming to no more than 2°C, and to pursue efforts to limit global warming to 1.5°C; and

- The UK Nationally Determined Contribution ('NDC') to the UNFCC (2025)[80], which sets out the UK's commitment to reducing GHG emissions by at least 81% compared to the 1990 levels by 2035.

National Legislation

10.2.2 The following national legislation is relevant to the Proposed Development in the context of climate change:

- The Climate Change Act 2008[81], which sets out the UK government's commitment to reduce the UK's GHG emissions by at least 80% compared to the 1990 levels by 2050, as well as requiring the government to set legally binding 'carbon budgets' to facilitate the targeted reductions by 2050;
- The Climate Change Act 2008 (2050 Target Amendment 2019), which introduced the legally binding target of achieving net zero GHG emissions by 2050;
- The Environment Act 2021, which sets out targets, plans and policies for improving the natural environment, including with respect to waste and resource efficiency;
- The Fifth Carbon Budget (2015)[82], which sets out the carbon budget totals for the Fifth (2028 – 2032) Carbon Budget period;
- The Sixth Carbon Budget (2020)[83], which sets out the carbon budget totals for the Sixth (2033 – 2037) Carbon Budget period; and
- The Seventh Carbon Budget: Advice for the UK Government (2025)[84], which sets out the recommended carbon budget totals for the Seventh (2038 – 2042) Carbon Budget period; and
- The Third National Adaptation Programme ('NAP3'; 2023)[85], which sets the actions that will be taken to adapt to the impacts of climate change in the UK, with NAP3 covering the period 2023 to 2028.

National Planning Policy

10.2.3 The following national planning policy is relevant to the Proposed Development in the context of climate change:

- NPS EN-1 (2026), which sets out national policy and requirements for energy infrastructure on matters relating to:
  - ES requirements at paragraph 4.2.13, and paragraphs 4.3.1 to 4.3.17;
  - Climate change adaptation and resilience at paragraphs 4.10.1 to 4.10.12;
  - Consideration and mitigation of GHG emissions associated with energy infrastructure development at paragraphs 5.3.1 to 5.3.7; and
  - Consideration of, mitigation of and adaptation to flood risk, including in the context of climate change, at paragraphs 5.8.1 to 5.8.35.
- NPS EN-3; (2026), which sets out national policy and requirements for renewable energy infrastructure on matters relating to:
  - Climate change adaptation and resilience at Section 2.4, with paragraph 2.4.11 relating specifically to solar photovoltaic; and
  - Assessment considerations relating to solar photovoltaic generation projects at section 2.10.
  - NPS EN-5; (2026), which sets out national policy and requirements for electricity networks infrastructure on matters relating to;
  - Climate change adaptation and resilience at section 2.3.
- NPPF; 2025, which sets out national policy and requirements on matters relating to:
  - Climate change adaptation, mitigation and resilience at paragraphs 8, 11, 20, 162 and 164;
  - The need to reduce carbon dioxide (‘CO_2’) emissions through design measures, reductions in energy consumption and the use of

renewable and low carbon technologies at paragraphs 170 to 168; and

- Flood risk at paragraphs 159 to 182.

Regional Planning Policy

10.2.4 The following regional planning policy is relevant to the Proposed Development in the context of climate change:

- Derbyshire Climate Change Strategy (2021 – 2025) (2021)[86], which sets out DCC's approach to mitigating climate change, and the measures that may be put in place to reduce GHG emissions to reach net zero by 2032 or sooner.

Local Planning Policy

10.2.5 The following local planning policy is relevant to the Proposed Development in the context of climate change:

- South Derbyshire Local Plan Part 1 (2016), which sets out the following policies:
  - Policy S1: Sustainable Growth Strategy;
  - Policy S2: Presumption in Favour of Sustainable Development; and
  - Policy SD6: Sustainable Energy and Power Generation.
- ESBC Local Plan 2012 – 2031 (2015), which sets out the following objectives and policies:
  - Strategic Objective 11: Prudent Use of Resources;
  - Strategic Policy 1: East Staffordshire Approach to Sustainable Development;
  - Strategic Policy 28: Renewable and Low Carbon Energy Generation;
  - DDDC Local Plan 2013 – 2033 (2017), which sets out the following objectives and policies;

- Strategic Objective 13: To facilitate low carbon development and energy generation from renewable sources of a type and scale appropriate to its location; and
- Policy PD7: Climate Change.

Guidance

10.2.6 The following guidance is relevant to the Proposed Development in the context of climate change:

- NPPG, which sets out guidance on how to implement the policies set out within the NPPF. Of relevance, the NPPG includes sections on:
- Climate Change (2019)[87], which provides advice on how to identify suitable mitigation and adaptation measures in the planning process in order to address the anticipated impacts of climate change; and
- Renewable and low carbon energy (2023)[88], which provides guidance for local councils in the development of policies for renewable and low carbon energy, whilst also identifying planning considerations.
- Energy White Paper: Powering our net zero future (2020)[89], which addresses the intended transformation of the UK's energy system, including the promotion of high-skilled jobs and resilient economic growth, to aid the transition to net zero emissions by 2050;
- Net Zero Strategy (2021)[90], which sets out policies and proposals for decarbonising all sectors of the UK economy to achieve net zero carbon emissions by 2050, including an aim for the UK to be entirely powered by clean energy sources, such as solar and wind, by 2035;
- Clean Power 2030 Action Plan (2024)[91], which sets out a pathway to achieving a clean power system by 2030, through the electrification of the energy supply, and the deployment of renewable technologies;
- ISEP Environmental Impact Assessment Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance (2022; updated 2026)[92], which sets out guidance on how GHG emissions

assessments should be undertaken for the purposes of EIA, in order to understand and record the potential GHG implications of developments; and

- ISEP Guidance 'Environmental Impact Assessment Guide to Climate Change Resilience and Adaption' (2020)[93], which provides guidance on how to consider climate change and adaptation for the purposes of EIA.

10.2.7 Engagement to date there has been no formal consultation undertaken on the scope of the Climate Change and GHGs chapter, and associated assessments. Engagement will be undertaken with statutory parties, including relevant LPAs on climate change targets, aims and commitments, as well as relevant projects, plans and policies that may affect climate and baseline data, in addition to any known future developments that may come forward in proximity to the Proposed Development.

Study Area

GHG Emissions

10.2.8 The study area comprises the draft Order Limits of the Proposed Development, shown in **Figure 1.1: draft Order Limits** (**Appendix 1.1: Figures**).

10.2.9 However, some of the GHG emissions associated with the Proposed Development will occur beyond the Order Limits. These emissions include, for example, the embodied GHG emissions associated with the extraction, processing and transportation of materials associated with the construction of the Proposed Development. In this way, the effects of GHGs associated with the Proposed Development are a local, national and global issue.

Climate Change Resilience

10.2.10 For the Climate Change Resilience assessment, the study area comprises the draft Order Limits of the Proposed Development, shown at **Figure 1.1: draft Order Limits (Appendix 1.1: Figures)**, and comprises all of the physical infrastructure of the assets associated with the Proposed Development.

10.2.11 For the In-Combination Climate Change Impact Assessment, the study area comprises the study areas applied within the assessments undertaken by each environmental discipline within the ES.

10.3 Sensitive Receptors

GHG Emissions

10.3.1 The sole sensitive receptor considered within the GHG Emissions assessment is the Global Climate. This receptor is considered to be highly sensitive to changes in GHG emissions.

Climate Change Resilience

10.3.2 The sensitive receptors to be considered within the Climate Change Resilience assessment include the Proposed Development itself, construction employees and future employees, construction operations, Site infrastructure and Site habitats and species. These receptors are considered to have a medium to high sensitivity to projected climate change.

10.3.3 For the In-Combination Climate Change Impact assessment, all sensitive receptors identified within the assessments undertaken by each environmental discipline within the ES. The sensitivities of the receptors will be determined within each relevant assessment.

10.4 Baseline Environment and Future Baseline

GHG Emissions

10.4.1 The majority of the landscape within the area surrounding the draft Order Limits of the Site comprise agricultural fields, with the land contained within the draft Order Limits of the Site itself similarly predominantly comprising arable land uses. It is considered that the presence of vegetation within the draft Order Limits of the Site results in a relatively high carbon sink potential. The current land uses within the draft Order Limits of the Site, which comprise largely agricultural operations, are assumed to have relatively low associated GHG emissions, although it is noted that baseline agricultural GHG emissions

are dependent on soil and vegetation types, as well as the fuels employed for the operation of vehicles, machinery and plant.

10.4.2 For the GHG Emissions assessment, the baseline scenario comprises the existing carbon stock within the draft Order Limits of the Site, in addition to the GHG emissions associated with the operations undertaken. The impact of this will be qualitatively considered within the ES.

10.4.3 Fuel Mix Disclosure data tables[94] are published by the UK government on an annual basis, containing a breakdown of the energy generation split across the UK over the given year. The CO_2 emissions associated with the operation phase of each energy source is also reported. To determine the baseline conditions to be employed within the GHG Emissions assessment, a weighted average of the energy source and relevant CO_2 emissions will be used to calculate the average energy-related CO_2 emissions associated with the generation of energy within the UK in the existing case. This value will then be used to calculate the carbon emissions that will be displaced by the electricity generated by the Proposed Development. It is noted that the share of energy generated by renewable technology will increase in the future, therefore the GHG Emissions assessment will include for a sensitivity analysis for a range of alternative energy generation CO_2 intensities over the expected lifetime of the Proposed Development. It is highlighted, however, that future scenarios that include for an increased share of renewable technologies within the energy mix will rely on projects such as the Proposed Development being consented and constructed.

Climate Change Resilience

10.4.4 For the Climate Change Resilience assessment, including the In-Combination Climate Impact assessment, the existing baseline represents the average climatic conditions at the Site in the existing case. This will be established through the use of the most up-to-date Met Office data[95] available at the time of writing for Denstone, which is the closest meteorological site to the Site.

10.4.5 The future baseline will be established through a review of the UK Climate Change Projections ('UKCP18')[96] study. The UKCP18 study employs Relative

Concentration Pathways ('RCPs'), which reflect the concentration of GHGs modelled to occur within the global atmosphere in the year 2100. UKCP18 study climate projections for the 25km OS grid squares within which the Site is located will be applied to the existing baseline. The assessment will apply the 'high' emissions scenario (RCP8.5), 50th percentile (median) scenario for the 2050s time period, in line with the guidance set out within the ISEP 'Guide to Climate Change Resilience and Adaptation'. The projections will detail forecast changes relative to the 1981 – 2010 baseline conditions for annual and seasonal temperatures and rainfall, whilst also considering sea level rise and changes to wind speeds.

10.4.6 An initial review of the UKCP18 data indicates that, in the 2050s time period and under the RCP8.5 scenario, compared to the 1981 to 2010 baseline period, the 25km grid square (412500, 337500) within which the Site is located could experience the following:

- A 2.2°C increase in summer mean temperature at 1.5m;
- A 1.5°C increase in winter mean air temperature;
- A 14.8% decrease in summer precipitation rate; and
- A 5.5% increase in winter precipitation rate.

10.5 Design, Mitigation and Enhancement Measures

10.5.1 An OCEMP and an ODEMP will be prepared as part of the DCO application. These documents, which are expected to be developed into a CEMP and DEMP via a Requirement in the DCO, will set out the requirements for environmental management, mitigation and monitoring for the Proposed Development.

10.5.2 A range of best practice measures will be included, where appropriate, within the CEMP and DEMP, such as:

- The specification of alternative materials in consideration of lower embodied GHG emissions; and

- The specification of low carbon design interventions, such as the employment of energy efficient lighting systems and the specification of robust and durable construction materials, which will reduce maintenance and replacement cycles.

10.5.3 If required, the selection of mitigation measures will be accounted for within the GHG Emissions and Climate Change Resilience assessments. It is noted that this may include measures to be put in place during the construction, operational and/or decommissioning phase(s) of the Proposed Development.

10.6 Description of Potential Likely Significant Effects

GHG Emissions

10.6.1 As stated within the ISEP 'Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance':

10.6.2 "GHG emissions have a combined environmental effect that is approaching a scientifically defined environmental limit, as such any GHG emissions or reductions from a project might be considered to be significant."

10.6.3 In this way, and for the purposes of the GHG Emissions assessment, it will be considered that any increase in GHG emissions when compared to the baseline conditions will potentially have an impact. This is due to the high sensitivity of the identified receptor, i.e. the Global Climate, to increases in GHG emissions.

10.6.4 The following potential sources of GHG emissions, based on the lifecycle stages and associated activities of the Proposed Development, will be considered as part of the GHG Emissions assessment:

- Product Phase:
  - Embodied GHG emissions associated with energy use during the extraction of materials and the manufacturing of components and equipment; and

- GHG emissions associated with the transportation of products and materials for manufacturing.

- Construction Phase:
  - GHG emissions related to the consumption of energy from plant, vehicles and generators;
  - GHG emissions related to the travel of construction workers;
  - GHG emissions associated with the transportation of products and materials to the Site where this is not accounted for during the Product Phase – there is potential that some materials and products required for the construction of the Proposed Development will need to be transported over significant distances;
  - GHG emissions arising from the transportation and disposal of construction-related waste;
  - GHG emissions associated with the net loss of carbon sink features; and
  - GHG emissions associated with the provision of clean water, and the treatment of wastewater.
- Operational and Maintenance Phase:
  - GHG emissions related to the consumption of energy, use of materials and generation of waste associated with the maintenance of the Proposed Development;
  - GHG emissions associated with the provision of clean water, and the treatment of wastewater;
  - Leakage of GHGs, such as sulphur hexafluoride ('SF_6');
  - GHG emissions associated with or displaced by the energy produced; and
  - GHG emissions associated with the travel of operational workers.
- Decommissioning Phase:

- GHG emissions associated with decommissioning activities, including from plant, vehicles and generators;
- GHG emissions arising from the transportation and disposal of decommissioning-related waste; and
- GHG emissions associated with the travel of decommissioning workers.

- Climate Change Resilience

10.6.5 Given that the construction of the Proposed Development would occur in the near future when climatic conditions are well understood and therefore accounted for in construction practices, it is unlikely that significant effects will occur as a result of climate change during the construction of the Proposed Development. Further to this, measures to mitigate the anticipated impacts of weather conditions that have the greatest potential effects on construction works would be detailed within the OCEMP and ODEMP, formalised in the CEMP and DEMP, both of which would be secured via a Requirement in the DCO.

10.6.6 In consideration of the anticipated lifetime of the Proposed Development, there is potential for significant effects to occur as a result of climate change as follows during the operation of the Proposed Development:

- An increase in precipitation during the winter may lead to an increase in fluvial and/or pluvial flooding at the Site;
- A decrease in precipitation during the summer may increase the risk of drought, which has the potential to affect ecology- and landscape-related receptors at the Site;
- A change in the availability of water has the potential to cause changes in the mobilisation of pollutants and, as a result, the acidity of soils. An increase in the acidity of the water and/or soils at the Site has the potential to result in the deterioration of the materials employed within the construction of the Proposed Development;

- An increase in the frequency and magnitude of wind and storms has the potential to cause damage to the infrastructure associated with the Proposed Development;
- An increase in temperatures during the summer has the potential to affect the electrical infrastructure associated with the Proposed Development;
- A change in cloud cover has the potential to affect the level of solar radiation received by the infrastructure associated with the Proposed Development and, in turn, the amount of power generated;
- Sea level rises have the potential to result in flooding at the Site; and
- A change in the amount of snow fall and ice coverage at the Site has the potential to affect the loading of the infrastructure associated with the Proposed Development.

10.6.7 Considering the relatively short-term nature of the decommissioning phase of the Proposed Development, it is unlikely that significant effects will occur as a result of climate change during the decommissioning of the Proposed Development. Further to this, measures to mitigate the anticipated impacts of weather conditions that have the greatest potential effects on decommissioning works would be detailed within the DEMP, which would be secured via a Requirement in the DCO.

10.7 Impacts Scoped Out of the Assessment

GHG Emissions

10.7.1 **Table 10.1**, below, sets out the impacts proposed to be scoped in and out of the GHG Emissions assessment:

Table 10.1 Summary of Matters Proposed to be Scoped In and Out of the GHG Emissions Assessment

Topic	Construction	Operation	Decommissioning	Rationale
Raw material extraction and manufacturing of products required for the Proposed Development, in addition to the transportation of raw materials to the place of manufacturing	**Scoped In**	Scoped Out	Scoped Out	There is potential for the embodied GHG emissions associated with the extraction, transportation and manufacturing of raw materials to impact on the overall GHG emissions savings associated with the Proposed Development.
Transportation of materials and products to the Site (where not accounted for at the Product Phase)	**Scoped In**	Scoped Out	Scoped Out	Due to the distance over which products may need to be transported, there is potential that the associated GHG emissions may impact on the overall GHG emissions savings associated with the Proposed Development.
On-Site construction activities, including emissions from plant vehicles and generators	**Scoped In**	Scoped Out	Scoped In	There is potential for the GHG emissions associated with construction activities to impact on the overall GHG emissions savings associated

Topic	Construction	Operation	Decommissioning	Rationale
				with the Proposed Development.
Energy consumption associated with the provision of clean water and the treatment of wastewater	**Scoped In**	**Scoped In**	**Scoped In**	Given the scale of the Proposed Development, the GHG emissions associated with the provision of clean water and treatment of wastewater during the construction, operation and decommissioning of the Proposed Development has the potential to impact on the overall GHG emissions savings associated with the Proposed Development.
Worker travel	**Scoped In**	**Scoped In**	**Scoped In**	There is potential for the GHG emissions associated with construction, operational and decommissioning activities to impact on the overall GHG emissions savings associated with the Proposed Development.
Leakage of GHGs	Scoped Out	**Scoped In**	Scoped Out	Given the scale of the Proposed Development, minor

Topic	Construction	Operation	Decommissioning	Rationale
				leakages of highly potent GHGs have the potential to impact on the overall GHG emissions savings associated with the Proposed Development.
Energy Generated	Scoped Out	**Scoped In**	Scoped Out	The energy generated by the Proposed Development will displace energy generated from other sources, with the displacement of energy generated using non-renewable sources resulting in GHG emissions savings.
Energy consumption, material use and waste generation associated with the operation and maintenance of the Proposed Development	Scoped Out	**Scoped In**	Scoped Out	Given the scale of the Proposed Development, the emission of GHGs associated with energy consumed, materials used and waste generated during the operation of the Proposed Development has the potential to impact on the overall GHG emissions savings associated with the

Topic	Construction	Operation	Decommissioning	Rationale
				Proposed Development.
On-Site decommission-related activities, including emissions from plant vehicles and generators	Scoped Out	Scoped Out	**Scoped In**	There is potential for the GHG emissions associated with decommissioning activities to impact on the overall GHG emissions savings associated with the Proposed Development.
Transport and disposal or waste materials	Scoped Out	Scoped Out	**Scoped In**	Due to the distance over which materials may need to be transported and in consideration of the potential uses of waste materials, there is potential that the associated GHG emissions may impact on the overall GHG emissions savings associated with the Proposed Development.
Net loss of carbon sink features	**Scoped In**	**Scoped In**	**Scoped In**	The potential loss of carbon sink features present within the draft Order Limits of the Site may impact on the overall GHG emissions savings associated

Topic	Construction	Operation	Decommissioning	Rationale
				with the Proposed Development.

Climate Change Resilience

10.7.2 **Table 10.2,** below, sets out the impacts proposed to be scoped in and out of the Climate Change Resilience assessment:

Table 10.2 Summary of Matters Proposed to be Scoped In and Out of the Climate Change Resilience Assessment

Topic	Construction	Operation	Decommissioning	Rationale
Increase in winter precipitation	**Scoped In**	**Scoped In**	**Scoped In**	During its operational lifetime, there is potential for the Proposed Development to lead to fluvial or pluvial flooding at the Site, to which the Proposed Development would need to be resilient. During its construction and decommissioning, there is potential for increased winter precipitation to cause waterlogged or muddy conditions at the Site, which may impact on the ability of workers to construct or decommission the Proposed Development.

Topic	Construction	Operation	Decommissioning	Rationale
Decrease in summer precipitation	Scoped Out	**Scoped In**	Scoped Out	During its operational lifetime, there is potential for reduced summer precipitation to led to drought that has the potential to affect ecology- and landscape-related receptors at the Site. During the shorter timescales of the construction phase, it is not expected that there will be significant changes in climate. Further to this, mitigation measures relating to dust impacts at the time of construction will be included within the OCEMP, or similar. Similarly, during the shorter timescales of the decommissioning phase, it is not expected that there will be significant changes in climate. Further to this, mitigation measures relating to dust impacts at the time of decommissioning will be included within the ODEMP, or similar.
Changes in water availability	Scoped Out	Scoped Out	Scoped Out	Whilst changes in water availability could affect the mobilisation of pollutants, and potentially the acidity of soils, which may deteriorate construction materials, the materials chosen for the construction of the Proposed Development will be appropriate for the existing ground conditions, and will be able to

Topic	Construction	Operation	Decommissioning	Rationale
				withstand potential changes in water availability. During its operation, the Proposed Development will not have a significant demand for water, with any water usage during operation being associated with cleaning activities.
Increased frequency and magnitude of wind and storms	Scoped Out	**Scoped In**	Scoped Out	During the operation of the Proposed Development, increased frequency and magnitude of wind and storms would have the potential to cause damage to the infrastructure associated with and, therefore, the amount of power generated by the Proposed Development. It is not expected that the climate will change significantly prior to or during the anticipated construction timescales. In addition, the construction phase will be shorter than the operational lifetime of the Proposed Development. Further to this, measures to mitigate against the impacts of increased frequencies and magnitudes of wind and storms at the time of construction will be included within the OCEMP, or similar Similarly, during the shorter timescales of the decommissioning

Topic	Construction	Operation	Decommissioning	Rationale
				phase, it is not expected that there will be significant changes in climate. Further to this, measures to mitigate against the impacts of increased frequencies and magnitudes of wind and storms at the time of decommissioning will be included within the ODEMP, or similar.
Increase in summer temperatures	Scoped Out	**Scoped In**	Scoped Out	During the operation of the Proposed Development, increased temperatures during the summer would have the potential to affect the electrical infrastructure associated with and, therefore, the amount of power generated by the Proposed Development. It is not expected that the climate will change significantly prior to or during the anticipated construction timescales. In addition, the construction phase will be shorter than the operational lifetime of the Proposed Development. Further to this, measures to mitigate against the impacts of increased temperatures at the time of construction will be included within the OCEMP, or similar Similarly, during the shorter timescales of the decommissioning phase, it is not expected that there will be significant changes in

Topic	Construction	Operation	Decommissioning	Rationale
				climate. Further to this, measures to mitigate against the impacts of increased temperatures at the time of decommissioning will be included within the ODEMP, or similar.
Changes in cloud cover	Scoped Out	**Scoped In**	Scoped Out	During the operation of the Proposed Development, changes in cloud cover would have the potential to impact the amount of incoming solar radiation received and, therefore, the amount of power generated by the Proposed Development. During the shorter timescales of the construction and decommissioning phases, it is not expected that there will be significant changes in cloud cover. Further to this, it is not expected that changes in cloud cover would have a significant negative effect on construction or decommissioning activities.
Sea level rise	Scoped Out	Scoped Out	Scoped Out	The Site is located a significant distance from the coast, therefore risks to the Proposed Development associated with projected sea level rise are not expected to be significant.
Changes to snow and ice	Scoped Out	Scoped Out	Scoped Out	The UKCP18 study indicates that there will be less snow and ice in the future when compared to the existing baseline. It is considered, therefore, that risks to the Proposed Development associated with snow

Topic	Construction	Operation	Decommissioning	Rationale
				and ice will be reduced when accounting for projected climate change.

10.8 Assessment Methodology

GHG Emissions

10.8.1 The GHG Emissions assessment will be undertaken in line with the guidance set out in the ISEP 'Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance'. A lifecycle approach will be applied to calculate the estimated GHG emissions arising from the construction, operation and decommissioning of the Proposed Development. This will enable the identification of potential emission sources that are likely to generate the largest amount of GHG emissions ('GHG hot spots'), and therefore priority areas for the implementation of mitigation. The following six steps, as set out within the ISEP 'Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance', will be incorporated as part of the GHG Emissions assessment:

- Set the scope and boundaries of the assessment: this includes the system boundaries and temporal boundaries;
- Develop the baseline: this includes the current, future and alternative baselines;
- Decide upon the assessment methodologies: this should result in a relevant, complete, consistent, transparent and accurate assessment of the reasonable worst case;
- Collect data: this should include project activity data and relevant GHG emissions factors;

- Calculate the GHG emissions inventory: despite the variation in methodology and approach to quantifying GHG emissions between projects for EIA purposes, it is expected that a calculated, rather than measured, approach be applied in almost all cases. This is due to the fact that the calculations are typically undertaken in advance of the commencement of a development. The following structure is therefore recommended for the calculation of GHG emissions for the purposes of EIA;
- GHG emission / removal = GHG emission factor x Activity data; and
- Mitigation opportunities: once the magnitude of GHG emissions has been determined, where required, mitigation measures should be proposed.

10.8.2 In line with the guidelines set out in the World Business Council for Sustainable Development and World Resources Institute's 'The Greenhouse Gas Protocol'[97], the GHG Emissions assessment will employ a metric of tonnes of carbon dioxide equivalent ('tCO_2e') when reporting and will consider the seven Kyoto Protocol[98] gases, as follows:

- CO_2;
- Methane ('CH_4');
- Nitrous Oxide ('N_2O');
- SF_6;
- Hydrofluorocarbons ('HFCs');
- Perfluorocarbons ('PFCs'); and
- Nitrogen trifluoride ('NF_3').

10.8.3 The primary data sources that will be used for the calculation of GHG emissions associated with the construction, operation and decommissioning of the Proposed Development include the DESNZ's GHG Conversion Factors for Company Reporting (2025)[99], and the Institute of Circular Ecology's Inventory of Carbon and Energy ('ICE') Database[100].

10.8.4 As detailed above, the sensitivity of the receptor, here the Global Climate, to increases in GHG emissions will always be defined as high. This is due to the fact that any increase in GHG emissions has the potential to compromise the UK's ability to reduce GHG emissions and therefore meet relevant carbon budgets.

10.8.5 In light of the above, and when evaluating the significance of GHG emissions, all new GHG emissions will therefore contribute to a negative impact on the Global Climate. However, it is acknowledged that some projects will result in the replacement of existing development or baseline activities that have a higher GHG emission profile than that associated with a proposal. The significance of a project's GHG emissions should, therefore, be based on tis net impact over its lifetime, with this impact potentially being positive, negative or negligible. Therefore, and as noted within the ISEP 'Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance':

10.8.6 "The crux of significance therefore is not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050."

10.8.7 The significance criteria that will be used to determine the Proposed Development's whole life GHG emissions and their alignment with the UK's net zero compatible trajectory are set out in **Table 10.3,** below.

Table 10.3 Significance of Effect Criteria

Significance of Effect	Description
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.

Significance of Effect	Description
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 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.

10.8.8 Effects classified as major, moderate or beneficial are considered 'significant'. Effects classified as minor or negligible in scale are considered 'not significant'.

10.8.9 The ISEP 'Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance' sets out 'good practice' approaches for contextualising a project's carbon emissions through comparison with sector-based, local, and/or national carbon budgets, policy goals and/or performance standards. This aids to provide the context to a project's carbon emissions or reductions.

In line with this, the carbon impact of the Proposed Development will be compared to:

- The UK's 5th, 6th and proposed 7th carbon budgets for the periods 2028 to 2032, 2033 to 2037, and 2038 to 2042, respectively, and the net zero trajectory. Future continuation of these budgets is expected in order to reach the UK's net zero target by 2050, however the 8th and 9th carbon budgets have not yet been quantified by the Government; and
- Local authority and regional carbon emissions. Data will be sourced from the latest 'UK local authority and regional greenhouse gas emissions statistics' tables, published by the DESNZ[101].

10.8.10 When considering the impact of a project in the context of the carbon budgets, local carbon emissions, and sector carbon emissions, ISEP's 'Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance' suggests an indicative threshold of 5% be used, where the impacts of GHG emissions above this level are likely to be significant.

Climate Change Resilience

10.8.11 The Climate Change Resilience assessment will be undertaken in line with the guidance set out in ISEP's 'Environmental Impact Assessment Guide to Climate Change Resilience and Adaption'. This will include the quantification of the future baseline climate, the identification of receptors sensitive to projected changes to the climate and their level of sensitivity to these changes, the determining of the magnitude of impacts, and the significance of any effects.

10.8.12 As detailed above, to determine the existing baseline climate, climate average data for the nearest meteorological site to the draft Order Limits of the Proposed Development published by the Met Office for the period 1991 to 2020 will be employed. The future baseline, meanwhile, will be defined using UKCP18 study climate projections, with the identified changes applied to the current baseline climatic conditions in order to provide a prediction of the local future climate.

10.8.13 For each receptor, the significance of each predicted effect of climate change will be assessed. This will include a consideration of the sensitivity of the receptor, and the magnitude of the impact.

10.8.14 Within ISEP's 'Environmental Impact Assessment Guide to Climate Change Resilience and Adaption' the sensitivity of a receptor is defined as:

"…the degree of response of a receptor to a change and its capacity to accommodate and recover from a change if it were to be affected".

10.8.15 The sensitivity of a receptor should take into account the susceptibility and vulnerability of a receptor to change, as well as the value and/or importance of the receptor. Here, susceptibility is defined within ISEP's 'Environmental Impact Assessment Guide to Climate Change Resilience and Adaption' as:

"…the ability of the receptor to be affected by a change."

10.8.16 A receptor's vulnerability, meanwhile, is defined as:

"…the potential exposure of the receptor to a change and sensitivity is the degree of response of a receiver to change and a function of its capacity to accommodate and recover from a change if it is affected."

10.8.17 It is highlighted that vulnerability is the inverse of climate resilience.

10.8.18 The scale of the susceptibility and vulnerability of identified receptors will be determined as per the criteria set out in ISEP's 'Environmental Impact Assessment Guide to Climate Change Resilience and Adaption', and as set out in **Table 10.4,** below.

Table 10.4 Climate Change Receptor Susceptibility and Vulnerability Scale

Scale	Susceptibility	Vulnerability
High	Receptor has no ability to withstand / not be substantially altered by the projected changes to the existing / prevailing climatic factors (e.g. lose much of its original function and form).	Receptor is directly dependent on existing / prevailing climatic factors and reliant on these specific existing climate conditions continuing in future (e.g. river flows and groundwater level) or only able

Scale	Susceptibility	Vulnerability
		to tolerate a very limited variation in climate conditions.
Medium	Receptor has some limited ability to withstand/not be altered by the projected changes to the existing/prevailing climatic conditions (e.g. retain elements of its original function and form).	Receptor is dependent on some climatic factors but able to tolerate a range of conditions (e.g. a species which has a wide geographic range across the entire UK but is not found in southern Spain).
Low	Receptor has the ability to withstand/not be altered much by the projected changes to the existing/prevailing climatic factors (e.g. retain much of its original function and form).	Climatic factors have little influence on the receptors (consider whether it is justifiable to assess such receptors further within the context of EIA – i.e. it is likely that such issues should have been excluded through the EIA scoping process).

10.8.19 The value and importance of a receptor will be determined using professional judgement. Receptors considered to be of high value and/or importance include all human health receptors, such as on-Site workers, occupants, local residents), and any receptors that are integral to the Proposed Development, such as buildings, infrastructure or operating systems. The value or importance of receptors such as habitats and species would be determined on a case-by-case basis.

10.8.20 Together, the susceptibility, vulnerability, value and importance of each receptor will be used to reach a reasoned conclusion on its sensitivity, with professional judgement to be applied. The greater the susceptibility and/or vulnerability of a receptor, the greater the likelihood that the receptor would also be of a higher sensitivity. For example, should a receptor be of high value but have little resilience (high vulnerability) to changes in climate conditions, it would be considered to be more likely to have a higher sensitivity compared

to a receptor of high value but which is very resilient (low vulnerability) to climate change.

10.8.21 Receptors will be assessed as having low, medium or high sensitivity to climate change using professional judgement. This will be supported by an evaluation and presentation of evidence undertaken in line with the guidance set out in ISEP's 'Environmental Impact Assessment Guide to Climate Change Resilience and Adaption'.

10.8.22 The magnitude of change will also be determined for each receptor, where magnitude is defined within ISEP's 'Environmental Impact Assessment Guide to Climate Change Resilience and Adaption' as:

"…the degree of a change from the relevant baseline conditions which derives from the construction and operation of a development".

10.8.23 The assessment of the magnitude of change is based on a combination of:

- Probability: This takes into account the chance of effect occurring over the lifespan of the Proposed Development if the risk is not mitigated; and
- Consequence. This reflects the scale or complexity of the effect, in consideration of the degree of harm, duration, frequency and reversibility of said effect.

10.8.24 In order to make a reasoned assessment of the magnitude of a change, both probability and consequence will be considered, and professional judgement applied. Where a probability and/or consequence of an effect is high, the magnitude of the effect will also be deemed to be high. In defining the magnitude of a change, the following descriptors will be used: negligible; small; medium; and large.

10.8.25 To determine the significance of an effect, the sensitivity of each receptor will be taken into account, alongside the magnitude of each change for each climate change effect, using professional judgement. An example of how the sensitivity of a receptor and the magnitude of a change would be used to determine the significance of an effect is provided in **Table 10.5,** below.

Table 10.5 Climate Change Significance Matrix

Sensitivity of Receptor	Magnitude of Change			
	Negligible	**Small**	**Medium**	**Large**
Low	Negligible	Negligible	Negligible	Slight
Medium	Slight	Slight	Moderate	Substantial
High	Moderate	Moderate	Substantial	Substantial

10.8.26 Effects classified as substantial or moderate are considered 'significant' in EIA terms. Effects classified as slight or negligible are considered 'not significant' in EIA terms.

10.9 Limitations and Assumptions

10.9.1 All assumptions and limitations applicable to the assessments undertaken with respect to Climate Change and GHGs will be documented within the ES chapter.

GHG Emissions

10.9.2 The GHG Emissions assessment will employ current estimates of future conditions, such as the future energy mix of the national grid, when considering the impacts of the Proposed Development over its lifetime. It is uncertain at this stage what these will be, and this will be qualitatively assessed within the sensitivity section of the Climate Change and GHGs chapter.

10.9.3 Where detailed information is not available regarding energy use, types and quantities of materials used, or the embodied carbon of key materials of the assets to be brought forward as part of the Proposed Development, precautionary assumptions will be made, based on industry approximations and professional best practice.

10.9.4 To allow for the limitations of using carbon factors where there are alternative assumptions available, the sensitivity of applying an alternative assumption will be taken into consideration.

Climate Change Resilience

10.9.5 The GHG Emissions assessment will employ current estimates of future conditions, such as the future energy mix of the national grid, when considering the impacts of the Proposed Development over its lifetime. It is uncertain at this stage what these will be, and this will be qualitatively assessed within the sensitivity section of the Climate Change and GHGs chapter.

10.9.6 There are inherent uncertainties associated with the use of the UKCP18 projections which, given they are projections, are not definite by nature. It is noted, however, that the UKCP18 projections provide the most up-to-date assessment of how climate may change in the future. These projections are supported by DESNZ and DEFRA. As detailed above, the assessment will use projections for the 2050s time period for a 'high' emissions scenario, which is considered to represent a conservative approach. It is noted, however, that any under or over estimation will not affect the outcome of the assessment. This is because the assessment of the significance of an effect is based on the impacts which are caused by climate change. Small difference in the magnitude of change will therefore not impede on this.

10.9.7 The baseline period over which the UKCP18 projections are based differs to that used for the baseline climate data. There is potential, therefore, that some projected changes may be slight over or under estimations. Despite this, the estimate provided is sufficiently accurate for the purposes of the assessment.

11.0 ECOLOGY AND BIODIVERSITY

11.1 Introduction

11.1.1 This chapter sets out the proposed scope and methodology for the assessment of Likely Significant Effects arising from the Proposed Development on Biodiversity (Ecology and Ornithology) during construction, operation and maintenance, and decommissioning. It includes a brief summary of specific legislation, policy and guidance, baseline conditions and the proposed assessment methodology relevant to Ecology and Ornithology to fully inform the ES. Matters that are proposed to be scoped in and out of the assessment are identified.

11.2 Legislation, Planning Policy and Guidance

11.2.1 The assessment will be undertaken in accordance with, and with reference to, the following legislation, planning policy and guidance, further details of which will be provided in the ES.

Legislation

11.2.2 The biodiversity assessment for the Proposed Development must comply with domestic legislation and international agreements that protect habitats and species. These frameworks require potential impacts to be assessed, significant adverse effects to be avoided, and appropriate mitigation measures to be implemented where necessary. Collectively, they provide the legal and policy basis for ensuring that impacts on biodiversity are properly understood, evaluated, and mitigated.

11.2.3 Relevant legislation includes:

- The Environment Act 2021;
- The Wildlife and Countryside Act 1981 (as amended)[102];
- The Conservation of Habitats and Species Regulations 2017 (as amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations, 2019)[103];

- The Countryside and Rights of Way ('CRoW') Act, 2000[104];
- The Invasive Alien Species (Enforcement and Permitting) Order 2019[105];
- The Natural Environment and Rural Communities ('NERC') Act 2006[106];
- The Hedgerow Regulations 1997[107];
- The Protection of Badgers Act 1992[108];
- The Wild Mammals (Protection) Act 1996[109]; and,
- The Town and Country Planning Act (1990) as amended, including specifically recently inserted schedule 14 (the Environment Act 2021).

11.2.4 On 15 April 2026, the Government confirmed that BNG will become mandatory for all NSIPs from 2 November 2026[110]. This decision follows the 2025 engagement and confirms there will be no sector-specific exemptions or voluntary approach.

11.2.5 The Government has confirmed that unimpacted habitats will be excluded from the BNG baseline. Instead, the 10% BNG requirement will apply only within a defined 'BNG boundary', covering habitats within the DCO limits that are either negatively impacted by the development or used to deliver BNG. This proportionate approach balances ambitious biodiversity outcomes with efficiency and maintains incentives to minimise construction impacts. Applicants will be required to submit a BNG boundary plan as part of their outline biodiversity gain plan.

11.2.6 International Agreements includes:

- Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention)[111];
- Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention)[112]; and,
- Agreement on the Conservation of African-Eurasian Migratory Waterbirds ('AEWA')[113].

National Planning Policy and Other Policy

11.2.7 Relevant national planning and other policy and guidance includes:

- NPS EN-1 with reference to Section 5.4 Biodiversity and Geological Conservation;
- NPS EN-3 with reference to Section 2.10;
- NPS EN-5;
- NPPF;
- The 25-year Environment Plan[114]; and,
- EIP[115].

Local Planning Policy

11.2.8 Relevant local planning policy includes:

- Derbyshire County Council Plan 2026-2029:
  - Strategic Objective 10 - Protect our environment and public spaces.
- SDDC Local Plan 2011 – 2028:
- BNE3 – Biodiversity.
- DDDC Local Plan 2013 – 2033:
  - PD3 – Biodiversity and the Natural Environment;
  - PD4 – Green Infrastructure;
  - PD6 – Trees, Hedgerows and Woodlands; and.
  - PD7 – Climate Change.
- ESBC Local Plan 2012 – 2031:
  - SO12 – Countryside;
  - SP26 – National Forest;

- SP28 – Renewable and Low Carbon Energy Generation; and,
- SP29 – Biodiversity and Geodiversity.

- The Plan for Stafford Borough 2011 – 2031[116]:
  - N4- The Natural Environment & Green Infrastructure;
  - N5- Sites of European, National & Local Nature Conservation Importance;
  - N6- Cannock Chase Special Area of Conservation;
- Derbyshire LNRS[117];
- Staffordshire & Stoke-on-Trent LNRS (due April 2026)[118];
- Lowland Derbyshire Biodiversity Action Plan ('BAP')[119]; and
- Staffordshire BAP[120].

Standards and Guidance

11.2.9 Other guidance documents relevant to the assessment of the impacts of the Proposed Development on ecology and biodiversity include:

- Natural England and DEFRA Standing Advice (protected species)[121];
- Chartered Institute of Ecology and Environmental Management ('CIEEM') (2018) Guidelines for EcIA in the UK and Ireland, Terrestrial, Freshwater, Coastal and Marine[122];
- CIEEM, Construction Industry Research and Information Association ('CIRIA'), ISEP (2016) Biodiversity Net Gain. Good practice principles for development[123]; and
- BS 42020:2013 Biodiversity – Code of Practice for Planning and Development (British Standard)[124].

11.2.10 Other guidance documents, such as specific survey methodologies, will be considered and referenced throughout the ES chapter, as appropriate.

11.3 Engagement

11.3.1 Engagement will be undertaken with statutory parties, including:

- Natural England (Discretionary Advice Service ('DAS'));
- Environment Agency (in respect of watercourse crossings); and,
- LPAs (DCC, SDDC, ESBCl, DDDC and SCC).

11.3.2 Statutory stakeholders will also be formally requested to comment on this EIA Scoping Report, via the Scoping Opinion. Comments received will be considered and addressed through the ES, where relevant to ecology and ornithology matters.

11.3.3 Engagement will also be undertaken with non-statutory parties, including (but not limited to):

- Derbyshire Wildlife Trust;
- Derbyshire Local Nature Partnership; and
- Landowners and local conservation groups (where practicable).

11.4 Study Area

11.4.1 The draft Order Limits for the purposes of scoping are split into two broad areas, the Castle Way Sites (Sites A-E, plus the POC at the National Grid Willington 400 kV substation), and the Cable Corridor Options ('CCO'). These are located and detailed in **Chapter 3: Description of the Site and Surroundings** as shown on **Figure 1.1: draft Order Limits**.

11.4.2 The study area for biodiversity includes land within the draft Order Limits and an appropriate buffer zone around the draft Order Limits based on ecological and/or ornithological sensitivity.

11.4.3 The buffers established for the biodiversity study area align with commonly accepted industry practices and the distances that regulatory authorities typically expect to be considered when identifying potential impacts beyond the draft Order Limits. This approach is based on published guidelines, Natural England's advice on other solar NSIPs and professional judgement.

11.4.4 The size and scope of the study area varies depending on the specific ecological feature at risk. The following has been applied:

- Statutory designated international sites – the draft Order Limits and 10 km radius (for ecology) - however, beyond this will be considered if appropriate;
- Statutory designated national sites - the draft Order Limits and 5km radius;
- Statutory designated Sites of Special Scientific Interest ('SSSI') Impact Risk Zones ('IRZs') – 5 km to 10 km radius;
- Non-statutory designated local sites - the draft Order Limits and 2km radius;
- Ancient woodland and Priority Habitats - the draft Order Limits and 2km radius;
- Protected and Priority Species records - the draft Order Limits and 2km radius;
- Breeding bird surveys - the Castle Way Sites (A to E) and 100m radius;
- Badger survey – the draft Order Limits and 30m radius where appropriate;
- Bats – Activity survey (Nighttime Bat Walkover and Static detector survey) – the Castle Way Sites (A to E);
- Bats - Ground Level Trees Assessment ('GLTA') (if required, based on potential tree removal)– the draft Order Limits;
- Bats - Emergence surveys (if required) – the draft Order Limits;
- Great Crested Newt – Habitat Suitability Index ('HSI') and environmental DNA ('eDNA') survey – Castle Way Sites (A to E) and 250m radius where appropriate;
- Otter survey – Suitable watercourses within Castle Way Sites (A to E) and suitable habitat within 200m; and

- Water vole survey – Suitable watercourses within the draft Order Limits.

11.4.5 As the design is refined, the draft Order Limits, in particular the CCO is expected to decrease in size to a 'Cable Route Corridor' in response to environmental and technical considerations identified through the EIA process, discussions with landowners, and engagement feedback from key stakeholders and the wider community. Consequently, as the Site is refined, the ecological and ornithological study area will also be amended accordingly, and this will be described and detailed in ES.

11.4.6 For avoidance of doubt, the entirety of the draft Order Limits is considered as a whole, unless stated otherwise.

11.5 Sensitive Receptors

11.5.1 With reference to the desk-study and the field survey results to date, the following key sensitivities identified include the following sensitive receptors within the study area that may experience significant effects:

- Designated Sites for Nature Conservation;
- Habitats; and
- Protected and Notable Species.

11.5.2 These are to be discussed further as follows.

11.6 Baseline Environment and Future Baseline

11.6.1 This section describes the baseline ecological and ornithological conditions established through desk study and field surveys undertaken at the time of writing. For the purposes of this section, the Proposed Development is divided into the following components (see **Figure 11.1: Statutory Designated Sites** and **Figure 11.2 Desk Study Search Area** in **Appendix 1.1: Figures**).

- Castle Way Sites: areas comprising the solar array and associated infrastructure where works will result in long-term land use change and long-term habitat alteration (the Castle Way Sites are described as Sites A-E);

- National Grid Willington 400 kV substation: POC at the existing substation; and,
- CCO: cable area (as explained in paragraph 11.20, to be refined to a Cable Route Corridor within which the Grid Connection Cables will be located) where works will be temporary and short-term in nature, associated with construction and decommissioning activities. Note that once the cable route is in place, the cable route will remain in-situ (underground and/ or overground) for the operational lifetime of the Proposed Development.

Desktop Sources

11.6.2 The following desktop sources have been used to inform the existing conditions of the study area:

- MAGIC website;
- Derbyshire Biological Records Centre ('DBRC')[125];
- Joint Nature Conservation Committee ('JNCC') website[126];
- OS mapping[127]; and,
- Google Maps[128], including aerial photography.

Surveys Undertaken and Surveys Proposed

11.6.3 The following surveys have been completed at the time of writing:

- Desktop study, including local record centre search of Castle Way Sites (A-E) +2km.
- UK Habitat Classification ('UKHab') Surveys of the Castle Way Sites A-D (October 2025 to November 2025); and,
- Badger Walkover Surveys within the Castle Way Sites A-D (October 2025 to November 2025).

11.6.4 The following surveys have been completed partly completed at the time of writing:

- Breeding Bird Surveys (April 2026 to July 2026) within the Castle Way Sites A- E.

11.6.5 The following surveys are currently proposed and are scheduled to take place up until the submission of the DCO application:

- Desktop Study of CCO;
- UKHab Survey of the Castle Way Solar Development Site E and POC;
- Update UKHab Surveys of the Castle Way Sites A – E (with a focus on high value areas);
- UKHab Surveys (May 2026 to April 2027) within the CCO;
- Modular River Physical ('MoRPh') Surveys (May 2026 to April 2027) within the Castle Way Sites and CCO;
- Badger Walkover Surveys (May 2026 to April 2027) within the Castle Way Solar Development Site E and the CCO;
- Bat GLTA (May 2026 to April 2027) for any trees to be removed within the Castle Way Sites and CCO;
- Bat Transect and Static Activity Surveys (June 2026 to October 2026, and April 2027 to May 2027) within the Castle Way Sites;
- Great Crested Newt HSI and eDNA surveys (April 2026 to May 2026) within the Castle Way Sites +250m;
- Water Vole and Otter Surveys within the Castle Way Sites and the CCO (May 2026 to April 2027).

11.6.6 Surveys within the CCO have not commenced; however, recognising that the installation of the cable route will require thin lengths, be temporary and likely phased, survey effort will be proportionate.

11.6.7 Survey scope and design will be consulted and agreed with through statutory engagement. The above scheduled surveys are considered proportionate to the Proposed Development, and all baseline evidence gathered will inform the ES.

Statutory Designated Nature Conservation Sites

11.6.8 No internationally designated sites are located within 10km of the Proposed Development, however two SSSI and three Local Nature Reserves are located within 5km of the Site. All Statutory Designated Sites for Nature Conservation are listed in **Table 11.1** below alongside the distance to the nearest boundary of the draft Order Limits. Also illustrated in **Figure 11.1: Statutory Designated Sites** in **Appendix 1.1: Figures.**

Table 11.1 Statutory Sites within 10km of the Proposed Development

Site Name	Distance from Castle Way Sites (A to E)	Distance from Proposed Development	Reasons for Designation
Hilton Gravel Pits SSSI	1.2 km	Immediately adjacent to the CCO	A range of breeding birds which are supported by a complex of open water, carr, scrub, woodland, marsh and grassland habitats. One of the most important sites in the middle region of the Trent valley for over wintering waterfowl. The site is also of botanical interest for its neutral grassland.
Old River Dove, Marston On Dove SSSI	1.3 km	430m	A meander cut off from the present course of the river. It is a locally important site for aquatic fauna and flora.
Kingfisher Trail (Burton Upon Trent) Local Nature Reserve (LNR)	2.2 km	2.2 km	Semi-natural habitat with regular sightings of kingfishers. Linking urban fringes with the centre of Burton upon Trent.
Mickleover Meadows LNR	4.4 km	4.0km	The reserve includes woodland, hedgerows, scrub, veteran trees,

Site Name	Distance from Castle Way Sites (A to E)	Distance from Proposed Development	Reasons for Designation
			wildflower meadows, ponds and grassland.
Scalpcliffe Hill LNR	4.3 km	4.3 km	Mature deciduous and yew woodland.

11.6.9 SSSI IRZs are used as a rapid initial assessment tool by LPAs to determine if a scheme is likely to affect a terrestrial SSSI and highlight when Natural England should be consulted. The Castle Way Sites are identified within the SSSI IRZ of several SSSIs for the type and scale of development proposed (solar schemes with footprint > 0.5 ha and all wind turbines). These IRZ's appear to correspond to the SSSI designations outlined above including Hilton Gravel Pits SSSI.

11.6.10 The CCO also falls within the IRZs of several SSSIs for the type and scale of development proposed (all planning applications and solar schemes with footprint > 0.5 ha and all wind turbines). As above these are considered in the assessment.

Non-Statutory Designated Nature Conservation Sites

11.6.11 109 LWS and three Derbyshire Wildlife Trust reserves are located within 2km of the Castle Way Sites. None of these are located within the Castle Way Sites, however three are located immediately adjacent. An addition 12 sites are located within the CCO.

11.6.12 The desk study has been undertaken from the Castle Way Sites (A to E) and POC, however a specific search has not been undertaken for the CCO. The existing data search largely covers the CCO, with the exception of a small area illustrated on **Figure 11.2: Desk Study Search Area** (**Appendix 1.1: Figures**) An updated desk study will form part of planned surveys.

Habitats

Priority and Irreplaceable Habitats

11.6.13 The following habitats of principal importance listed in the Natural England Priority Habitats Inventory were identified within the Castle Way Sites and the CCO in the desktop search:

- Deciduous Woodland;
- Coastal and Floodplain Grazing Marsh;
- Ponds;
- Traditional orchard; and,
- Hedgerows.

11.6.14 No ancient woodland as listed in the Natural England Ancient Woodland database are located within or adjacent to the Castle Way Sites, with one area adjacent to the CCO.

11.6.15 No trees listed on the Ancient and Veteran Tree Inventory were identified within the Castle Way Sites, with one located adjacent to the western boundary of Site C. A further 15 ancient or veteran trees were identified within the CCO.

On-Site Habitats

11.6.16 Initial UKHab surveys of the Castle Way Sites (A to E) completed in October and November 2025, alongside review of aerial imagery, indicate that the majority of the Castle Way Sites comprise agricultural cropland and grazing land, bordered by hedgerows, trees, ditches and watercourses. There are also large areas of other neutral grassland, with occasional small areas of scrub, woodland and ponds.

Fauna and Flora

11.6.17 Based on the habitats recorded within the baseline surveys to date and the desktop study results, the draft Order Limits has the potential to support the following species/species groups:

- Breeding and non-breeding birds
- Amphibians;
- Reptiles;
- Badger;
- Bats;
- Otter;
- Water vole;
- Other notable mammals, including:
  - Brown Hare;
  - Hedgehog;
  - Invertebrates; and,
  - Aquatic fauna.

Future Baseline-Ecology

11.6.18 The future baseline for ecology is expected to remain as the current existing baseline in the absence of the Proposed Development proceeding as it is likely the current management of the draft Order Limits as farmland will be maintained and continue. However, there is uncertainty that if the landscape and current practices remain, then this could intensify impacts from agricultural pressures thus contributing to further declines of UK biodiversity.

11.6.19 It is also possible that other developments may arise in the future which could change the baseline conditions, which may be of smaller scale without the need to include enhancements to biodiversity and cumulatively, this could have a significant impact on UK biodiversity.

11.7 Design, Mitigation and Enhancement Measures

Principles of Mitigation

11.7.1 The Proposed Development will follow the Mitigation Hierarchy.

11.7.2 There are four sequential steps that must be taken throughout the lifecycle of a project where there is potential for impacts on relevant ecological receptors:

- Avoidance – actions taken to prevent impacts to the environment prior to beginning development (for example, siting of the development and inherent design);
- Minimisation – measures taken to reduce the duration, intensity, extent and/or likelihood of the unavoidable environmental impacts caused by development (for example, adapting the development design to minimise impacts);
- Restoration or rehabilitation – actions taken to repair environmental degradation or damage following unavoidable impacts caused by development; and
- Offset – measures taken to compensate for any adverse environmental impacts caused by development which cannot be avoided, minimised and/or restored (e.g., including habitat creation to offset losses).

Management Plans

11.7.3 The embedded mitigation would include the adoption of management plans that would be in place for the construction, operation and maintenance, and decommissioning of the Proposed Development. Outline versions of these management plans will be submitted with the DCO application to secure the commitments contained within. Those relevant to biodiversity include:

- OCEMP;
- OLEMP;
- OOEMP;
- Outline Drainage Strategy (‘ODS’); and,

- ODEMP.

11.7.4 The CEMP will describe measures to be implemented during the construction process and may, for example, include commitments to Species Protection Plans, Reasonable Avoidance Measures ('RAMs'), pre-construction surveys and appropriate derogation licenses as well as pollution (including dust) control, managed construction lighting and noise / traffic management measures.

11.7.5 The LEMP will be designed to ensure delivery of the Proposed Development's BNG strategy.

11.7.6 Note that this is not the final list of final plans, and other plans may be included in the DCO submission based on the information gathered throughout the assessment stage.

Additional Mitigation

11.7.7 Additional mitigation comprises measures requiring further intervention to reduce effects and/or achieve outcomes beyond those assumed as part of embedded mitigation. Such measures for biodiversity will be identified through engagement and reported within the ES once the significance of effects has been determined, taking account of committed embedded mitigation.

Enhancement

11.7.8 The Proposed Development is expected to deliver a BNG in excess of the forthcoming mandate of 10%, and this will be demonstrated through the appropriate use of the Statutory Biodiversity Metric. An Outline Biodiversity Gain Plan ('OBGP') will accompany the DCO application.

11.8 Description of Potential Likely Significant Effects

11.8.1 The sensitive receptors identified, potential magnitude of impacts and the likelihood of a resulting significant effect during the construction, operation and decommissioning phases, with consideration of mitigation, are summarised in **Table 11.2**. It should be noted that the CCO is still being refined at the point

of the preparation of this Scoping Report. The scoping exercise has, therefore, followed a precautionary basis based on the worst-case scenario. Ultimately, another screening exercise will be undertaken as part of engagement and ES Chapters once the Cable Route Corridor is fixed.

Construction

11.8.2 In the absence of mitigation there is the potential for the following construction impacts on important ecological features:

- Direct habitat loss within the draft Order Limits;
- Fragmentation of habitat across the draft Order Limits;
- Indirect habitat loss/damage through degradation of retained/adjacent habitats;
- Indirect impacts to habitats and species through pollution (e.g. dust deposition, runoff, lighting);
- Direct disturbance, killing and/or injury of protected/notable species as well as displacement of species within proximity of the Proposed Development; and
- Spread of invasive species.

Operation and Maintenance

11.8.3 There is the potential for the following operational impacts on important ecological features:

- Disturbance/ displacement of species due to presence of solar panels;
- Disturbance/ displacement of species due to noise generated by ancillary equipment (E.g., Battery Energy Storage Units);
- Disturbance/ displacement of species during operational maintenance;
- Disturbance/ displacement due to lighting of habitats that support light sensitive species such as bats; and

- Potential increase in botanical, bird and invertebrate species-richness due to habitat enhancements and ongoing management associated with BNG.

11.8.4 Risk of direct impacts to ecological receptors during maintenance operations (via vehicle movements) would be expected to be similar to or less than the current agricultural operations. Operational activity will be limited to periodic maintenance and operational replacement which would be temporary and short-term. These works can be managed through protection measures within the OEMP and LEMP and as such are scoped out.

Decommissioning

11.8.5 During the decommissioning phase, all of the solar infrastructure would be removed and recycled or disposed of in accordance with good practice following the waste hierarchy, with materials being reused or recycled whenever possible. All waste will be disposed of in accordance with the legislation at the time of decommissioning.

11.8.6 The underground ducting and joint bays associated with the cables, and/ or overground cables will be decommissioned in accordance with the latest regulations and good practice at that time but are anticipated to be left in-situ to minimise adverse environmental effects. It may be possible to remove the cable itself by extracting it at the joint bays from within the ducting, so that the cable can be recycled.

11.8.7 Following the Proposed Development components, the land within the draft Order Limits will be returned to its original use as far as possible, as part of the decommissioning of the Proposed Development, and following the expiry of any 30-year biodiversity net gain obligation.

11.8.8 It is considered that the decommissioning activities will result in impacts commensurate with or lesser than those experienced during construction.

11.8.9 Mitigation measures for the decommissioning stage will be set out in DEMP. The DEMP will ensure that decommissioning was undertaken safely and with

regard to the environmental legislation at the time of decommissioning such that ecological and ornithological effects are minimised.

Table 11.2 Ecology Scoping Summary

Feature	Potential for significant effect	Scoped in/ Scoped out
Nationally designated Sites for Nature Conservation	Hilton Gravel Pits is located immediately adjacent to the CCO and as such may experience indirect impacts during construction All other sites are considered sufficiently distanced that impacts are unlikely to occur with the implementation of embedded mitigation (management plans).	Hilton Gravel Pits SSSI scoped in for construction, operation and decommissioning All other sites scoped out.
Locally designated sites for Nature conservation	Non-statutory designated sites are located within and immediately adjacent to the draft Order Limits and may experience indirect impacts during construction and decommissioning. All other sites beyond 200m are considered sufficiently distanced that impacts are unlikely to occur with the implementation of embedded mitigation (management plans).	Scoped in
Priority habitats	The extent and distribution of priority habitats could be affected through direct and indirect construction impacts and through the embedded landscape design.	Scoped in
Other on-Site habitats	On-Site habitats may be directly impacted during construction of the Proposed Development. The embedded landscape design and BNG is likely to increase the value of habitats within the Order Limits.	Scoped in.
Breeding birds	Adverse impacts may occur due to habitat loss, destruction of nesting sites or disturbance. Ground nesting birds will continue to be displaced throughout the operational lifetime of the Proposed Development.	Scoped in
Non-breeding birds	Non-breeding bird species may experience disturbance during construction and displacement during operation.	Scoped in

Feature	Potential for significant effect	Scoped in/ Scoped out
Bats – foraging and commuting	Important bat foraging and commuting features such as field boundary habitats would be retained and protected through embedded avoidance and mitigation measures with only small scale and localised impacts. There is limited evidence the presence of solar PV panels may affect bat foraging and commuting habits. The embedded landscape design is likely to enhance the site for bats.	Scoped in
Amphibians	Ponds within the Site and Zone of Interest ('ZoI') offer suitable habitat for great crested newt and other amphibians (e.g., toad). Construction works have the potential to impact amphibians directly and through loss of habitat. The embedded landscape design is likely to enhance the site for amphibians.	Scoped in
Otter	Watercourses within and adjacent to the Site are likely to support otter which may be subject to disturbance during construction and decommissioning.	Scoped in
Water vole	Watercourses within and adjacent to the Site may support water vole. In the absence of a detailed design water vole, mater vole be affected through installation of crossing points.	Scoped in
Other notable mammals	Notable mammal species are common and widespread locally and nationally but may be affected by changes to habitats during construction and operation.	Scoped in
Invertebrates	Aquatic invertebrates may be affected by the presence of solar panels. The embedded landscape design is likely to enhance the site for invertebrates.	Scoped in
Internationally designated Sites for Nature Conservation	N/A – no internationally designated sites with the ZoI	Scoped out

Feature	Potential for significant effect	Scoped in/ Scoped out
Irreplaceable habitats	Irreplaceable habitats including ancient and veteran trees would be retained and protected.	Scoped out
Bats – roosting	Trees offering bat roosting potential will be retained and protected in line with embedded avoidance and mitigation measures. No buildings with roost potential are anticipated to be affected by the Proposed Development.	Scoped out
Reptiles	Habitats offering suitable reptile habitat (e.g., field margins) would be retained and protected through construction of the Proposed Development with protection measures within the CEMP. The embedded landscape design is likely to enhance the site for reptiles.	Scoped out
Badger	Badgers are a common and widespread species at both a local and national level, and while protected by law this is primarily due to welfare concerns. Any effect is not likely to be considered significant. Badger will be considered with regards to legislative compliance (mitigation).	Scoped out
Fish	The embedded OCEMP would include best practice measures to ensure no adverse impacts (e.g., pollution) to aquatic habitats	Scoped out

11.9 Impacts Scoped Out of the Assessment

11.9.1 As outlined in **Table 11.2** above, and accounting for embedded mitigation measures as described earlier, the following ecological receptors are scoped out of assessment:

- Internationally designated Sites for Nature Conservation;
- Nationally Designated Statutory Sites for Nature Conservation (other than Hilton Gravel Pits SSSI);
- Locally designated Sites beyond 100m from the Site boundary;

- Irreplaceable habitats;
- Roosting bats;
- Badger; and
- Fish.

11.9.2 While scoped out of detailed impact assessment, receptors will still be considered with regards to legislative compliance and best practice, and as such avoidance and mitigation measures will be implemented where required.

11.10 Assessment Methodology

11.10.1 This section describes the methodology proposed for the assessment of effects on Ecology, including the criteria for the determination of the importance of the receptor and the magnitude of change from baseline conditions.

11.10.2 All ecological assessment will be undertaken in accordance with CIEEM guidance for EcIA.

11.10.3 The assessment process will include the following stages:

- Determination and evaluation of important ecological features within the existing baseline of the Proposed Development and surrounding area;
- Identification and characterisation of potential impacts of the Proposed Development;
- Determination of the significance of effects;
- Outlining mitigation measures to avoid and reduce significant impacts;
- Assessment of the significance of any residual effects after such measures;
- Identification of appropriate compensation measures to offset significant residual effects; and
- Identification of opportunities for ecological enhancement.

11.10.4 The ES Chapters will be supported by technical appendices and relevant figures, which will provide full details of desk studies, engagement and field studies undertaken to inform the design and assessment of the Proposed Development.

11.10.5 Ecological data considered sensitive (e.g. that pertaining to the breeding and/or resting places of protected species) will be included within a confidential appendix to the ES Chapters.

11.10.6 Sufficient information will be presented within the ES Chapters to allow an objective and robust assessment of potentially significant adverse or beneficial impacts upon important ecological features to take place. Information will include relevant desk-based searches and data gathered through surveys.

Determining Importance

11.10.7 The ES Chapter will only assess in detail impacts upon important ecological features which are likely to be significantly affected by the Proposed Development. A detailed assessment of features that are sufficiently widespread, unthreatened and resilient to impacts of the Proposed Development will not be undertaken and justification for scoping out is provided.

11.10.8 Relevant European, national and local legislation policy and guidance will be referred to in order to determine the importance (or sensitivity) of ecological features. This will include, but is not limited to, the Conservation of Habitats and Species Regulations 2017 (as amended), the Wildlife and Countryside Act 1981 (as amended), and relevant guidance published by CIEEM and Natural England, including best practice guidance for EcIA and ornithological survey and assessment. In addition, importance will also be determined using professional judgement, specialist engagement advice and the results of baseline surveys and the importance of features within the context of the geographical area.

11.10.9 Importance will not necessarily relate solely to the level of legal protection that a feature receives, and ecological features may be important for a variety of

reasons, such as their connectivity to a designated site and the rarity of species or the geographical location of species relative to their known range.

11.10.10 The importance of ecological features will be defined in a geographical context from 'Site' to 'International' in line with **Table 11.3**.

Table 11.3 Ecological Importance

Importance	Definition
International	A regularly occurring, nationally significant population of an internationally important species or site supporting such a species (or supplying a critical element of their habitat requirement) or species listed in Annex IV of the Habitats Directive. An internationally designated site (SPA, SAC and/or Ramsar sites) or proposed and/or candidate site ('pSPA' or 'cSAC'). Large area of a habitat listed in Annex I of the Habitats Directive or smaller areas of such habitat which are essential to maintain the viability of the larger whole.
National	A regularly occurring, regionally significant population of any nationally important species listed as a UK BAP / Biodiversity List and priority species listed under Section 41 of the Natural Environment and Rural Communities Act 2006 (NERC Act), and Species listed under Schedule 1 or Schedule 5 of the Wildlife and Countryside Act or Annex II or Annex IV of the Habitats Directive. A nationally designated site (e.g. SSSI) or a discrete area which meets the selection criteria for national designation. An area of a priority habitat listed under Section 41 of the NERC Act or which constitutes a significant proportion of the UK resource of that habitat.
Regional (England)	Regionally significant populations of species identified in the NERC Act Part 1 as being of principal importance for the conservation of the biodiversity of England, or otherwise formally deemed to be nationally rare and threatened (e.g. red-listed), the loss of which would significantly change the species' overall conversation status (i.e. range, abundance, population trend) at the regional scale. A significant area of non-designated habitat type identified in the NERC Act, as being of principal importance for the conservation of biodiversity in England, the loss of which would significantly change the overall range and area of that habitat at the regional level in the long term. Significant areas of semi-natural ancient

Importance	Definition
	woodland that do not meet the national value criteria (above) should be considered at this scale due to the irreplaceable nature of such habitat.
County	Significant populations of species identified in the NERC Act as being of principal importance for the conservation of biodiversity in England, or otherwise formally deemed to be nationally rare and threatened (e.g. red-list), or priority species in the County BAP the loss of which would significantly change the species' overall conservation status (i.e. range, abundance, population trend) at the County scale. Locally designated sites (Local Nature Reserves, County or LWS). Areas of priority habitat which constitutes a significant proportion of the County's resource of that habitat.
Local	Local area around the Proposed Development. For example, areas of priority habitat which are not large enough to meet the criteria for County value, or small but sustainable populations of a protected or notable species
Site	Considered within the context of the Site only.

Identification and Characterisation of Impacts

11.10.11 The identification and characterisation of impacts on important ecological features will be undertaken in accordance with the CIEEM guidelines, with reference made to magnitude (in line with descriptions in), extent, duration and reversibility, as appropriate.

Table 11.4 Magnitude of Impact

Magnitude of Impact	Criteria
Major	The change may negatively or positively affect the conservation status of a site or species population, in terms of the coherence of its ecological structure and function, that sustains the habitat, complex of habitats and/or the population levels of species of interest.
Moderate	Conservation status of a site or species population will not be negatively or positively affected, but some element of the functioning of the site or population might be affected and the change to the site and/or population is likely to be significant in terms of its ability to sustain some part of itself in the long term.

Magnitude of Impact	Criteria
Minor	Neither of the above applies, but some minor negative or positive change is evident on a temporary basis, or the change affects extent of habitat or individuals of a species abundant in the local area.
Negligible	No observable effect in either direction

11.10.12 Impacts will be considered during the construction, operation and decommissioning phases and will be assessed on the basis that a clearly defined range of avoidance and standard good practice measures are implemented.

Significance of Effect

11.10.13 CIEEM guidelines define a significant effect as an effect that either supports or undermines biodiversity conservation objectives for important ecological features or for biodiversity in general (i.e. the feature could be positively or negatively significantly affected).

11.10.14 CIEEM guidelines on EcIA note that, "A significant effect does not necessarily equate to an effect so severe that consent for the project should be refused planning permission. For example, many projects with significant negative ecological effects can be lawfully permitted following EIA procedures as long as the mitigation hierarchy has been applied effectively as part of the decision-making process."

11.10.15 CIEEM guidelines do not recommend the sole use of a matrix table as commonly set out in ES chapters to determine 'significant' and 'not significant' effects. For the purposes of this assessment presented herein, sets out adapted CIEEM terminology and equivalent in the context of the EIA Regulations).

Table 11.5 Effect (EIA Significance)

Significance	Definition	
Significant	Major Adverse/ Beneficial	An adverse or beneficial effect resulting in a permanent or long-term change to the integrity of an ecological feature of national or international importance, such that its structure, function, or conservation status is fundamentally altered.
	Moderate Adverse/ Beneficial	An adverse or beneficial effect resulting in a medium to long-term change to the integrity of an ecological feature of regional importance (or higher), affecting its structure or function but not fundamentally compromising its conservation status.
Not significant	Minor Adverse/ Beneficial	An adverse or beneficial effect resulting in a short-term and/or reversible change to the integrity of an ecological feature of local importance (or below), with no lasting effect on its structure or function.

11.10.16 Potentially significant effects identified will be expressed with reference to an appropriate geographic scale. For example, a significant effect on a nationally designated site is likely to be of national significance. However, the scale of significance does not necessarily always relate to the importance of an ecological feature. For example, an effect on a species which is considered of national importance, may not have a significant effect upon its national population.

11.10.17 In cases of reasonable doubt, where it is not possible to robustly justify a conclusion of no significant effect, a significant effect will be assumed as a precautionary approach. Where uncertainty exists, this will be acknowledged in the ES Chapters.

Supplementary Assessment

11.10.18 A BNG Assessment Report will be prepared and submitted as supplementary assessments to the chapter and DCO application.

Cumulative and In-Combination Effects

11.10.19 The approach to assessing in-combination effects from the interrelationship between different environmental effects of the Proposed Development (intra-project) and cumulative effects from the interrelationship between different projects along with the Proposed Development (inter-project) is set-out in **Chapter 5: EIA Methodology**.

11.10.20 The interaction and combination of different environmental discipline residual (post-additional mitigation) effects from within the Proposed Development affecting a single receptor will be assessed within the Cumulative and In-Combination Effects of the ES.

11.10.21 Receptors identified within the ecology assessment will be assessed within in-combination effects assessment of up to 10 km.

11.11 Limitations and Assumptions

11.11.1 This EIA Scoping Report does not represent the results of an EcIA but provides a conservative judgement about impact pathways and receptors for which significant effects are considered possible, and which should therefore be scoped into the EIA for further assessment. Those where there is no likely significant effect, and the confidence level at this stage is high, should be scoped out of the EIA.

11.11.2 All limitations to the biodiversity survey and assessment will be detailed within the ES and accompanying Technical Appendices.

12.0 GLINT AND GLARE

12.1 Introduction

12.1.1 The chapter of the Scoping Report considers the approach to the assessment of likely significant effects of Glint and Glare as a result of the Proposed Development during its construction, operation and maintenance, and decommissioning phases, with particular focus on residential amenity, road safety, railway operations and infrastructure, and aviation safety.

12.1.2 Glint and Glare is defined as follows:

- Glint – a momentary flash of bright light (typically experienced by moving receptors); and
- Glare – a continuous source of bright light (typically experienced by static receptors).

12.1.3 The term ‘solar reflection’ is used to refer to both reflection types i.e. Glint and Glare.

12.1.4 These definitions are aligned with those presented within the NPS EN-3 and the Federal Aviation Administration in the USA.

12.2 Legislation, Planning Policy and Guidance

12.2.1 This Scoping Report has considered the NPS EN-3 published January 2026, as has the associated technical appendix ‘Receptor Scoping and Methodology’ (**Appendix 12.1: Glint and Glare Receptor Scoping and Methodology**).

12.2.2 NPS EN-3 (paragraph 2.10.94) states that “Solar PV panels are designed to absorb, not reflect, irradiation. However, the Secretary of State should assess the potential impact of glint and glare on nearby homes, motorists, public rights of way, and aviation infrastructure (including aircraft departure and arrival flight paths)".

12.2.3 NPS EN-3 does not state which receptors should be considered as part of a quantitative glint and glare assessment. Based on Pager Power’s extensive

project experience, typical receptors include residential dwellings, road users, railway infrastructure, air traffic control towers, and pilots on approach to runway thresholds.

12.2.4 Pager Power's Glint and Glare guidance (2022) details Pager Power's methodology for undertaking technical assessment of Glint and Glare effects, including study areas, identification of receptors, impact determination, and mitigation requirements. The Glint and Glare assessment will be carried out in accordance with this guidance document.

12.2.5 Pager Power has undertaken over 1,800 Glint and Glare assessments in the UK and internationally under Pager Power's assessment methodology presented within our Glint and Glare guidance document. Pager Power's methodology has been accepted on numerous projects across the UK and internationally, including at the NSIP level.

12.3 Engagement

12.3.1 No engagement has been undertaken with respect to Glint and Glare at the time of writing. It is not standard practice to carry out engagement prior to detailed assessment of Glint and Glare and the established assessment methodology has been widely accepted by stakeholders and planning authorities across Pager Power's past projects, including at NSIP level.

12.3.2 Following the impact assessment of potential Glint and Glare impacts, engagement may be carried out as part of the EIA with relevant stakeholders, including but not limited to:

- LPAs;
- National Highways;
- Network Rail; and
- Local aerodromes.

12.4 Study Area

12.4.1 There is no formal guidance with regard to the maximum distance at which Glint and Glare should be assessed. From a technical perspective, there is no maximum distance for potential reflections; however, the significance of a solar reflection decreases with distance. This is because the proportion of an observer's field of vision that is taken up by the reflecting area diminishes as the separation distance increases. In most instances, terrain and shielding by vegetation are also more likely to obstruct an observer's view at greater distances.

12.4.2 A 1km assessment area is considered appropriate when identifying ground-based receptors surrounding the Proposed Development. This study area has been established via engagement with relevant stakeholders, including National Highways and LPAs, across Pager Power's past project experience and is industry standard for assessment of Glint and Glare.

12.4.3 There is also no formal guidance with regard to the maximum distance at which aviation effects must be modelled. However, in practice, concerns are most often raised for developments within 10km of a licensed aerodrome. Requests for modelling at ranges of 10-20km of a licensed aerodrome are less common. An assessment range of 5km for unlicensed general aviation aerodromes and 10km for licenced aerodromes is considered appropriate based on past project experience. This is the typical assessment range based on previous experience; aerodromes outside of this range may be considered for assessment upon request from the relevant aerodrome.

12.4.4 If a railway line is identified within 200m of the solar panel areas, then a technical assessment is undertaken for railway receptors within a 500m assessment area. This assessment area size is deemed appropriate when identifying railway receptors and infrastructure and has been previously accepted by Network Rail.

12.5 Sensitive Receptors

12.5.1 Sensitive receptors with respect to Glint and Glare are as follows:

- Residential dwellings;
- Road users;
- Railway train drivers; and
- Aircraft pilots and air traffic controllers.

12.5.2 Detail regarding the defined sensitivity of each receptor type is presented in Section 12.10 – Assessment Methodology.

12.5.3 Please see technical appendix 'Receptor Scoping and Methodology' (**Appendix 12.1: Glint and Glare Receptor Scoping and Methodology**) for a detailed review of receptors.

12.6 Baseline Environment and Future Baseline

12.6.1 The Proposed Development is located in an area of predominantly rural farmland and towns including: Church Broughton, Hatton, Hilton, Etwall, Stretton, and Willington.

12.6.2 Key roads in the area of the Proposed Development include: the A38 Road, the A50, and the A516, in addition to a number of smaller local routes.

12.6.3 The closest railway line is located approximately 250m south-east of Solar Development Site E.

12.6.4 The wider area contains several aerodromes including: Derby Airfield, Brook Farm Airfield, and Palmer Moor Farm Airfield.

12.6.5 Please see technical appendix 'Receptor Scoping and Methodology' (**Appendix 12.1: Glint and Glare Receptor Scoping and Methodology**) for a detailed review of receptors.

12.7 Design, Mitigation and Enhancement Measures

12.7.1 The impact of the Proposed Development can only reliably be determined via detailed geometric modelling; this will be undertaken in accordance with the guidance as stated in the previous section.

12.7.2 Common mitigation strategies for ground-based receptors are:

- Provision of screening (planting or opaque fence) at the draft Order Limits boundary, or elsewhere, between the observer and reflecting panel areas;
- Changes to the Site configuration. This may involve changes to the azimuth angle of the solar panels; and/or changes to the elevation (tilt) angle of the solar panels; and

12.7.3 Changes to technology. This may involve implementing areas of fixed panels instead of single-axis tracking panels. **Appendix 12.1** has been prepared assuming that the panels are fixed, and that these will be reviewed should tracker panels be progressed. The most common mitigation solution for ground-based receptors is the provision of screening at the perimeter of the solar area. A screening solution that sufficiently obstructs visibility of the potentially reflecting panels will mitigate impacts.

12.7.4 The reflecting panels that should be obscured from view (if any), based on the proposed configuration, will be defined within the impact assessment.

12.7.5 Where screening solutions are not feasible, changes to the PV configuration can be investigated.

12.7.6 For aviation receptors, where mitigation is recommended/ required, the most common solution is changes to the PV configuration. This is because screening solutions are typically unviable due to the inherent visibility of elevated receptors.

12.8 Description of Potential Likely Significant Effects

12.8.1 The impact of the Proposed Development can only reliably be determined via detailed geometric modelling; this will be undertaken in accordance with the methodology and guidance as laid out in previous sections.

12.8.2 A detailed Glint and Glare impact assessment report will accompany the DCO application.

12.9 Impacts Scoped Out of the Assessment

Table 12.1 Issues Scoped Out of the Assessment

Matter	Rationale
Construction and decommissioning phases	Glint and Glare occurs as a result of the presence of reflective surfaces, i.e. solar panels. The number of solar panels present during the construction and decommissioning phases will not exceed the number of solar panels present during the operational phase. Effects predicted as a result of the operational phase will therefore provide a worst-case assessment of effects during the construction and decommissioning phases.
Road users	Glint and Glare effects identified during the technical impact assessment will be suitably mitigated upon these receptors such that residual effects will not be significant.

12.9.1 The Glint and Glare impact assessment report will consider effects upon all receptors, including those scoped out of the ES. Where significant effects are identified, suitable mitigation will be recommended and agreed, which will also be detailed within the impact assessment report.

12.10 Assessment Methodology

Receptor Sensitivity – Introduction

12.10.1 The nature or sensitivity of all identified environmental receptors will be described as high, medium, low, or very low. This is set out in the context of Glint and Glare below.

Table 12.2 Sensitivity of Receptors

Sensitivity	Definition
High	Receptors with low capacity to experience solar reflections without fundamentally reducing safety or amenity.

Sensitivity	Definition
Medium	Receptors with medium capacity to experience solar reflections without significantly reducing safety or amenity.
Low	Receptors with a high capacity to experience solar reflections without reduction to safety or amenity.
Very Low	Receptors can experience solar reflections without reduction to safety or amenity.

Receptor Sensitivity – Aviation

12.10.2 Air Traffic Control Towers are considered High sensitivity because they have low capacity to experience solar reflections without a fundamental reduction in safety.

12.10.3 Approaching aircraft are considered Medium sensitivity because they have medium capacity to experience solar reflections without a significant reduction in safety.

Receptor Sensitivity – Road Users

12.10.4 To determine the sensitivity of road users, it is relevant to consider that road types can generally be categorised as:

- Major National – Typically a road with a minimum of two carriageways with a maximum speed limit of up to 70mph. These roads typically have fast-moving vehicles with busy traffic;
- National – Typically a road with a one or more carriageways with a maximum speed limit of up to 60mph or 70mph. These roads typically have fast-moving vehicles with moderate to busy traffic density;
- Regional – Typically a single carriageway with a maximum speed limit of up to 60mph. The speed of vehicles will vary with a typical traffic density of low to moderate; and
- Local – Typically roads and lanes with the lowest traffic densities. Speed limits vary.

12.10.5 Road users along local roads are considered Very Low sensitivity because they have capacity to experience solar reflections without a reduction to safety. The workload of a road user along a local road is expected to be lower

than that of a user of a larger road where there are multiple lanes of traffic, speed limit changes, other users overtaking and joining, signs to be observed, etc. A user of a local road is therefore more able to accommodate a source of solar reflections and respond to it without an impact upon safety.

12.10.6 Road users along regional, and national roads are considered Medium sensitivity because they have medium capacity to experience solar reflections without a significant reduction in safety.

12.10.7 Road users on major national roads are considered High sensitivity because they have low capacity to experience solar reflections without a fundamental reduction in safety.

Receptor Sensitivity – Dwellings

12.10.8 Dwelling receptors are considered Medium sensitivity because they have moderate capacity to experience solar reflections without a significant reduction to amenity.

Magnitude of Impact – Introduction

12.10.9 The magnitude of impact upon all identified environmental receptors will be described as large, medium, small, or negligible. This is set out in the context of Glint and Glare in **Table 12.3** below.

Table 12.3 Magnitude of impact

Sensitivity	Definition
Large	Solar reflection durations / intensities that exceed the maximum allowable levels representing a fundamental safety or amenity impact.
Medium	Solar reflection durations / intensities that exceed the maximum allowable levels, and the glare scenario is considered one which could cause a material safety or amenity impact.
Small	Solar reflection durations / intensities that are within the maximum allowable levels, or where the glare scenario is such that safety or amenity will not be materially impacted.
Negligible	Solar reflections that is not geometrically possible or will not be experienced in practice due to intervening screening.

Magnitude of Impact – Aviation, Air Traffic Control Towers

12.10.10 A Negligible magnitude would occur if solar reflections are not geometrically possible, or are not predicted to be experienced by an air traffic controller.

12.10.11 A Small magnitude would occur if solar reflections with 'low potential for temporary after-image' are predicted to be experienced with sufficient mitigating factors or confirmation the level of glare is acceptable to the aerodrome.

12.10.12 A Medium magnitude would occur if solar reflections with 'low potential for temporary after-image' are predicted to be experienced without sufficient mitigating factors, or if solar reflections with 'potential for temporary after-image' are predicted to be experienced.

12.10.13 A Large magnitude would occur if solar reflections with 'potential for permanent eye damage' are predicted to be experienced.

Magnitude of Impact – Aviation, Approaching Aircraft

12.10.14 A Negligible magnitude would occur if solar reflections are not geometrically possible, or are not predicted to be experienced by a pilot.

- A Small magnitude would occur under the following scenarios:
- Solar reflections originate from outside a pilot's main field of view;
- The solar reflections have 'low potential for temporary after-image';
- The solar reflections have 'potential for temporary after-image' with sufficient mitigating factors; and
- The aerodrome has confirmed the level of glare is acceptable.

12.10.15 A Medium magnitude would occur if the solar reflections have 'potential for temporary after-image' without sufficient mitigating factors.

12.10.16 A Large magnitude would occur if the solar reflections have 'potential for permanent eye damage'.

Magnitude of Impact – Road Users

12.10.17 A Negligible magnitude would occur if solar reflections are not geometrically possible, or are not predicted to be experienced by a road user.

12.10.18 A Small magnitude would occur if solar reflections were experienced from outside a road user's primary horizontal field of view (50 degrees either side of the direction of travel), or inside of road user's primary horizontal field of view with sufficient mitigating factors.

12.10.19 A Medium magnitude would occur if solar reflections were experienced from within a road user's primary horizontal field of view without sufficient mitigating factors.

12.10.20 A Large magnitude would occur if solar reflections were experienced from directly in front of a road user's direction of travel with no mitigating factors.

Magnitude of Impact – Dwellings

12.10.21 A Negligible magnitude would occur if solar reflections are not geometrically possible, or are not predicted to be experienced in practice within a dwelling.

12.10.22 A Small magnitude would occur if solar reflections were experienced for less than three months per year and for less than 60 minutes on any given day, or if solar reflections exceeded one of the thresholds with sufficient mitigating factors.

12.10.23 A Medium magnitude would occur if solar reflections were experienced for more than three months per year or for more than 60 minutes on any given day without sufficient mitigating factors.

12.10.24 A Large magnitude would occur if solar reflections were experienced for more than three months per year and for more than 60 minutes on any given day.

Significance of Effects

12.10.25 The significance of an environmental effect is determined by the interaction of sensitivity and magnitude. This significance matrix is set out **Table 12.4** below.

Table 12.4 Significance Matrix

Magnitude	Sensitivity			
	High	Medium	Low	Very Low
Large	**Major**	**Major**	**Moderate**	Minor
Medium	**Major**	**Moderate**	Minor	Minor
Small	Minor	Minor	Minor	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

12.11 Limitations and Assumptions

12.11.1 The assessment will be limited to desk-based modelling. No site survey is initially proposed. The assessment approach is considered to be both appropriate and robust, as it is standard practice for this type of assessment to be conducted on a desk-based basis. Where an accurate determination of potential visibility cannot be made using desk-based resources, a site survey will be proposed unless suitable site imagery can be provided by the developer.

12.11.2 The following is a list of assumptions and limitations associated with Pager Power's glint and glare model:

- The geometric model considers 100% sunlight during daylight hours. This assumption provides a conservative assessment of potential effects and a worst-case scenario;
- Only reflections from the face of the panel are considered. The frame supporting the panels, or the back of solar panels, has not been considered as the frame will be obstructed from view by the face. Where views of the frame are possible, a solar reflection from the frame is from

of a smaller surface area will be less significant than from the face of a solar panel with a larger surface area;

- The geometric model shall assume panels within the entirety of the indicated areas of the parameter plan. In actual practice, rows and arrays of solar panels will include spacing between panels to decrease the effects of shadowing upon neighbouring panels. Therefore, the model assumes a highly conservative number of panels and presents a worst-case geometric result;
- The model assumes that a receptor can view the face of every panel (i.e. 'point', defined in the following paragraph) within the Site whilst, in reality, this will not occur, as rows of panels will obstruct views of panels behind them except in areas of varying terrain. Therefore, any predicted solar reflection from the face of a solar panel that is not visible to a receptor will not occur in practice;
- A finite number of points within each defined solar panel area is chosen based on an assessment resolution so that a comprehensive understanding of potential effects can be formed. This determines whether a solar reflection could occur at a chosen receptor. The model does not consider the specific panel rows or the entire face of the solar panel within the areas, rather a single point will be defined at intermittent points (the assessment resolution) with the geometric characteristics of the panel. A panel area is however defined to encapsulate all possible panel locations; and
- The geometric modelling does not account for any existing screening in the form of vegetation and buildings that could obstruct views of reflecting panels. Therefore, the modelling of potential effects portrays the 'worst-case scenario' for the Proposed Development during the operational phase. Visibility of views in practice is considered within the desk-based analysis which follows the geometric modelling.

12.11.3 The following is a list of assumptions and limitations associated with the ForgeSolar glint and glare model, and are taken directly from the ForgeSolar website[129]:

- *"The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules variable height of the PV array, and support structures may impact actual glare results. However, we [ForgeSolar] have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the toll accurately predicted the occurrence and intensity of glare at different times and days of the year";*
- *"Several calculations utilise the PV array centroid, rather than the actual glare spot location, due to algorithm limitation. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects analyses of path receptors";*
- *"Random number computations are utilised by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of observation points, including ATCTs. Note that the SGHAT/ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis";*
- *"The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacts results if actual glare sports are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards";*
- *"The algorithm assumes that the PV array is aligned with a plane defined by the total heights of the coordinates outlined in the Google map. For*

more accuracy, the user should perform runs using the minimum and maximum values for the vertex heights to the bound the height of the plane containing the solar array. Doing so will expand the range of observed solar glare when compared to results using a single height value";

- *"The algorithm does not consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc";*
- *"The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalised time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors";*
- *"The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses";*
- *"The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modelling methods";*
- *"Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum";*
- *"Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ";*

- *“Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ”; and*
- *“PV array tracking assumes the modules move instantly when tracking the sun, and when reverting to the rest position”.*

13.0 GROUND CONDITIONS AND CONTAMINATION

13.1 Introduction

13.1.1 This chapter of the ES Scoping Report has been produced by Waterman Infrastructure & Environment Limited (Waterman) and sets out the proposed scope of assessments and methodologies to be undertaken in the ES.

13.1.2 This chapter provides an overview of the potential effects that may arise from the Proposed Development in relation to Ground Conditions and Contaminated Land, which is proposed to be scoped into the ES.

13.1.3 The Ground Conditions and Contaminated Land Chapter of the ES will present an assessment of the likely effects of the Proposed Development on the ground conditions within the Site and the wider study areas identified through desk-based research, a Site walkover to identify any potential contamination sources at the Site and include engagement with key stakeholders.

13.1.4 The chapter will assess the current condition of the Site in relation to its geology, hydrogeology, soils and potential contamination, alongside the level of impact and resultant magnitude of effects.

13.1.5 The assessment will be undertaken by competent and qualified Geotechnical consultants.

13.2 Legislation, Planning Policy and Guidance

Legislative Context

13.2.1 Specific UK legislation on contaminated land is principally contained within Part IIA of the Environmental Protection Act ('EPA'), 1990[130], as inserted by Section 51 of the Environment Act 1995. The legislation endorses the principle of a 'Suitable for Use' approach to contaminated land, where remedial action is only required if there are unacceptable risks to defined Statutory Receptors which include human health and the receiving

environment, taking into account the use of the land and its environmental setting.

13.2.2 The above legislation has been interpreted as statutory guidance in 'EPA 1900: Contaminated Land Statutory Guidance, 2012'. This statutory guidance outlines how Local Authorities should implement the legislation including how to determine whether the land in its area is defined as 'Contaminated' in the legal sense. The guidance explains the legal provisions of Part 2A and how regulators should ensure that remediation requirements are reasonable.

Planning Policy Context

13.2.3 NPS EN-1 outlines that applicants should identify any effects and seek to minimise impacts on soil health and protect and improve soil quality taking into account any mitigation measures proposed. Paragraphs 5.11.4, 5.11.5, 5.11.8 and 5.11.13 to 5.11.19 and 5.11.23 of Land Use, Including Open Space, Green Infrastructure, and Green Belt of the NPS EN-1 relate to soil and water resources with reference to contaminated land.

13.2.4 The statement also encourages the development of a OSMP which could help minimise potential land contamination. The sustainable reuse of soils needs to be carefully considered in line with good practice guidance where large quantities of soils are surplus to requirements or are affected by contamination.

13.2.5 The statement notes a requirement for developments to enhance the natural and local environment by preventing new and existing developments from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil pollution.

13.2.6 NPS EN-3, relates to biomass and energy from waste (EfW), offshore wind energy, pumped hydro storage, solar PV, tidal stream energy. It is stated that generic issues are covered in EN-1, however, EN-3 provides further specific considerations. Solar Photovoltaic Generation is covered in Section 2.10, with paragraphs 2.10.21 stating '*while determining the suitability of the site location applicants should, were possible, utilise suitable previously developed land, brownfield land, contaminated and industrial land*'.

- Paragraph 2.10.26 mirrors recommendations provided in EN-1 and states applicants are encouraged to develop and implement a Soil Resources and Management Plan which could help to use and manage soils sustainably and minimise adverse impacts on soil health and potential land contamination.
- NPS EN-5, together with the NPS EN-1, provides the primary policy for decisions taken by the SoS on applications it receives for electricity networks infrastructure.
- This policy relates to ground conditions in Section 2.2 of EN-5 Factors Influencing Site Selection and Design. Paragraph 2.2.10 states that Applicants must take into account Schedule 9 to the Electricity Act 1989, which places a duty on all transmission and distribution licence holders, in formulating proposals for new electricity networks infrastructure "*have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and …do what [they] reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects.*"

13.2.7 Contamination is also managed via the planning regime, through the NPPF 2025. The NPPF sets out the government's planning policies and how they are expected to be applied. Paragraphs 119, 120, 121 of Section 11 – Making effective use of land and paragraphs 174, 183, 184, 185, Section 15 – Conserving and enhancing the natural environment of the NPPF relate to contaminated land matters.

13.2.8 With regard to new developments, the NPPF aims 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 soil, air, water or noise pollution or land instability.

13.2.9 In addition, the NPPF sets out that when considering a planning application, a site must be suitable for its new use taking account of ground conditions and land instability, including hazards from natural sources or former activities such as mining, or pollution arising from previous uses. This should be balanced against any proposals for mitigation including land remediation or impacts on the natural environment arising from that remediation.

13.2.10 The NPPF also outlines that post remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the EPA 1990.

Guidance and Best Practice

13.2.11 There is no specific ground conditions guidance or prescribed methodology for undertaking EIA. Relevant national guidance and codes of practice relevant for the assessment of land contamination (soils, hydrogeology, geology and potential contamination) will be considered including the following:

- Land Contamination Risk Management ('LCRM') [131]);
- Human Health Toxicological Assessment of Contaminants in Soil (SR2)[132];
- Updated Technical Background to the CLEA Model (SR3)[133];
- Contaminated Land Exposure Assessment ('CLEA') Tool[134], Land Contamination: Remedial Targets Methodology ('RTM')[135], Investigation of Potentially Contaminated Sites. Code of Practice for Ground Investigations. BS5930:2015;
- Code of Practice for the Design of Protective measures for methane and carbon dioxide ground gases for new buildings[136];
- Assessing Risk posed by Hazardous Ground Gases to Buildings. CIRIA C665[137]; and
- ISEP: A New Perspective on Land and Soil in Environmental Impact Assessment[138].

13.3 Engagement

13.3.1 The study area extends across several Local Authority administrative areas; therefore, engagement has been sought with the South Derbyshire District Council and East Staffordshire Borough Council Contaminated Land Officers. Their responses are pending.

13.3.2 The draft Order Limits are not located with a Coal Authority Reporting Areas therefore the Mining Remediation Authority has not been consulted. Engagement has instead been sought with Johnson Poole & Bloomer to understand potential mining risks in the area. Correspondence was extended on 28th April 2026 and a response is pending.

13.4 Study Area

13.4.1 The study area relates to five Solar Development Sites, the POC and Cable Corridor Option Routes described at **Chapter 2: The Proposed Development** of this report (the draft Order Limits). The Cable Corridors have not been subject to baseline studies and are not included in this Chapter, however, they have been included for completeness in the Impacts section.

13.4.2 The study area will comprise the draft Order Limits and a buffer of 250m around the draft Order Limits, to account for sensitive receptors or factors that may affect the area within the draft Order Limits.

13.5 Sensitive Receptors

13.5.1 The following sensitive receptors are identified at the Sites:

- Aquifers;
- Secondary A Aquifers (Sites A to E and Willington 400kV Substation);
- Secondary (Undifferentiated) Aquifers (Site C);
- Secondary B Aquifer (Sites A to E and Willington 400kV Substation);
- Soil Environment;

- Greenfield land (Sites A to E). Five land parcels extend over agricultural site uses and are largely classified as greenfield sites; and
- Willington 400kV Substation has been in use as a substation.

13.6 Baseline Environment and Future Baseline

13.6.1 Based on the information gathered to date, a summary of the baseline environment is provided below.

Baseline Environment

Site History

13.6.2 In summary, from a review of the available mapping, the Solar Development Sites have generally comprised agricultural fields. A summary of each Solar Development Site is provided below.

Solar Development Site A

13.6.3 The Solar Development Site has been in use as arable land since the earliest available mapping in 1880. An unspecified pit was present in the north-west of the Site between 1899 and 1965. The area is now marked by a field copse. 44No. unspecified historical pits are located within 500m of the Solar Development Site. These likely relate to small-scale clay extraction or ponds, given the historical land use in the surrounding area.

13.6.4 A historical landfill, East Of Breech Lane (Ref. LF/01), is recorded 122m south of the Solar Development Site. The landfill license was for an Inert, Industrial waste type and was licensed between October 1993 and April 1994.

Solar Development Site B

13.6.5 The Solar Development Site is recorded to have been in agricultural use from at least 1880 to the present day, with no indication of significant built development. Early plans suggest that a brick works may have partially extended into the western boundary in the late 1880s; however, later map editions suggest the brick works was entirely out with the western boundary, suggesting a potential inaccuracy in the earlier map edition. Other features within the boundaries include an old clay pit (1880 - 1955), several small ponds

(1880 – 2015) and a wind pump and pump in the south-west of the Solar Development Site (1924 – 2001).

Solar Development Site C

13.6.6 The Solar Development Site has been in use as arable land since earliest mapping in 1880. 5 No. unspecified pits are located in the north of Parcel C. 1 No. pond was located in the north-west of Parcl C.

13.6.7 The Derbyshire and North Staffordshire Extension Railway line was located immediately adjacent to the east of Parcel C3. The Etwall section stopped normal passenger trains in 1939, with occasional use remaining until the late 1960s. The line stayed in place as the Mickleover test track until it was finally removed in the early 1990s.

13.6.8 A historical landfill, Marsh Cottage Farm (Ref. EAHLD23783), is recorded 48m east of Parcel C3. The landfill license was for an inert waste type and was licensed between July 1991 and January 1992.

13.6.9 20 No. unspecified historical pits are located within 500m of the Solar Development Site. These likely relate to small-scale extraction or ponds, given the historical land use in the surrounding area.

Solar Development Site D

13.6.10 The northern area is recorded to have been in agricultural use from at least 1882 to the present day, with no indication of significant built development. A small water feature (possible pond) is recorded near the southern boundary from 1882 until sometime prior to 1980.

13.6.11 The southern area is also indicated to have remained primarily in agricultural use from at least 1882 to the present day. A pond is indicated to have been present in the centre/ east of the Site from at least 1882 until sometime prior to 1980. A sports/ recreation ground (currently a cricket ground) is recorded in the northeast of the Solar Development Site from 1980 to the present day.

Solar Development Site E

13.6.12 In summary, the Site has been in use as arable land since earliest mapping in 1880s with small ponds and structures sporadically denoted with all structures

removed by 2000s. The south-western extent was shown as a marshland between 1880s and 1970s.

13.6.13 The National Grid Willington 400 kV substation comprised undeveloped agricultural land from at least 1880s until the late 1960s/ early 1970s when embankments had been constructed along the northern, western and southern site boundaries with multiple small structures in the central area of the Solar Development Site and pylons along the southern boundary. Additional structures have been added up to 2010, with no changes noted since.

Potential Sources of Contamination

13.6.14 The potential sources of contamination identified are applicable to all Solar Development Sites, unless specified. These are summarised as follows:

- Agricultural practices including waste deposition activities;
- Made Ground associated with areas of infill;
- Sports Ground potential for Made Ground (Solar Development Site D);
- Landfill Site(s) located adjacent to the Site potential migrating ground gas in superficial deposits;
- Isolated area of burning, inert waste stockpiles and unknown land-use in the C1 parcel (Solar Development Site C);
- Potential localised Made ground associated with demolition of historical structures or potential infilling of former ponds;
- Made ground associated with construction of the present day substation and surface mounds – National Grid Willington 400 kV substation;
- Site use as an electricity substation (transformers, interceptors oil storage) – National Grid Willington 400 kV substation; and
- Historical tanks in the east of National Grid Willington 400 kV substation.

13.6.15 A number of potential off-Site sources of contamination that may affect the Solar Development Sites have been identified, detailed as follows:

- Agricultural practices including waste deposition activities;
- Active sewage pumping station (33m north east of the eastern Solar Development Site segment);
- Made Ground associated with areas of infill;
- Former Tile and Brick Works – Solar Development Site B;
- Sewage Filter Beds – Solar Development Site B;
- Graveyard (Solar Development Sites B, D & E);
- Historic Landfill – Solar Development Sites C & D;
- Historic railway infrastructure (Solar Development Site C);
- Unspecified tanks (Solar Development Site D);
- Former Gravel Pits (Solar Development Site D);
- Former National Grid Willington 400 kV substation; and
- Former Willington Power Station.

13.6.16 Historical ground investigation reports have not been made available for the site areas. An AECOM Geo-Environmental report has been reviewed relating to areas off-Site and to the east of National Grid Willington 400 kV substation as part of the PRAs.

Anticipated Geology

13.6.17 Groundsure Reports, British Geological Survey ('BGS') data, historical borehole records have been consulted to establish the anticipated geology at the Sites. **Table 13.1** presents a summary within each of the Solar Development Sites.

Table 13.1 Site Geology

Stratum	Area Covered	Typical Description
Solar Development Site A to E		
Topsoil	Whole Site	Dark brown, silty SAND with high organic content, many fine roots.

Stratum	Area Covered	Typical Description
Made Ground		A thickness of Made Ground is anticipated in localised areas across the Site
Solar Development Site A		
Glaciofluvial terrace deposits	Southern half of the Site.	Silty clay with lenses of sand and gravel OR clayey fine sand OR very silty gravel and sand.
Mercia Mudstone	Entire Site	Firm clay and siltstone OR red highly weathered Mudstone becoming firmer at depth.
Solar Development Site B		
Alluvium	Central Site area in the vicinity of the pond and associated watercourse	Clay, silt, sand and gravel
River Terrace Deposits	Eastern Site boundary	Sand and gravel
Mercia Mudstone	Entire Site	Mudstone
Solar Development Site C		
River Terrace Deposits	Eastern boundary of Parcel C1	Sand and gravel.
Oadby Till Member - Diamicton	Southeastern corner of Parcel C1	Grey weathering to brown. Diamicton with lenses of sand and gravel, clay and silt.
Alluvium	Locally present Adjacent to watercourses	Soft brownish grey silty CLAY OR loose slightly sandy GRAVEL.
Head Deposits	Locally present Adjacent to watercourses	Clay, silt, sand and gravel.
Mercia Mudstone	Entire Site	Red brown firm clay and siltstone OR red highly weathered Mudstone becoming firmer at depth.
Solar Development Site D		
Glaciofluvial Terrace Deposits	Northeast of Site area	Medium dense, clayey very sandy GRAVEL.

Stratum	Area Covered	Typical Description
		Stiff sandy silty CLAY with much gravel and occasional silty lenses. (BGS Borehole Ref. SK23SW99)
River Terrace Deposits	Southwest and south of Site area	Firm brown slightly sandy slightly gravelly CLAY (BGS Borehole Ref. SK23SW48)
Alluvium	Entire Site area	Soft brownish grey silty CLAY OR loose slightly sandy GRAVEL.
Mercia Mudstone	Entire Site	Red brown firm clay and siltstone OR red highly weathered Mudstone becoming firmer at depth.
Solar Development Site E		
Hemington Gravel Member	Majority of the western and eastern areas of the Site and southern corner of the Site.	Gravels, sands and loams which underlie the Hemington Terrace. The gravels are likely to be dominated by “Bunter” quartz/quartzite with subordinate subangular flint.
Holme Pierrepont Sand and Gravel Member	Northeastern areas.	Pinkish, poorly sorted and compositionally immature matrix supported, sandy, trough-cross bedded (braided river) gravels with syndepositional ice wedge casts. Gravel dominated by rounded pebbles of "Bunter" quartz/quartzite, plus flint, Triassic and Upper Carboniferous sandstone, Lower Carboniferous cherts, etc, and other "exotic" lithologies.
Alluvium	Along the centre and northwestern Site areas & both of the southern segments.	Clay, silt, sand and gravel.
Gunthorpe Member	Eastern area of the Site	Mudstone, red-brown, with subordinate dolomitic siltstone and fine-grained sandstone, greenish grey, common gypsum veins and nodules.
Edwalton Member	Western area of the Site	Mudstone and siltstone, red-brown and greenish grey, with beds of indurated, variably dolomitic siltstone and very fine-grained sandstone common in the lower half; finely disseminated gypsum common in upper half.

Stratum	Area Covered	Typical Description
Radcliffe Member	Northern and central section of the Site	Mudstone, siltstone and very fine-grained sandstone, finely interlaminated; pinkish red or red-brown, subordinately green.
National Grid Willington 400 kV substation		
Holme Pierrepont Sand and Gravel Member	Majority of the Site and southeastern corner	Pinkish, poorly sorted and compositionally immature matrix supported, sandy, trough-cross bedded (braided river) gravels with syndepositional ice wedge casts. Gravel dominated by rounded pebbles of "Bunter" quartz/quartzite, plus flint, Triassic and Upper Carboniferous sandstone, Lower Carboniferous cherts, etc, and other "exotic" lithologies.
Hemington Gravel Member	Eastern site boundary	Gravels, sands and loams which underlie the Hemington Terrace. The gravels are likely to be dominated by “Bunter” quartz/quartzite with subordinate subangular flint.
Alluvium	Northern boundary	Clay, silt, sand and gravel.
Gunthorpe Member-Mudstone	Whole Site	Mudstone, red-brown, with subordinate dolomitic siltstone and fine-grained sandstone, greenish grey, common gypsum veins and nodules.

13.6.18 At a number of the sites, the geological mapping indicates superficial deposits are likely to be absent and the solid geology is likely to be shallow.

Hydrogeology

13.6.19 The expected geology and the aquifer designation within each of the Sites is presented in **Table 13.2**.

Stratum	Environment Agency Classification	Hydrogeological Significance
Solar Development Site A – Superficial Designations		
Glaciofluvial Terrace deposits	Secondary A Aquifer	May be important in supporting local abstractions or in providing baseflow to rivers and streams
Solar Development Site B – Superficial Designations		
River Terrace Deposits	Secondary A Aquifer	May be important in supporting local abstractions or in providing baseflow to rivers and streams
Alluvium	Secondary A Aquifer	May be important in supporting local abstractions or in providing baseflow to rivers and streams
Solar Development Site C – Superficial Designations		
River Terrace Deposits	Secondary A Aquifer	May be important in supporting local abstractions or in providing baseflow to rivers and streams
Oadby Till Member - Diamicton	Secondary (undifferentiated) Aquifer	May be important in supporting local abstractions or in providing baseflow to rivers and streams
Alluvium	Secondary A Aquifer	May be important in supporting local abstractions or in providing baseflow to rivers and streams
Head Deposits	Secondary (undifferentiated) Aquifer	May be important in supporting local abstractions or in providing baseflow to rivers and streams
Solar Development Site D – Superficial Designations		
River Terrace Deposits	Secondary A Aquifer	May be important in supporting local abstractions or in providing baseflow to rivers and streams
Glaciofluvial Terrace Deposits	Secondary A Aquifer	May be important in supporting local abstractions or in providing baseflow to rivers and streams

Alluvium	Secondary A Aquifer	May be important in supporting local abstractions or in providing baseflow to rivers and streams
Solar Development Site E – Superficial Designations		
Hemington Gravel Member	Secondary A Aquifer	May be important in supporting local abstractions or in providing baseflow to rivers and streams
Holme Pierrepont Sand and Gravel Member		
Alluvium		
National Grid Willington 400 kV substation – Superficial Designations		
Holme Pierrepont Sand and Gravel Member	Secondary A Aquifer	May be important in supporting local abstractions or in providing baseflow to rivers and streams
Hemington Gravel Member	Secondary A Aquifer	May be important in supporting local abstractions or in providing baseflow to rivers and streams
Alluvium	Secondary A Aquifer	May be important in supporting local abstractions or in providing baseflow to rivers and streams
Site A to D - Solid Geology		
Mercia Mudstone	Secondary B Aquifer	May be important in supporting local abstractions or in providing baseflow to rivers and streams
Site E – Solid Geology		
Gunthorpe Member	Secondary B Aquifer	May be important in supporting local abstractions or in providing baseflow to rivers and streams
Edwalton Member		
Radcliffe Member		
Tarporley Siltstone Formation		
Solid Geology - National Grid Willington 400 kV substation		
Gunthorpe Member-Mudstone	Secondary B Aquifer	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers

13.6.20 The Sites are not located within a groundwater Source Protection Zone.

Historical Mining

13.6.21 Engagement Pending. Details in relation to historical mining records and baseline information are currently pending.

13.7 Design, Mitigation and Enhancement Measures

13.7.1 The process of EIA will identify the baseline at the Site with regard to soils, geology, hydrogeology and potential contamination. This will be established through the finalisation of a Preliminary Risk Assessment ('PRA') and engagement with Local Authorities, mining information from Johnson Poole and Bloomer and consultation with the Environment Agency where necessary.

13.7.2 Ground investigations will be provided at the appropriate stage of the process through early engagement with statutory bodies and stakeholders, and prior to construction to confirm the ground conditions. The findings of the ground investigation would be used to inform a Remediation Strategy and additional mitigation measures necessary as part of the Proposed Development.

13.7.3 Embedded mitigation measures are likely to include good practice measures during construction, best practice and adhering to industry standards, implemented through an CEMP, SMP, OEMP and DEMP, for example:

- e.g. treatment and attenuation of run off from construction working areas to ensure that this does not wash into watercourses and cause pollution downstream;
- Suitable materials management during construction to avoid cross contamination and appropriated material re-use; and
- Appropriate piling techniques, if required, governed by specialist contractor method statements.

13.8 Description of Potential Likely Significant Effects

Construction and Decommissioning

13.8.1 The construction and decommissioning of the Proposed Development will involve similar activities and will include the excavation of soils, construction/removal of small foundations associated with the Solar Development Sites and more substantial foundations associated with the BESS together with thed installation of underground cables in utility trenches. During the construction / decommissioning phase, the likely effects from the temporary works will be:

- The construction, and ground workers during the works arising from potentially contaminated soils and groundwater;
- On-Site and off-Site users during the works due to disturbance of the ground;
- Potential ground gas and vapour emissions to development from potentially contaminated soils and groundwater; and
- On-Site and off-Site controlled waters, including underlying aquifers and surface waters during the Works.

Operation

13.8.2 The operation of the Solar Development Sites will comprise PV panels with no enclosed structures or buildings. It is understood there is no requirement for regular on-site workers and therefore no new human health receptors will be introduced through Operation.

13.8.3 The Cable Corridors will comprise buried cables.

13.8.4 The location of the BESS remains unknown at this stage, however, it is understood this will comprise buildings and/or structures It is understood there may be a requirement for new buildings or structures on the National Grid Willington 400 kV substation Site to receive the cable connection, final designs to be confirmed.

13.8.5 The potential effects of the operational Site on ground conditions and contamination are expected to be minimal associated with the Solar Development Sites.

- The Operational impacts are expected to be limited to the Cable Corridors and the BESS, as follows Cable Corridors - Potential migration of ground gas along the Cable Corridors if suitable mitigation is not installed;
- Cable Corridors – underground infrastructure on potential contaminated soils and groundwater;
- BESS – Underground infrastructure on potential contamination soils and groundwater
- BESS – Future soft landscaping exposing potential soil and groundwater contamination; and
- BESS – On-Site and off-Site controlled wates including underlying aquifers and surface waters.

Decommissioning

13.8.6 The decommissioning impacts are included together with the Construction Impacts.

Table 13.3 Issues Scoped Into the Assessment

Matter	Rationale
Construction & Decommissioning	Construction and groundworkers during the works arising from potentially contaminated soils and groundwater.
Construction & Decommissioning	Potential ground gas and ground vapour emissions to the development from potentially contaminated soils and groundwater.
Construction & Decommissioning	On-Site and off-Site users during the construction works due to disturbance of the ground such as dusts.

Matter	Rationale
Construction & Decommissioning	On-Site and off-Site controlled waters including underlying aquifers and surface waters.
Operation	Potential migration of ground gas and vapours along the Cable Corridors
Operation	Underground infrastructure on potential soil and groundwater contamination
Operation	BESS - Underground infrastructure on potential contamination soils and groundwater
Operation	BESS - Future soft landscaping exposing potential soil and groundwater contamination
Operation	On-Site and off-Site controlled wates including underlying aquifers and surface waters

13.9 Impacts Scoped Out of the Assessment

13.9.1 Once the Proposed Development is designed and constructed incorporating the embedded mitigation, the passive operational nature of the Solar Development Sites indicates limited impact on the ground conditions. The operational impacts within the Solar Development Sites on ground conditions are scoped out.

13.10 Assessment Methodology

13.10.1 The following section provides an overview of the approach to EIA Assessment in relation to soils, geology, hydrogeology and potential contamination. It will largely follow the overarching EIA methodology defined earlier in this Scoping Report but differs in some respects with regard to defining the sensitivity of receptors. For the assessment of potential ground contamination risks, the risk assessment categories established by CIRIA guidance will be used to judge potential significance of effects.

Magnitude of Impact

13.10.2 The magnitude of potential impacts to soils, geology, hydrogeology and potential contamination during both construction & decommissioning, operation he Proposed Development will be described using the following terms in **Table 13.4**.

Table 13.4 Magnitude of Impacts

Magnitude of Impact	Examples of Impact
High	Loss of resource and/or quality and integrity of resource. Loss of exposed designated geological feature. Very high risk of exposure of a sensitive receptor to potentially harmful levels of contamination via a confirmed pathway.
Medium	Loss of resource but not adversely affecting the integrity, partial loss of damage to key characteristics, features, quality or elements. Quarrying of rock for imported fill, or substantial changes due to cuttings. Proven source – pathway – receptor pollutant linkage identified with elevated level of contamination recorded/or potential to be present.
Low	Some measurable changs in attributes, quality, vulnerability. Superficial disturbance to geology / changes in geomorphology. Identified source – pathway – receptor pollutant linage identified but contamination likely to be low risk.
Negligible	Very minor loss or detrimental alteration. Changes to Made Ground deposits. No source – pathway – receptor pollutant linkage identified.
No Change	No loss or alteration of characteristics, features or elements. No observable impact in either direction.

Sensitivity of Receptors

13.10.3 There are no published criteria for the assessment of effects on ground conditions for the purposes of EIA. Receptor sensitivity and significance criteria were therefore developed based on professional judgement and relevant experience using the criteria outlined in **Chapter 5: EIA Methodology**.

13.10.4 CIRIA C522 Contamination Land Risk Assessment – A Guide to Good Practice, 2001 presents a description of risk categories of the methodology

and how significance of effect will be assessed as part of the ES Chapter. **Table 13.4** presents the Significance of Risk Categories.

13.10.5 **Table 13.5** presents the sensitivity of potential receptors.

Table 13.5 Receptor Sensitivity

Receptor	Sensitivity
Controlled Waters – Attribute with a very high quality and rarity on a regional to international scale with very limited potential for substitution. Examples include Principal Aquifer / Secondary Aquifer used for public water supply. Groundwater Source Protection Zone I. . Human Health (Future users of the Proposed Development, off-site users and residential residents with gardens, Construction workers). Land Contamination – Category 1 or 2 Part 2A Site Designated. Development on land designated may result in a high probability that severe harm could arise or there is evidence that severe harm is currently happening. This risk, if realised, is likely to result in substantial liability. Urgent investigation (if not already undertaken) is required and remediation is likely to be required.	Very High
Controlled Waters – Attribute with a high quality and rarity on a local scale with limited potential for substitution or attribute with a medium quality. Principal Aquifer used for local supply. Groundwater Source Protection Zone II/III Human Health (Future users of the Proposed Development, off-site users and residential residents within apartments (with garden space), Construction workers). Land Contamination – Category 1 or 2. Development on land considered in this category may result affect the soils resulting in high probability and present substantial liability. Urgent investigation (if not already undertaken) is required and remediation may be necessary in the short term and is likely to be required over the longer term.	High
Controlled Waters – Attribute with a medium quality and rarity on a local scale with limited potential for substitution on a regional and national scale. Examples will include Secondary Aquifer (not used for public water supply). Land Contamination - It is possible that harm could arise. However, it is either relatively unlikely that harm would be severe or if harm were to occur it is more likely that the harm would be relatively mild.	Medium

Receptor	Sensitivity
Investigation (if not already undertaken) is normally required to clarity the risk and determine the potential liability. Some remedial work may be required in the longer term. Human Health (Future users of the Proposed Development, off-site users and Public Open Space Construction workers). Land Contamination – Category 2 or 3. Development on land designated within this category. The development may affect the soils, which may results in harm arising. However, it is either relatively unlikely that harm would be severe or if harm were to occur it is more likely that the harm would be relatively mild. Investigation (if not already undertaken) is normally required to clarity the risk and determine the potential liability. Some remedial work may be required in the longer term.	
Controlled Waters – Attribute with a low quality and rarity on a local scale with limited potential for substitution. Examples include Unproductive Strata and Made Ground. Human Health (Future users of the Proposed Development, off-site users and Industrial/commercial properties. Construction workers. Land Contamination – Category 3 and 4 Land Contamination Designation. Development on land designated, it is possible that harm could arise, but it is likely that this harm would at worst normally be mild.	Low
Controlled Waters – Attribute with very low importance and rarity on a local scale. Made Ground and no water bearing units. Land Contamination – Category 4 land designation. Development on land included in this category represents a low probability that soil disturbance form the development would result in harm. In the event of such harm it is not likely to be severe.	Negligible

Significance of Effect

13.10.6 The approach of land quality practitioners to assess the significance of effects of a development at a site on the site's geology, soils, hydrogeology and potential contamination status through changes to the ground conditions as a result of the development and the indirect effects of those changes on the proposed end-users is two-fold; a Development Impact Assessment and a Land Quality Assessment. A Conceptual Site Model is then prepared outlining the impacts on the receptors.

13.10.7 A Development Impact Assessment identifies the Proposed Development, its parameters of development and its likely operating rhythm. This allows the likely impact on the environmental to be established.

13.10.8 A Land Quality assessment identifies the baseline information available including geology, hydrogeology, soil environment, mining a ground gas status, which allows an assessment of impact to be understood.

13.10.9 The significance of the effect has been determined taking into account the magnitude of impact and the sensitivity of the receptor. The matrix presented in **Table 13.5** has been used to determine overall significance of the effect, together with professional judgement.

13.10.10 The interaction of the risk and receptor sensitivities results in an overall resultant effect, which will be assessed as outlined in **Table 13.5**.

Table 13.5 Significance of Resultant Effects

Receptor Sensitivity	Magnitude of Impact			
	High	Medium	Low	Negligible
Very High	Substantial	Major	Moderate	Moderate
High	Major or Substantial	Major or Moderate	Moderate	Minor
Medium	Major or Moderate	Moderate	Minor	Negligible
Low	Minor	Minor	Minor	Insignificant
Negligible	Negligible	Negligible or Minor	Negligible or Minor	Minor

13.11 Limitations and Assumptions

13.11.1 It is considered by Waterman that there will not be significant limitations in the data available for the preliminary assessment or the impact assessment

completed as part of engagement on environmental information and the subsequent ES. The assessment will be undertaken on the basis of available documentary sources and on a review of risks from within the study area.

13.11.2 The assessment will be considered as objective, taking into account planning policy, legislation and published guidance in the assessment methodology and determination of significant effects. The assessment will use data from the PRA and third-party ground investigation data. An assessment of risk will allow an assessment to be made and presented as value judgements using professional experience.

13.11.3 With regard to any further intrusive investigation works that may be recommended pre-construction, the ground conditions information gained will relate to the point of excavation and cannot necessarily guarantee a continuation of the ground conditions throughout any non-inspected area of the Site. Whilst such exploratory holes would usually provide a reasonable indication as to the general ground conditions, these cannot be determined with complete certainty. These limitations would be considered and taken into account in the updated risk assessment and any Remediation Strategy or Soil Management Plan to be approved at that time.

13.11.4 Access could not be gained to the Willington 400 kV substation. The current site details will be taken from on-line Google Mapping

14.0 HEALTH

14.1 Introduction

14.1.1 This chapter of the Scoping Report presents the scope of the environmental assessment for Health. Specifically, the Chapter presents the policy and legislative context, the approach to collecting baseline data and then an overview of the relevant baseline conditions within the Site and surrounding area, based on current knowledge and understanding. It concludes by setting out the scope of assessment including, with justification, those health matters that are proposed to be scoped out and in for detailed assessment and concludes by outlining the method that will be used to undertake the detailed assessment.

14.2 Legislation, Planning Policy and Guidance

14.2.1 Legislation planning policy and guidance relating to health, and pertinent to the Proposed Development comprises:

Legislation

- The EIA Regulations– Regulation 5(2) requires EIAs to identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the proposed development on human health.

National Planning Policy

- NPS EN-1 (2026) – Section 4 sets out the general assessment principles for nationally significant infrastructure projects, including the consideration of potential effects on human health;
- NPS EN-3 (2026) – Provides the primary basis for decision-making on renewable energy infrastructure, including solar photovoltaic development; and
- NPPF (2025) – Paragraphs 96–100 set out that planning decisions should promote healthy, inclusive and safe communities. This includes

enabling and supporting healthy lifestyles and, through positive planning of shared spaces, community facilities and local services to enhance health, social and cultural well-being for all sections of the community.

Local Planning Policy

- SDDC (2016), South Derbyshire Local Plan Part 1 (2011–2028) – specifically Policy SD6 (Sustainable Energy and Power Generation), which supports renewable energy development subject to environmental and amenity considerations;
- SDDC (2016), South Derbyshire Local Plan Part 1 (2011–2028) – specifically Policy SD1 (Amenity and Environmental Quality), which seeks to ensure that development does not result in unacceptable impacts on environmental quality or residential amenity, including noise, air quality and disturbance;
- SDDC (2016), South Derbyshire Local Plan Part 1 (2011–2028) – including Policy BNE4 (Landscape Character and Local Distinctiveness), which requires development to respond positively to landscape character; and
- SDDC (2017), South Derbyshire Local Plan Part 2 – sets out detailed development management policies relating to landscape, rural development, and environmental protection.

National Guidance

- NPPG (2024) – Provides further guidance on promoting healthy and safe communities and identifies health impact assessments as a useful tool where there are expected to be significant impacts;
- ISEP Determining Significance for Human Health In Environmental Impact Assessment (2022)[139] – Provides guidance on consideration of health as a topic within an EIA; and
- ISEP Guide to Determining Significance For Human Health In Environmental Impact Assessment (EIA) (2025).

Local Guidance

- Joined Up Care Derbyshire Integrated Care Strategy (2023), Sets out a commitment to improving population health and reducing health inequalities across Derbyshire, including through prevention, supporting healthier lifestyles, and coordinating access to health and care services, alongside addressing the wider determinants of health such as housing, employment and the environment; and
- SDDC (2017), South Derbyshire Design Guide Supplementary Planning Document – provides detailed guidance on the implementation of design policies, including principles relating to layout, active travel, community safety and healthy lifestyles.

14.3 Study Area

14.3.1 A Local Impact Area ('LIA') has been identified as Middle Super Output Areas ('MSOAs') South Derbyshire 001, 002, 003, 005, East Staffordshire 004, 005, 007, 008, 011, and Derbyshire Dales 010, to provide an understanding of the characteristics of the area surrounding the Site. A Wider Impact Area ('WIA') is made up of the South Derbyshire, East Staffordshire and Derbyshire Dales local authority boundaries, as it is expected that they will capture a large proportion of the impacts.

14.3.2 The extent of this impact area may vary for some receptors following best practices or the availability of data. Where this is the case, this will be highlighted within the ES Health Chapter. A map of the proposed study area is shown in **Figure 14.1**: **Health Study Area (Appendix 1.1: Figures)**

14.4 Sensitive Receptors

14.4.1 The assessment will primarily focus on the effects on people in the local authority areas of South Derbyshire, Derbyshire Dales and East Staffordshire, as well as the local area within which the Proposed Development is located. Where relevant, baseline data and potential effects at regional and national levels will also be provided. Whilst people are ultimately the receptors to any

effects, the assessment will consider the ways in which health and wellbeing may be influenced through environmental and social pathways, together with the scale and spatial extent of any effects. Specific receptors will be selected using a tiered evidence-based approach, that integrates spatial data, statutory engagement and baseline health profiles. **Table 14.1** provides an overview of the types of receptors which will be included and potential effects to be assessed.

Table 14.1 Identified Receptors and Effects

Receptor	Effect
Local population	Potential effects on health and wellbeing arising from environmental pathways during construction and operation, including changes in noise levels, air quality and visual amenity.
Groups vulnerable through characteristics including physical and mental health issues	Greater sensitivity to potential environmental effects, including noise, air quality and changes in access, which may result in disproportionate effects on health outcomes.
Groups vulnerable through geography	Increased potential for exposure to environmental effects for those located in close proximity to the Proposed Development, as well as greater susceptibility in areas of relative deprivation due to existing health inequalities and baseline health conditions.
PRoW and recreational receptors	Potential effects on wellbeing associated with temporary disruption during construction and any changes to access, amenity and recreational use of the Site and surrounding area.

14.5 Baseline Environment and Future Baseline

Population

14.5.1 Based on the latest 2024 mid-year population estimates, South Derbyshire had a population of 117,493 people. Since 2014, the population of South Derbyshire grew by 20.9%, which equates to an increase of 20,280 people. When compared to the East Midlands (22.9%) and England (23.1%), South Derbyshire has a similar proportion of younger aged 0-19 (23.2%). There is a

higher proportion of people aged 25 to 64 in South Derbyshire (53.8%) than the East Midlands (51.2%) and England (52.1%). Conversely there are fewer older people aged over 65 in South Derbyshire (18.8%) when compared to the South East region (19.9%) but similar to across England (18.7%).

Deprivation

14.5.2 A review of the English Index of Multiple Deprivation ('IMD'), 2025 shows that South Derbyshire is 210th out of 317 local authorities nationally meaning that it is less deprived than 71% of local authorities nationally.

14.5.3 Out of the seven indicators of deprivation, South Derbyshire is most deprived in terms of Health and Disability falling within the 50% of least deprived local authorities.

Health Profile

14.5.4 At 79.4 and 83.2 years respectively, life expectancy for both men and women in South Derbyshire is marginally higher than at both the regional and the country level.

14.5.5 When standardised against the England average (100), South Derbyshire performs marginally better than both national and regional averages across the majority of mortality indicators (6 out of 8), including mortality from all causes, premature mortality (under 75), and deaths attributable to cancer, cardiovascular disease, coronary heart disease, stroke, respiratory disease and preventable causes[140].

14.5.6 In terms of behavioural risk factors, obesity among reception-aged children in South Derbyshire is consistent with regional and national averages. However, for Year 6 children, South Derbyshire performs better than both regional and national levels, with a lower proportion of children classified as obese.

14.5.7 However, emergency hospital admissions for all causes are slightly above the England standardised average (101 compared with 100), with a more pronounced difference observed for emergency admissions related to coronary heart disease (108.7 compared with 100).

PRoW

14.5.8 South Derbyshire's Rights of Way Network is made up of public footpaths, bridleways and byways, managed by DCC.

14.6 Design, Mitigation and Enhancement Measures

14.6.1 The Proposed Development has the potential to influence health and wellbeing in the local area, including through the application of good design principles which can help to minimise adverse effects and maximise potential benefits. These effects may arise during the construction and decommissioning phases, for example through temporary changes to the local environment, as well as during the operational phase where longer-term conditions may influence health outcomes.

14.6.2 Mitigation would be secured through the preparation and implementation of a suite of management plans, including but not limited to:

- An OCEMP, which would set out measures to control noise, vibration, air quality (including dust) and general site disturbance, thereby minimising potential effects on local amenity and wellbeing;
- An OCDTMP, which would manage construction vehicle routing, access arrangements and traffic movements to reduce disruption to the local highway network and associated community effects;
- An OEMP, where required, to ensure that any operational environmental effects are appropriately controlled; and
- An ODEMP and OCDTMP, to manage potential effects arising during the decommissioning phase in a similar manner to construction.

14.6.3 Through the implementation of these measures, potential adverse effects on health and wellbeing would be minimised and reduced to a level that is not significant.

14.7 Description of Potential Likely Significant Effects

14.7.1 Potential health effects have been identified using a wider determinants of health approach, consistent with ISEP guidance, and include those arising through environmental, social and behavioural pathways across the construction, operational and decommissioning phases. This includes:

- Effects on health and wellbeing arising from construction-related environmental changes (e.g. noise, air quality and disturbance), particularly affecting nearby residents and sensitive groups;
- Effects associated with changes in access and connectivity, including temporary or permanent disruption to PRoWs, with implications for physical activity and recreation;
- Effects on mental and physical wellbeing arising from changes to local amenity, including visual amenity, landscape character and environmental quality;
- Potential indirect socio-economic and community effects associated with the temporary presence of construction workers;
- Potential differential effects on vulnerable population groups, including those more susceptible to environmental stressors or experiencing existing health inequalities; and
- Potential wider health effects associated with land use change and renewable energy generation, including contributions to climate change mitigation (beneficial).

Table 14.2 Potential Health Effects and Assessment Approach

Potential Health Effect	Relevant Receptors	Assessment Approach
Temporary environmental effects during construction (e.g. noise, air quality, disturbance)	Nearby residents; sensitive receptors (e.g. schools, older people, those with pre-existing health conditions)	Assessed within the EIA through topic-specific chapters (e.g. noise and air quality), with effects on health and wellbeing considered within the ES Health chapter via established exposure pathways
Indirect effects associated with construction worker presence (e.g. use of local accommodation, potential influence on services and community dynamics)	Local residents; local service providers; temporary construction workforce	Considered qualitatively within the ES Health chapter as indirect socio-economic and community effects; not expected to result in significant effects requiring detailed technical assessment
Effects on health and wellbeing arising from changes to local amenity (e.g. visual amenity, landscape character, environmental quality)	Local residents; users of the wider landscape; recreational users	Assessed within the EIA (e.g. landscape and visual assessment), with secondary effects on mental and physical wellbeing considered within the ES Health chapter
Effects associated with changes to access, including diversion or disruption of PRoWs	Walkers, cyclists and recreational users; local communities	Assessed within the EIA (e.g. transport and access assessments), with implications for physical activity and recreation considered within the ES Health chapter

Potential Health Effect	Relevant Receptors	Assessment Approach
Differential effects on vulnerable or sensitive population groups	Vulnerable groups (e.g. older people, children, those with disabilities or existing health inequalities); geographically isolated communities	Considered within the ES Health chapter through application of a health inequalities lens, drawing on findings from relevant EIA technical assessments
Indirect health effects associated with land use change and renewable energy generation (e.g. climate-related health effects/benefits)	Wider population (local, regional or national scale)	Considered qualitatively within the ES Health chapter; effects are indirect and primarily beneficial and do not require detailed assessment within individual EIA topic chapters

14.8 Impacts Scoped Out of the Assessment

14.8.1 The effects of the Proposed Development on healthcare capacity will not be assessed, as the operational phase is not expected to result in a permanent increase in the local population; therefore, demand for healthcare services is not anticipated to change materially. If needed construction workers will be treated at the local Accident & Emergency ('A&E').

14.9 Assessment Methodology

14.9.1 A review of relevant national, regional and local policies will be undertaken to identify key health issues relevant to the Proposed Development.

14.9.2 In addition to the baseline conditions set out above, the assessment of effects will consider baseline health conditions and relevant environmental and social determinants of health.

14.9.3 Data may be used at the ward, district or county level, as appropriate. Where the Zone of Influence of the Proposed Development differs from these spatial

levels, other metrics such as proximity, travel distances and the extent of environmental change will be used to inform the assessment.

Table 14.3 Matrix of Significant Effects

Receptor Sensitivity	Magnitude of Impact			
	High	Medium	Low	Very Low
High	Major Beneficial / Adverse	Major Beneficial / Adverse	Moderate Beneficial / Adverse	Minor Beneficial / Adverse
Medium	Major Beneficial / Adverse	Moderate Beneficial / Adverse	Minor Beneficial / Adverse	Negligible
Low	Moderate Beneficial / Adverse	Minor Beneficial / Adverse	Negligible	Negligible
Very Low	Minor Beneficial / Adverse	Negligible	Negligible	Negligible

Construction, Operation and Decommissioning

14.9.4 The assessment of effects will consider the following in relation to the impacts of the Proposed Development on baseline conditions:

- The likely scale and duration of impacts of the Proposed Development and any relevant cumulative schemes;
- The sensitivity of receptors, including vulnerable population groups, to these impacts; and
- Based on the baseline conditions, sensitivity of receptors and magnitude of any effects, and in the context of relevant policy, professional judgement will be used to evaluate the significance of potential health effects. Whilst there is no single standard methodology for assessing health in EIA, significance will be determined in line with established EIA

practice, reflecting the relationship between the magnitude of effect and receptor sensitivity.

14.9.5 The assessment will seek to quantify effects where possible; however, a proportion of effects will be assessed qualitatively. Effects are defined as follows:

- Beneficial effects indicate a positive influence on health and wellbeing;
- Negligible effects indicate no discernible influence on health and wellbeing;
- Adverse effects indicate a negative influence on health and wellbeing; and
- No effect indicates no change to baseline conditions.

14.9.6 Receptors will be defined according to the appropriate spatial scale, which may vary depending on the type of effect. Where relevant, effects may be assessed at multiple spatial scales (e.g. local and district level).

14.9.7 Where an effect is identified as beneficial or adverse, its scale will be categorised as follows:

- Minor: a small change to baseline conditions and/or a limited number of receptors affected;
- Moderate: a noticeable change to baseline conditions and/or a moderate number of receptors affected; and
- Major: a substantial change to baseline conditions and/or a large proportion of receptors affected.

14.9.8 Effects classified as moderate or major, whether adverse or beneficial, will be considered significant.

14.10 Limitations and Assumptions

14.10.1 The assessment is subject to a number of assumptions, limitations and uncertainties. Where relevant, established guidance and professional judgement have been applied to ensure a proportionate and reasonable worst-

case approach is adopted. Distances to local services and social infrastructure have been measured manually using publicly available mapping tools and are therefore approximate. The assessment is based on publicly available baseline data and undertaken at a strategic level and draws on findings from other technical chapters within the EIA, meaning that any uncertainties within those assessments are carried through to the consideration of health effects.

15.0 LANDSCAPE AND VISUAL IMPACT

15.1 Introduction

15.1.1 This chapter of the Scoping Report presents the scope of the detailed environmental assessment for Landscape and Visual for the Proposed Development. Specifically, this section of the Scoping Report presents the policy and legislative context, the approach to collecting baseline data relevant to this scoping chapter and an overview of the relevant baseline conditions within the Site and surrounding area. It concludes by setting out the scope of assessment including, with justification, those effects that are proposed to be scoped in or out for detailed assessment, and by outlining the method that will be used to undertake the detailed environmental assessment.

15.1.2 Landscape effects relate to changes to the landscape as a resource, including physical changes to the fabric or individual elements of the landscape, its aesthetic or perceptual qualities, and landscape character.

15.1.3 Visual effects relate to changes to existing views of identified visual receptors (people), from the loss or addition of features within their view due to the construction, operation and decommissioning of the Proposed Development. For example, this may be residents, people at work, or people travelling on PRoW.

15.1.4 Landscape effects and visual effects will therefore be assessed and reported separately within this chapter.

15.1.5 The LVIA will be undertaken with reference to other environmental topics, including ecology, heritage, arboriculture, and glint and glare assessments.

15.2 Legislation, Planning Policy and Guidance

15.2.1 **Chapter 5: EIA Methodology** of this Scoping Report sets out an overview of the legislation, planning policy and guidance relevant to informing the scope of the EIA. These will be kept under review during the preparation of the LVIA, and any emerging policy or legislation will be considered as appropriate.

Those most pertinent to Landscape and Visual, and relevant to the Proposed Development at the time of writing comprise:

Legislation

- The European Landscape Convention (2022)[141]; Planning (Listed Building and Conservation Areas) Act 1990[142];
- The Town and Country Planning (Tree Preservation) (England) Regulations 2012[143];
- The Countryside and Rights of Way Act 2000;
- The Natural Environment and Rural Communities Act 2006; and
- The Hedgerow Regulations 2024[144].

National Planning Policy

- NPS EN-1 (2026) with particular regard to Section 5.10 as well as Paragraphs 4.7.1, 5.10.1, and 5.10.6;
- NPS EN-3 (2026) with particular regard to Paragraphs 2.10.96 to 2.10.98;
- NPS EN-5 (2026) with particular regard to Paragraphs 2.9.7 to 2.9.19 and 2.10.5 to 2.10.8; and
- NPPF (updated February 2025).

Local Planning Policy

- South Derbyshire Local Plan Part 1 (Adopted 2016);
- South Derbyshire Local Plan Part 2 (Adopted 2017);
- South Derbyshire Local Plan Part 1 Review (Emerging, 2022–2041);
- South Derbyshire Local Plan Part 2 Review (2025);
- Derbyshire Dales Local Plan;
- Derby City Local Plan Part 1 – Core Strategy (Adopted);
- East Staffordshire Local Plan (Adopted and as updated);

- Hilton, Marston-on-Dove and Hoon Neighbourhood Development Plan 2020- 2035 (Made 2021)[145];
- Etwall Neighbourhood Plan[146]; and
- Hatton Parish was designated as a Neighbourhood Area on 7 November 2024, enabling preparation of a Neighbourhood Development Plan; however, no plan has yet been submitted or adopted.

National Guidance

- PPG: The Natural Environment (2024)[147];
- PPG: Light Pollution (2019)[148]; and
- PPG: Renewable and Low Carbon Energy (2023)[149].

Local Guidance

- The Landscape Character of Derbyshire (DCC, 2003; Fourth Edition, March 2014)[150];
- Derbyshire Dales Landscape Character Assessment (DDC 2004)[151];
- Staffordshire Landscape Character Assessment / 'Planning for Landscape Change' Supplementary Planning Guidance (SCC, 2000; adopted 10 May 2001)[152];
- 6Cs Green Infrastructure Strategy (Derby–Nottingham–Leicester Sub-Regional Partnership, 2010)[153]; and
- Green Infrastructure Strategic Plan (Stafford Borough Council, updated November 2025)[154].

Other Relevant Guidance

- Guidance Note 01/21: The Reduction of Obtrusive Light[155].

15.3 Engagement

15.3.1 To date, a series of introductory meetings have been held with various interested parties including the host authorities. A summary of these meetings

is provided at **Chapter 5: EIA Methodology** of the EIA Scoping Report but have generally focussed on high-level information about the Proposed Development.

15.3.2 Following the receipt of the EIA Scoping Opinion and as the Proposed Development progresses, the Applicant will seek agreement from the relevant interested parties with regard to the approach and scope of the LVIA. This is likely to constitute a series of virtual meetings, accompanied site visits, and email correspondence, all of which will be summarised by key issues and outcomes within the ES.

15.3.3 With regards to the Landscape and Visual Chapter, it is expected that a series of meetings will be convened with the host authorities and other key stakeholders as appropriate, to agree the assessment methodology as well as scope of landscape and visual receptors and representative viewpoints, noting that the scope is likely to evolve as the design progresses. The engagement is likely to be in the form of on-Site meetings and virtual presentations, as well as ad hoc telephone and email correspondence.

15.3.4 Should it become apparent, through the on-going design and assessment process, that the potential for significant adverse landscape or visual effects on a receptor changes, the receptor will be scoped in/out of the assessment, with accompanying justification and thorough engagement with the relevant host authorities and landscape consultees.

15.4 Study Area

15.4.1 The LVIA study area identifies the geographic area across which significant landscape or visual effects may occur as a result of the Proposed Development, and has been developed with reference to Guidelines for LVIA, Third Edition (GLVIA3)[156].

15.4.2 GLVIA3 paragraph 5.2 states “the study area should include the site itself and the full extent of the wider landscape around it which the proposed development may influence in a significant manner”.

15.4.3 GLVIA3 also sets out at paragraph 6.2 that, at the scoping stage, the Study Area will only be defined in a preliminary way and may change as more detailed analysis is undertaken, discussion with the host authority is progressed, and the design of the Proposed Development is developed.

15.4.4 As shown on **Figure 15.1: LVIA Study Area**, a 2km radius from the draft Order Limits has been adopted as an initial study area to ensure that all potentially significant effects are captured in a proportionate and robust manner.

15.4.5 To understand the extent of the landscape over which the Proposed Development may give rise to significant landscape and visual effects, an wider area of search of 5km from the draft Order Limits boundary was investigated via a desk-based review principally noting prevailing patterns of landform, settlement and vegetation, and the likely viewing opportunities of the Proposed Development. The 5km area of search is based on professional judgement and experience with developments of a similar scale and context, and the resulting extent of significant effects, indicating that 5km is an appropriate initial spatial boundary.

15.4.6 The extent of the study area will be reviewed through the iterative design and assessment process and agreed with the host authorities. This will be informed by detailed desk-based analysis, field surveys undertaken in different seasonal conditions. This will include the preparation of a series of Zone of Theoretical Visibility (ZTV) maps to indicate where in the local landscape the different components of the Proposed Development would be theoretically visible from.

15.5 Sensitive Receptors

Landscape

15.5.1 Landscape receptors have been identified via a review of published landscape character assessments, maps and aerial photography, relevant planning policy and fieldwork surveys.

15.5.2 The study area and the Site are covered by several Landscape Character Assessments and related studies, as set out below, together with the relevant character areas:

- National Character Areas[157]:
  - 68: Needwood and South Derbyshire Claylands (Solar Development Site A, Solar Development Site B, Solar Development Site C);
  - 69: Trent Valley Washlands (Solar Development Site D, Solar Development Site E);
- The Landscape Character of Derbyshire (DCC, 4th Edition, 2014)[158];
  - Needwood & South Derbyshire Claylands LCA:
  - Riverside Meadows LCT;
  - Settled Farmlands LCT;
  - Trent Valley Washlands LCA:
  - Wet Pasture Meadows LCT;
  - Lowland Village Farmlands LCT;
  - Riverside Meadows LCT;
- Planning for Landscape Change Supplementary Planning Guidance; and
  - Riparian alluvial lowlands LCT.

15.5.3 To provide a finer scale of assessment than what is provided in the published character studies, Local Landscape Character Areas ('LLCA') will be defined by the Applicant via desk study and fieldwork surveys in line with industry guidance, namely An Approach to Landscape Character Assessment. Maps and details of the LLCAs will be issued to the host authorities for comment and will be confirmed prior to preparation of the ES.

15.5.4 The landscape effects of the Proposed Development will also be reported at Site level with regard to the landscape character across the Site boundary. Individual features, specifically trees, hedgerows, and watercourses within the Site, will also be assessed in terms of their landscape resource.

Visual Amenity

15.5.5 A range of visual receptors and representative viewpoints likely to experience views of the Proposed Development will be identified through the preparation of ZTV mapping and subsequent field survey. The number, location and distribution of viewpoints will be agreed, where appropriate, through engagement with the host authorities. Receptors are anticipated to include the following:

- Residential receptors, including:
  - Site A: Boylestone, Sapperton, Harehill, Sudbury, Foston and Oaks Green, as well as dispersed properties within the surrounding landscape;
  - Site B: Church Broughton, Boylestone and Sutton on the Hill, together with dispersed properties within the surrounding landscape;
  - Site C: Sutton on the Hill, Dalbury, Trusley and Etwall;
  - Site D: Hilton, Marston on Dove and Hatton; and
  - Site E: Willington, Egginton, Stretton and Rolleston on Dove.
- Recreational receptors, including users of the local PRoW network;
- Recreational users of the National Cycle Network and associated routes, including NCN6 and local promoted routes such as the Derby City Millennium Routes, Mickleover Greenway, and routes associated with the Trent Valley, Trent and Mersey Canal, and River Trent corridors;
- Transport receptors, including road users on the strategic and local highway network, notably the A50, A516, A38 and A5132, as well as connecting local roads; and

- Visitors to local recreational and tourist destinations, including Mercia Marina and the Sudbury Estate.

15.5.6 Photographs taken during fieldwork surveys will be provided and reported upon in the ES to help demonstrate the nature of baseline views, including the extent of existing screening. These photographs will be presented as annotated photographs (Type 1 as per LI TGN 06/19).

15.5.7 Photomontages (Type 4 as per LI TGN 06/19) will also be provided from a selection of viewpoints to illustrate the likely extent and nature of changes in baseline views in winter and summer. All photographs and photomontages will be prepared in accordance with Landscape Institute TGN 06/19[159].

15.6 Baseline Environment and Future Baseline

15.6.1 This section provides an overview of the existing baseline in terms of landscape character and visual amenity across the study area.

Landform and Hydrology

15.6.2 The study area lies within the gently undulating lowlands of the Needwood and South Derbyshire Claylands (NCA 68) and Trent Valley Washlands (NCA 69). Landform varies from softly rolling farmland and plateau landscapes, to the flat, open floodplains of the Trent and Dove valleys, creating broad horizons with limited topographic variation.

15.6.3 Hydrology is defined by the River Trent, River Dove and associated tributaries, alongside a network of ditches and drains. Floodplain areas are characterised by wet pasture and seasonal inundation, while heavier clay soils in the Claylands result in slower drainage, with ponds and field ditches common. Together, these features form a managed but strongly influential hydrological network across the landscape.

15.6.4 More information relating to Hydrology can be found in **Chapter 18: Water Environment and Flood Risk**, of the Scoping Report.

Land Use, Infrastructure and Settlement

15.6.5 The study area is predominantly characterised by mixed agricultural land use, including a combination of arable farming and improved pasture, reflecting the Settled Farmlands, Settled Plateau Farmlands and Lowland Village Farmlands landscape types. Fields are typically medium to large in scale, defined by hedgerows, with pockets of wetter grazing land associated with the Riverside Meadows and Wet Pasture Meadows along river corridors. Settlement is dispersed, comprising isolated farmsteads, small hamlets and villages, with larger settlements such as Burton upon Trent and Derby influencing the wider context.

15.6.6 Transport infrastructure is well established, with strategic routes including the A50, A38, A516 and A511 crossing the landscape and connecting surrounding towns and villages. A network of local roads and lanes provides access to agricultural land and settlements, often following field and settlement patterns.

15.6.7 The landscape also contains notable infrastructure associated with energy and industry, including overhead power lines, pylons and substations, particularly in proximity to the National Grid Willington 400 kV substation and along key corridors. Industrial and employment uses are present in the wider area, alongside active and former mineral workings and associated features.

15.6.8 These elements contribute to a landscape that is influenced by both agricultural practices and modern infrastructure, reflecting an evolving landscape character shaped by settlement, transport and energy development.

Vegetation Patterns

15.6.9 Vegetation within the study area reflects its lowland agricultural setting. Field boundaries are typically defined by managed hedgerows, often with mature hedgerow trees, particularly within the Settled Farmlands and Settled Plateau Farmlands landscape types. Tree cover is generally intermittent, occurring as scattered hedgerow trees, small woodland blocks, shelterbelts and groups associated with farmsteads and villages.

15.6.10 Along river corridors and floodplain areas, vegetation is more pronounced, with riparian tree belts, wet grassland, and areas of pasture associated with the Riverside Meadows and Wet Pasture Meadows. Ditches, streams and ponds support marginal and aquatic vegetation, reinforcing linear landscape features.

15.6.11 In less intensively managed areas, small pockets of rough grassland, scrub and semi-natural habitats occur, particularly along field margins and watercourses. Overall, this creates a mosaic of linear and clustered vegetation, which provides structure to the landscape while maintaining a generally open character, particularly within the broader floodplain areas.

PRoW

15.6.12 PRoW are distributed throughout the study area, which provide recreational access and connectivity between settlements. The following PRoW routes intersect or cross the Site boundary (as presented in **Figure 3.1: Environmental Constraints in Appendix 1.1: Figures**):

- Site A:
  - Footpath Foston and Scropton-SD22 3/1;
  - Footpath Church Broughton-SD12 29/1; and
  - Footpath Church Broughton-SD12 19/1.
- Site B:
  - Footpath Church Broughton-SD12 12/1;
  - Bridleway Barton Blount-SD4 1/1;
  - Footpath Church Broughton-SD12 10/1; and
  - Footpath Barton Blount-SD4 7/1.
- Site C:
  - Footpath Osleston and Thurvaston-SD34 46/1;

- Footpath Trusley-SD46 5/1;
- Bridleway Ash-SD1 15/1;
- Footpath Etwall-SD19 5/1;
- Footpath Etwall-SD19 3/2;
- Footpath Etwall-SD19 3/3; and
- Footpath Etwall-SD19 4/2.

- Site D:
  - Bridleway Marston on Dove-SD30 1/1.

- Site E:
  - Footpath Stretton CP 5;
  - Footpath Egginton-SD17 18/1;
  - Footpath Egginton-SD17 16/1; and
  - Footpath Willington-SD50 4/1.

Perceptual Qualities

15.6.13 The perception of the study area is influenced by its broad lowland setting within the Trent Valley Washlands and surrounding Claylands, together with the presence of river corridors, agricultural land and occasional areas of woodland. The generally open character, particularly within floodplain areas, contributes to intervisibility across the landscape, although this is locally moderated by hedgerows, tree belts and small woodlands.

15.6.14 The study area comprises road infrastructure, settlements, working farmland, watercourses and scattered vegetation. Away from main infrastructure corridors and settlements, parts of the study area may be perceived as relatively tranquil, with dispersed settlement patterns and generally low levels

of activity. Light pollution is typically limited in more rural areas, although it increases in proximity to settlements and main transport routes.

15.6.15 However, the presence of large-scale infrastructure, including strategic roads (such as the A50 and A38), overhead power lines, pylons and substations, introduces visual influence and localised noise.

15.6.16 Traffic movement along main routes and operational activity associated with infrastructure can reduce perceived tranquillity in certain locations.

Landscape Designations

15.6.17 Neither the Site nor the study area are covered by any statutory landscape designations (i.e. National Parks and National Landscapes).

Other Designations relevant to Landscape

15.6.18 Other relevant designations within the study area (and are presented in **Figure 3.1: Environmental Constraints** in **Appendix 1.1: Figures**) that may indicate landscape value include:

- SSSI – Hilton Gravel Pits north of Hilton;
- LNR – Scalpcliffe Hill;
- LNR – Sinfin Moor south of Derby;
- LNR e – Mickleover Meadows west of Derby;
- Registered Park and Garden – Bretby Park;
- Scheduled Monument – Medieval Village of Barton Blout (site of) west of Sutton on the Hill;
- Scheduled Monument – Castle Hill north of Tutbury;
- Scheduled Monument – Heathwood east of Milton;
- Scheduled Monument – St Mary's Church in Rolleston Drove;
- Scheduled Monument – Monk's Bridge south of Egginton; and
- Scheduled Monument – Potlock's House farm east of Willington.

15.6.19 Further detail relating to these designations is provided within **Chapter 8: Archaeology**, and **Chapter 9: Built Heritage** of this Scoping Report.

15.6.20 Further fieldwork will be undertaken in winter and summer conditions throughout the design and assessment process. The fieldwork will be informed by ZTV mapping, which will reflect emerging design refinements. The additional baseline work will also inform the classification of the LLCAs to be defined by the Applicant. Photography will be captured from each representative viewpoint in both summer and winter conditions, showing the effect of seasonality on the potential visibility of the Proposed Development.

15.7 Design, Mitigation and Enhancement Measures

15.7.1 The LVIA will inform the iterative design process of the Proposed Development. Embedded design measures will be included to reduce and, where achievable, avoid significant adverse effects. Such mitigation will include the sensitive siting of solar panels and associated structures in response to the prevailing landscape pattern and existing views experienced by sensitive receptors. New planting will be proposed to complement and enhance the existing green infrastructure network and will also be designed to reduce visibility of the proposed above ground elements.

15.7.2 Consideration will be given to the opportunity to introduce environmental measures (and mitigation) that will help to avoid or reduce the potential for an adverse significant effect to occur. In accordance with paragraph 7 of Schedule 4 of the EIA Regulations, the ES will be based on an EIA mitigation hierarchy which seeks to avoid, prevent, reduce and offset (where appropriate) likely significant effects.

15.7.3 Specific environmental measures relevant to the Landscape and Visual topic will be identified and will be considered as part of the assessments (i.e. the assessments of likely significant effects have been undertaken with the inclusion of the environmental measures, as these measures will form part of the Proposed Development).

15.7.4 At this stage of the project, the following environmental measures are proposed to be included within the Proposed Development:

- Existing trees and hedgerows will be retained as far as possible and protected in accordance with best practice (BS 5837);
- The substation compound will not be permanently lit, but rather lighting would be used when access or exit is required during hours of darkness, designed in accordance with Health and Safety requirements. External lighting will be mounted on columns up to 10 metres high. Task-specific lighting will be used in the case of emergency works. Passive Infra-Red controlled lighting will be used where access is required outside of working hours;
- Closed-Circuit Television ('CCTV') towers will be installed within the Proposed Development up to a maximum height of 5m above ground level. CCTV lighting will be passive infrared (not visible in the dark) and will not be permanently operated. CCTV lighting will be directed within the Site, incorporating measures to minimise light spill beyond the areas required to be lit; and
- The existing alignment of PRoW will be retained where practicable as part of the design of the Proposed Development. Temporary closure, diversion, or managed crossings may be required during construction and decommissioning.

15.8 Description of Potential Likely Significant Effects

15.8.1 The Proposed Development has the potential to result in temporary significant adverse landscape and visual effects during the construction phase. There are likely to be significant changes to the landscape character as well as views and visual amenity due to alterations to surface landform and vegetation, the presence and movement of construction machinery, introduction of construction compounds and access routes, and associated reduction in tranquillity.

15.8.2 Throughout operation, significant adverse landscape and visual effects are also likely. This is due to the changes to the landscape character, as well as views and visual amenity resulting from the change in land use through the introduction of solar panels and associated structures. Although most of the impacts would be reversible, they would be long term. The Proposed Development would include areas of new planting, likely to include diverse grassland and meadows, trees and hedgerows. Once established, this new planting has the potential to result in a reduction of the level of landscape and visual effects.

15.8.3 The decommissioning phase has the potential to result in significant adverse landscape and visual effects, similar to but of no greater magnitude than the construction phase.

15.8.4 **Table 15.1** and **Table 15.2** presents the landscape matters that are likely to give rise to significant adverse effects as a result of the Proposed Development and, therefore, which are proposed to be scoped into the detailed assessment.

Table 15.1 Likely Significant Landscape Effects to be Scoped In

Potential Effect	Receptor
Changes to Regional Landscape Character	Needwood & South Derbyshire Claylands LCA Riverside Meadows LCT Settled Farmlands LCT Trent Valley Washlands LCA Wet Pasture Meadows LCT Lowland Village Farmlands LCT Riverside Meadows LCT Riparian alluvial lowlands LCT

Potential Effect	Receptor
Changes to Local Landscape Character	To be defined by the Applicant
Changes to Site Landscape Character	Landscape character of the Site
Changes to Landscape Features	Trees, hedgerows and watercourses within the Site

Table 15.2 Likely Significant Visual Effects to be Scoped In

Potential Effect	Receptor
Changes to views and visual amenity of residents	People living in Boylsetone, Sapperton, Harehill, Sudbury, Foston, Oaks Green, Church Broughton, Sutton on the Hill, Dalbury, Trusley, Etwall, Marston on Dove, Hatton, Willington, Eggington, Stretton, and Hilton, as well as people living in dispersed properties beyond the settlements
Changes to views and visual amenity of people engaged in recreation which depends upon the appreciation of views of the landscape	People using the National Cycle Network Route 6, and local PRoW
Changes to views and visual amenity of motorists	People travelling on the A50, A38, A516, A5132 and the local road network
Visitors to heritage assets where views are an important	Visitors to Sudbury Estate

Potential Effect	Receptor
contributor to experience	

15.9 Impacts Scoped Out of the Assessment

15.9.1 **Table 15.3** presents the Landscape and Visual matters that are unlikely to give rise to significant adverse effects and, therefore, which are proposed to be scoped out from detailed assessment.

Table 15.3 Likely Significant Landscape and Visual Effects to be Scoped Out of the Assessment

Potential Effect	Rationale to be Scoped Out
Changes to character of NCAs	The geographical extent of NCAs is generally very large such that changes arising from the Proposed Development would be very localised and unlikely to give rise to significant effects on their key characteristics. As explained in paragraph 5.14 of GLVIA3, "broad-scale assessments at national or regional level can be helpful in setting the landscape context, but are unlikely to be helpful on their own as the basis for LVIA". LCAs defined at the national scale will therefore be included to provide context, but effects on these receptors are proposed to be scoped out.
Lighting during construction and decommissioning	Task-specific lighting would be used during construction and decommissioning to enable works within parts of the Site boundary and works during hours of darkness within the agreed typical working hours. Because of its temporary and specific nature, construction and decommissioning lighting is considered unlikely to give rise to significant landscape or visual effects.

Potential Effect	Rationale to be Scoped Out
	The impact of temporary and occasional lighting as detailed above will be considered as part of the wider assessment of landscape and visual impacts but a standalone lighting assessment is proposed to be scoped out.
Lighting during operation	The substation compound will not be permanently lit, but rather lighting would be used when access or exit is required during hours of darkness, designed in accordance with Health and Safety requirements. External lighting will be mounted on columns up to 10 metres high. Task-specific lighting will be used in the case of emergency works. Passive Infra-Red controlled lighting will be used where access is required outside of working hours. Where internal lighting is used within control buildings, light spillage will be controlled. CCTV installed along the perimeter of the Solar PV area will not require visible lighting. Because of its temporary and specific nature, operation lighting is considered unlikely to give rise to significant landscape or visual effects. The impact of temporary and occasional lighting as detailed above will be considered as part of the wider assessment of landscape and visual impacts but a standalone lighting assessment is proposed to be scoped out.
Changes to views and visual amenity of people at their place of work	This receptor group is acknowledged in GLVIA3 as being less sensitive to change in views and visual amenity such that for them to experience significant effects would require a high magnitude of change. No people at their place of work have been identified within or immediately adjacent to the Site boundary, so it is considered that the Proposed Development is not likely to give rise to significant effects on their views and visual

Potential Effect	Rationale to be Scoped Out
	amenity. Effects on these receptors are therefore proposed to be scoped out.
Changes to views and visual amenity of people engaged in outdoor sport or recreation which does not depend upon the appreciation of views of the landscape	This receptor group is acknowledged in GLVIA3 as being less sensitive to change in views and visual amenity such that for them to experience significant effects would require a high magnitude of change. No people engaged in outdoor sport or recreation which depend upon the appreciation of views of the landscape have been identified within or immediately adjacent to the Site boundary, so it is considered that the Proposed Development is not likely to give rise to significant effects on their views and visual amenity. Effects on these receptors are therefore proposed to be scoped out.

15.10 Assessment Methodology

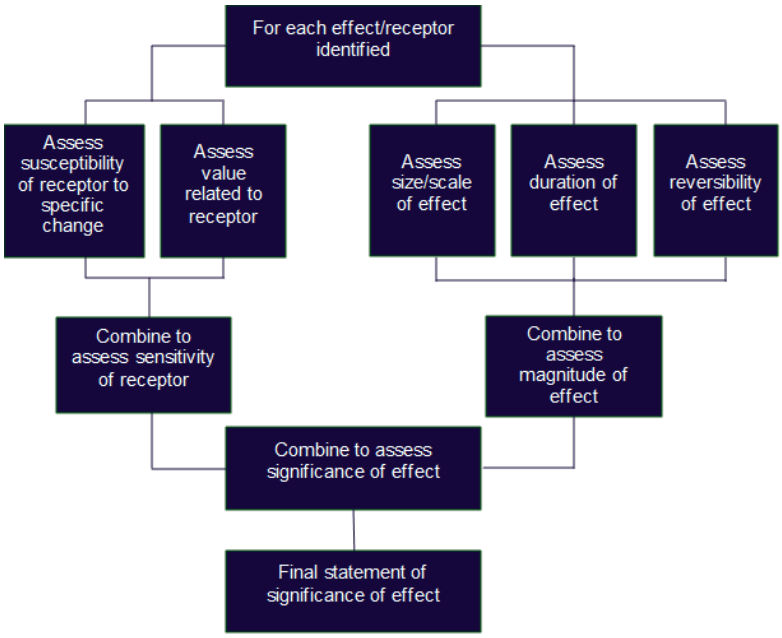
15.10.1 The LVIA will be undertaken in accordance with the following best practice guidance which applies to proposed development in the UK:

- Guidelines for LVIA, Third Edition (GLVIA3)[160];
- Technical Guidance Note 2024-01: Notes and Clarifications on GLVIA3[161];
- Technical Guidance Note 02/21: Assessing Landscape Value Outside National Designations[162];
- Technical Guidance Note 06/19: Visual Representation of Development Proposals[163];
- An Approach to Landscape Character Assessment[164];
- Technical Guidance Note 04/2020: Infrastructure[165];
- Technical Information Note 01/2017: Tranquillity[166]; and

- Technical Guidance Note 02/19: Residential Visual Amenity Assessment ('RVAA')[167].

15.10.2 The methodology will reflect the process set out in **Inset 3.1** of GLVIA3 as shown below:

Inset 3.1:



Overview of LVIA Methodology

15.10.3 In accordance with the GLVIA 3 process, the LVIA methodology will include the following key stages:

- A baseline review of published landscape assessments, studies, relevant supporting evidence base documents, aerial photography, mapping and fieldwork to identify the landscape and visual baseline and receptors. These shall be presented to the host authorities to seek their agreement on the scope of the LVIA, including the extent of the study area;
- An assessment of the sensitivity of landscape and visual receptors, based on an assessment of their respective value and susceptibility to

change, and taking into account the local landscape designations and other indicators of landscape sensitivity;

- An assessment of the magnitude of impact resulting from the Proposed Development during construction, Year 1, Year 15 (to determine the likely significant effects of landscaping, taking account of vegetation maturity), and decommissioning. The assessment of magnitude of impact will consider the scale, duration, and reversibility of the impact. Short-term durations are considered to be two years or less; medium-term durations are considered to be between two and five years; and long-term durations are considered to be more than five years;
- The assessment will then combine the receptor's sensitivity and the magnitude of impact experienced at each assessment scenario to determine the resultant level of effect and effectiveness of the landscape mitigation;
- An assessment of the significance of the effect on the landscape and visual receptors identified i.e. is the effect considered significant in EIA terms? It is proposed that effects judged to be moderate and major will be considered to be significant;
- A cumulative assessment of landscape and visual effects, taking into account the interaction of the Proposed Development with other committed and reasonably foreseeable developments within the study area, in accordance with EIA Regulations and GLVIA3 guidance;
- The LVIA will review the Glint and Glare Assessment to include consideration of how glint and/or glare impacts might contribute to landscape or visual effects; and
- The LVIA will assess the potential visual effects on different types of visual receptor, including residential receptors, i.e. private views (albeit assessed from publicly accessible locations). In the event that the visual assessment identifies major adverse effects on residents at year 15 of operation (i.e. major adverse visual effects remaining after the establishment of landscape mitigation), a Residential Visual Amenity

Assessment will be undertaken in line with the Landscape Institute's Technical Guidance Note 02/19: Residential Visual Amenity Assessment.

15.11 Limitations and Assumptions

15.11.1 All fieldwork will be undertaken from publicly accessible locations. Professional judgement will be used to assess residents' views, aided by aerial photography and fieldwork observations.

15.11.2 For the construction phase assessment, a reasonable worst-case approach will be undertaken, which assumes that construction activity will occur in winter and will be undertaken across the Site boundary at the same time.

15.11.3 For the Year 1 operational assessment, the assumption is that the Proposed Development will be operational in winter conditions. This represents a reasonable worst-case assessment. The Year 15 assessment will assume summer conditions and the establishment of planting included in the landscape design. This represents an assessment of the completed and operational development.

15.11.4 For the decommissioning assessment, the assumptions are that the Proposed Development is no longer operational, and the solar panels and associated structures and equipment are being removed in a manner similar to the construction phase requiring machinery and localised activity in winter.

15.11.5 Design work on the layout and heights of the individual components within the Proposed Development is still on-going this stage and therefore the study area will be kept under review as more details relating to these aspects are fixed.

16.0 NOISE AND VIBRATION

16.1 Introduction

16.1.1 This chapter of the ES Scoping Report has been produced by Waterman Infrastructure & Environment Limited (Waterman) and sets out the proposed scope of assessment and methodologies to be undertaken in the ES

16.1.2 The Noise and Vibration Chapter of the ES will present an assessment of the likely noise and vibration effects of the Proposed Development, during the construction, operation and maintenance, and decommissioning phases, on existing and future sensitive receptors based on change in baseline conditions, comparative and/ or absolute level, in accordance with relevant standards, policy and guidance. Baseline conditions will be established through baseline surveys, the strategy of which will be agreed with key stakeholders.

16.1.3 Consideration will also be given to the potential effect on areas of tranquillity, if relevant to the draft Order Limits.

16.1.4 The assessment will be undertaken by competent and qualified acoustic consultants.

16.1.5 The accompanying documents to the Noise and Vibration ES Chapter are likely to include the following which provide additional information to that presented in the ES Chapter:

- Glossary of Acoustic Terminology;
- Summary of relevant Legislation, Planning Policy and Guidance;
- Baseline Conditions;
- Construction Assessment;
- Operational Noise Assessment; and
- Road Traffic Noise Assessment.

16.2 Legislation, Planning Policy and Guidance

16.2.1 The Noise and Vibration ES chapter will have regard to the following national and local level policy documents and guidance:

- Control of Pollution Act (1974)[168];
- EPA (1990);
- NPS EN-1 (2026);
- NPS EN-3 (2026);
- NPS EN-5 (2026);
- NPPF (2025);
- Noise Policy Statement for England (2010)[169];
- World Health Organisation Guideline for Community Noise (1999)[170];
- BS5228 'Code of Practice for Noise and Vibration Control on Construction and Open Sites', Part 1[171] and Part 2[172] (2014);
- Calculation of Road Traffic Noise[173] (2008);
- DMRB LA111 (2020)[174];
- Guidelines for Environmental Noise Impact Assessment (2014)[175];
- PPG Noise[176];
- BS4142[177] Methods for Rating and Assessing Industrial and Commercial Sound (2019); and
- BS8233[178] Guidance on Sound Insulation and Noise Reduction for Buildings (2014).

16.2.2 Relevant planning policy of the LPAs pertaining to noise and energy infrastructure projects are presented in **Table 16.1**.

Table 16.1 Planning Policy (Noise) of LPAs

LPA	Planning Policy (noise)	Summary
DCC	Vision Derbyshire: Climate and Planning Guidance (2023)[179]	Guidance seeks to assist in development of planning policy that mitigates pollution of air/land/water, including noise. BESS: Battery systems and their associated transformers and inverters can be a source of low frequency noise and should therefore be located away from sensitive receptors or suitable acoustically screened. Ground mounted PV has an important role to play in the future provision of low carbon energy. Although the PV panels themselves are effectively passive, simply absorbing energy from the sun and converting it silently to electricity, the associated inverter, substation and electricity transmission infrastructure required for large scale commercial solar parks does have the potential to generate a low hum often associated with electrical infrastructure. Such infrastructure is therefore best located away from sensitive receptors such as dwellings.
SDDC	Draft Local Plan Part 1 Review 2022 – 2039[180] Developers Guide to Noise Mitigation[181]	SDDC supports renewable energy proposals (Policy SD6 – Sustainable Power & Energy Generation) that demonstrate environmental benefits, particularly focusing on mitigating impacts like noise and agricultural land loss (Policy BNE4 – Landscape Character and Local Distinctiveness). Construction noise is managed through planning conditions, with strict limits during construction, generally restricted to 0800-1800 Monday-Friday

LPA	Planning Policy (noise)	Summary
ESBC	Local Plan 2012-2031[182]	STRATEGIC POLICY 28 - Renewable and Low Carbon Energy Generation: The Council will promote and encourage all technologies and types of renewable and low-carbon energy generation, provided any adverse impacts have been minimised and impacts on residential amenity considered. In assessing whether or not adverse impacts are satisfactorily addressed, the Council will also take into account cumulative impacts. DETAILED POLICY 7 - Pollution and Contamination states *Development proposals will only be granted planning permission where they*
SCC	Renewable Energy Policy Position (19th Nov 2025)[183]	SCC supports renewable energy to meet net-zero targets but is actively seeking a national land-use strategy to manage the "solar land grab" on agricultural land. They have paused solar/battery development on council-owned farmland, requiring developers to focus on built-up areas.

16.3 Consultation

16.3.1 The EHO for each LPA will be consulted to agree the baseline survey strategy to establish prevailing ambient (dB L_{Aeq}) and background (dB L_{A90}) noise conditions. The established prevailing noise conditions will form the basis for the noise assessment.

16.3.2 Further to this, the sensitive receptors on which the potential effects during the construction, operational and decommissioning phases are assessed, will be agreed with the EHO at the relevant LPA(s).

16.4 Study Area

16.4.1 The study area for the noise and vibration assessment comprises an area of approximately 300m from the boundary of the draft Order Limits, as defined in DMRB LA 111 Noise and vibration paragraph 3.5 Note 1, on the basis that "a *study area of 300m from the closest construction activity is normally sufficient to encompass noise sensitive receptors*". Whilst this document relates to highways, the guidance is commonly applied to linear infrastructure and

energy projects. It further states "*Variations in the study area can be defined for individual projects*". It should be noted that assessment is only undertaken on the nearest sensitive receptors to the draft Order Limits in the various cardinal directions. This is on the basis that if effects are considered acceptable for the nearest sensitive receptors, it should automatically be the case for those located at greater distance; however, if the closest receptors from the nearest Order Limit boundary are predicted to experience significant adverse effects, then the distance at which significant adverse effects are predicted to not occur is determined and the additional receptors within this area are included within the assessment. This will be determined using the calculation and assessment methodology discussed within this Chapter. It also extends to include key linkages within the local highway network which have the potential to be affected by traffic associated with the Proposed Development. At these local highway network locations, the study area is 50m from the kerb line as defined in DMRB LA111 paragraph 3.8.

16.5 Sensitive Receptors

16.5.1 Sensitive receptors, within the vicinity of the draft Order Limits will be identified and agreed with the LPA. It will be on these that potential noise and vibration effects will be determined. With regard to changes in road traffic noise, this will include sensitive receptors within 50m of the relevant road links.

16.6 Baseline Environment and Future Baseline

16.6.1 Current baseline noise conditions of the study area will be established through extended baseline surveys, undertaken over 5-days covering the weekday and weekend period. The monitoring locations will be agreed with the EHO of the relevant LPA(s).

16.6.2 The extended baseline surveys will be supplemented by short-term attended weekday daytime noise measurements at key locations within the Study Area. The approach will be agreed with the EHO at the relevant LPAs prior to any baseline surveys being undertaken.

16.6.3 Without the Proposed Development, the future baseline noise levels are expected to remain broadly unchanged. Those nearer to major roads are expected to increase slightly in the future due to the general growth in traffic flows. This is however anticipated to be modest given a doubling in traffic volume is required for a 3dB increase in road traffic noise, which is generally accepted as being just perceptible if the increase is gradual.

16.7 Design, Mitigation and Enhancement Measures

16.7.1 A number of embedded design measures will be incorporated to reduce the potential for significant adverse effects, in addition to measures that will be secured by outline control documents to be submitted with the DCO application. These will include, but are not limited to:

Construction Phase

- Implementation of a CEMP, which will secure the details of the OCEMP; and
- Implementation of a CTMP, which will secure the details of the OCDTMP.

Operational Phase

- Strategic layout of solar infrastructure within the draft Order Limits;
- Positioning of power lines to help mitigate noise, if overhead;
- Selection of appropriately sized conductor;
- Implementation of maintenance regime (ensure conductors are kept clean and free of surface contaminants;
- Selection of ‘quieter’ plant;
- Provision of noise attenuating measures (i.e. barriers, enclosures, silencers, attenuators) to BESS units where required;
- Quality assurance through manufacturing and transportation to avoid damage to plant / overhead cables, that may result in higher noise emissions;

- Where relevant, use of landscaping, bunds or noise barriers to reduce noise transmission; and
- Where relevant, use of containment of noise sources.

Decommissioning Phase

- Implementation of a DEMP, which will secure the details of the ODEMP; and
- Implementation of a DTMP, which will secure the details of the OCDTMP.

16.7.2 Should significant adverse noise and vibration effects be identified with the inherent mitigation measures accounted for, then secondary mitigation measures will be proposed.

16.8 Description of Potential Likely Significant Effects

16.8.1 The potential for likely significant effects will be a function of distance of the noise source to receptor, prevailing ambient noise level, and the absolute level of the source noise at the receptor location. Other factors include acoustic properties of the source (tonal/ impulsive), duration, constant/ intermittent and time of the day.

Enabling Works and Construction

16.8.2 Potential noise and vibration effects from enabling and construction works comprise:

- Temporary noise effects on existing sensitive receptors surrounding the draft Order Limits as a result of the works on-Site and from construction plant/ equipment activities;
- Temporary vibration effects on existing sensitive receptors surrounding the draft Order Limits as a result of the works on-Site and from construction plant/ equipment activities; and
- Temporary change in road traffic noise due to construction HGV movements on the local road network.

Completed Development

16.8.3 Potential noise effects from the completed Proposed Development include:

- Permanent noise effects, including where necessary consideration of low frequency noise due to on-Site plant noise emissions generated from plant; and
- Permanent noise effects from above ground electricity network infrastructure.

Decommissioning

16.8.4 Potential noise effects from the decommissioning phase of the Proposed Development include:

- Temporary noise effects from dismantling of solar infrastructure; and
- Temporary vibration effects from dismantling of solar infrastructure.

16.8.5 Temporary change in road traffic noise due to decommissioning HGV movements on the local road network.

16.9 Impacts Scoped Out of the Assessment

16.9.1 It is proposed to scope out the following from the noise and vibration assessment as they would not give rise to significant effects:

- Operational vibration: No vibration sources will be introduced as part of the Proposed Development.
- Operational road traffic noise: As described in **Chapter 18: Transport and Access** of this Report, once operational, traffic movements to and from the Proposed Development will generally be very light, and not considered significant in transport or noise and vibration terms. Should there be a need to replace machine components, this may generate heavier commercial vehicle movements, but these are likely to be infrequent and would not result in permanent significant noise effects.

16.10 Assessment Methodology

16.10.1 The assessment methodology is as follows:

- Identification of the existing and future potential noise and vibration sensitive receptors surrounding the draft Order Limits. Final selection for assessment to be agreed with relevant LPAs;
- Baseline daytime and nighttime noise monitoring at appropriate boundary locations within the study area using unattended environmental noise loggers to establish baseline conditions at and within the vicinity of the draft Order Limits and sensitive receptors. The monitoring protocol and locations will be agreed in advance with Environmental Health at the relevant LPAs. The survey will be carried out in line with the guidance provided in BS 7445:2003[184] 'Description and Measurement of Environmental Noise';
- Assessment of temporary noise and vibration effects during the construction and decommissioning works, in line with BS 5228-1:2009+A1:2014 'Noise and Vibration Control on Construction and Open Sites Part 1 - Noise' and BS 5228-2:2009+A1:2014 'Part 2 - Vibration';
- Assessment of the likely temporary effects of changes in road traffic noise resulting from traffic generated during the construction and decommissioning phases. The calculations will be carried out in accordance with the Calculation of Road Traffic Noise ('CRTN') memorandum with assessment against the significance criteria detailed within the DMRB LA111;
- BS4142:2014+A1:2019 assessment of operational noise. Where detail on plant is not known, noise criteria at the nearest sensitive receptors will be recommended derived from baseline conditions established through survey, together with the requirements of the EHO of the relevant LPAs; and
- Where likely significant adverse effects from any of the aforementioned sources are identified, consideration will be given to appropriate

secondary mitigation measures in safeguarding amenity and ensuring compatibility with adjoining land uses.

16.10.2 The assessments will be based on realistic assumed worst-case scenarios.

Significance Criteria

16.10.3 The scale attributed to each effect is determined based on the sensitivity of the receptor and magnitude of the noise or vibration impact arising (i.e. level change, comparative and / or absolute level), because of the Proposed Development.

16.10.4 **Table 16.2** presents the assigned receptor sensitivity.

Table 16.2 Receptor Sensitivity

Value (Sensitivity)	Descriptor
High	Residential, school, hospital
Medium	Office, commercial
Low	Industrial
Very Low	No receptors within 800m[1]

Note: [1]This has been adopted from BREEAM POL 05 'Reduction of noise pollution' and is considered to be a conservative approach.

16.10.5 **Table 16.3** presents the criteria used to determine the magnitude of noise and vibration effects, and the equivalent effect level drawn from Noise Policy Statement for England ('NPSE'). The NPSE effect levels are descriptive and do not have assigned noise or vibration levels or change in level specified.

16.10.6 This is dependent on what is being assessed together with baseline conditions and British Standards and guidance.

Table 16.3 Magnitude of Development Noise and Vibration

Magnitude	Descriptor
Large	Significant Observed Adverse Effect Level ('SOAEL')
Medium	Above LOAEL but below SOAEL
Small	Lowest Observed Adverse Effect Level ('LOAEL')
Low/Negligible	No Observed Effect Level ('NOEL')

16.10.7 The NPSE effect levels are defined as follows:

- NOEL – No Observed Effect Level: Level below which no effect on health and quality of life due to noise can be detected;
- LOAEL – Lowest Observed Adverse Effect Level: Level above which adverse effects on health and quality of life can be detected; and
- SOAEL – Significant Observed Adverse Effect Level: Level above which significant adverse effects on health and quality of life occur.

16.10.8 Consideration is also given to the scale and duration (e.g. for construction, short-term for 1-2 years, medium-term for 3-5 years, long-term for 5 years and greater, and permanent, dependent upon project timeframes) and the extent of the Proposed Development when considering the level of effect.

Enabling Works and Construction – Magnitude of Noise & Vibration

16.10.9 **Table 16.4** presents the magnitude of construction and decommissioning noise and vibration which is drawn from BS5228 part 1 (Noise) and part 2 (Vibration).

Table 16.4 Magnitude of Construction, Decommissioning Noise and Vibration

Magnitude	Construction Noise Level dB $L_{Aeq,T}$	Level of Vibration mm/s PPV	Definition
Low/Negligible	≤ Baseline (Prevailing) Noise Level	<0.3	The level is not of concern. ≤NOEL
Small Adverse	≤Threshold Noise Level	≥0.3 to <1	The level is undesirable but of limited concern. >NOEL ≤LOAEL.
Medium Adverse	>Threshold Noise Level to <Threshold +5dB (or ≤75dB $L_{Aeq,T}$, whichever is highest	≥1 to <10	The level gives rise to some concern but is likely to be tolerable depending on scale and duration. >LOAEL <SOAEL.
Large Adverse	>Threshold +5dB (or >75dB $L_{Aeq,T}$, whichever is highest	≥10	The level gives rise to serious concern and it should be considered unacceptable, except for very brief exposure depending on the

Magnitude	Construction Noise Level dB $L_{Aeq,T}$	Level of Vibration mm/s PPV	Definition
			absolute level. ≥SOAEL.

16.10.10 **Table 16.5** presents the magnitude of construction and decommissioning road traffic noise which is drawn from DMRB LA111.

Table 16.5 Magnitude of Change in Road Traffic Noise Due to Construction, Decommissioning Traffic

Magnitude	Change in Road Traffic Noise with Construction Traffic	Definition
Low/Negligible	<1.0	The change is not of concern. ≤NOEL.
Small	≥1.0 to ≤3.0	The change is of limited concern. >NOEL ≤LOAEL.
Medium	>3.0 to <5.0	The change gives rise to some concern depending on absolute levels and duration. >LOAEL <SOAEL.
Large	≥5.0	The change gives rise to serious concern and it should be considered unacceptable where it increases the prevailing noise levels by this amount, depending on absolute level and duration. Note: noise from another road link may be the dominant source so the predicted increase may not be realised. ≥SOAEL.

Completed Development

16.10.11 **Table 16.6** presents the magnitude of noise arising from fixed external and where relevant building services plant which is drawn from BS4142.

Table 16.6 Magnitude of Noise From Fixed External & Building Services Plant

Magnitude	Rating Level dB $L_{Ar,Tr}$ (without context) Compared to Background Sound Level (L_{A90})	Definition

Low/Negligible	Rating Level ≤ L_{A90}	The rating level is not of concern. ≤NOEL.
Small	Rating Level ≤ L_{A90}+5dB	The rating level is undesirable but of limited concern. >NOEL ≤LOAEL.
Medium	Rating Level > L_{A90}+5dB	The rating level gives rise to some concern but is likely to be tolerable depending on scale, duration and period of operation (day/night). >SOAEL <SOAEL.
Large	Rating Level ≥ L_{A90}+10dB	The rating level gives rise to serious concern and it should be considered unacceptable. ≥SOAEL.

16.10.12 **Table 16.7** presents the significance of effects matrix based on receptor sensitivity and magnitude of the noise or vibration as a result of the Proposed Development. Road traffic noise and vibration is only specific to the construction and decommissioning phases. The magnitude of noise or vibration is dependent on what is being assessed (construction works, road traffic noise, plant). Professional judgement and experience will be drawn upon to assess the scale and significance.

16.10.13 Notwithstanding this generally moderate and major adverse effects are considered to be significant.

Table 16.7 Significance of Effects Matrix

Receptor Sensitivity	Magnitude			
	Large (SOAEL or above)	Medium (between LOAEL and SOAEL)	Small (LOAEL)	Low/Negligible (NOEL)
High	Major Beneficial / Adverse	Moderate to Major Beneficial / Adverse	Minor to Moderate Beneficial / Adverse	Negligible
Medium	Moderate to Major Beneficial / Adverse	Moderate Beneficial / Adverse	Minor Beneficial / Adverse	Negligible
Low	Minor to Moderate Beneficial / Adverse	Minor Beneficial / Adverse	Negligible to Minor Beneficial / Adverse	Negligible

Receptor Sensitivity	Magnitude			
	Large (SOAEL or above)	Medium (between LOAEL and SOAEL)	Small (LOAEL)	Low/Negligible (NOEL)
Very Low	Minor Beneficial / Adverse	Negligible	Negligible	Negligible

Note: SOAEL – Significant Observed Adverse Effect Level; LOAEL – Lowest observed adverse effect level, NOEL – No Observed Effect Level

16.11 Limitations and Assumptions

Limitations and Assumptions – Construction & Decommissioning

16.11.1 The BS 5228 calculation methodologies allow accurate noise levels to be determined for various demolition, construction and decommissioning activities; however, specific detail on the plant and machinery to be used (make/model) is unlikely to be known. A number of assumptions will therefore be made regarding the number and type of plant to be utilised, their location, and detailed operating arrangements. Some of this information would be clarified as the detailed design progresses and later when resources are mobilised and the contractor is appointed, but other information (such as exactly where the plant operates and for how long) would remain uncertain, even after works have commenced. The assessment approach uses worst-case scenario, when works are being undertaken at the shortest distance to the receptor.

16.11.2 Construction and decommissioning noise levels will be based on generic plant detail contained within BS5228-1:2009+A1:2014 and information provided by the Applicant. The available information is considered sufficient to undertake a noise assessment of the construction and decommissioning phases, focussing on key activities operating at the draft Order Limits, with the aim of identifying whether a significant, albeit temporary, adverse noise effect is likely to arise at the nearest sensitive receptors. In this respect, a medium to high degree of confidence is assigned to the predicted significance of the potential effects.

Limitations and Assumptions - Baseline

16.11.3 The assessment will be based upon noise monitoring conducted within the study area covering both a weekday and weekend period, together with short-term attended weekday daytime within the vicinity of draft Order Limits for the cable routing and is therefore consider robust on which to base the assessment.

16.11.4 There are no existing sources of vibration proximate to the study area. On this basis vibration measurements will not be conducted and is taken as zero for all areas, which is considered to be representative of baseline conditions.

Limitations and Assumptions - Fixed Plant & Building Services

16.11.5 At this stage, the specific type and configuration of fixed plant is not defined. Consequently, it may not be possible to undertake predictions to determine whether appropriate standards would be met, where this is the case appropriate plant noise emission limits will be set based on prevailing conditions established through baseline survey, BS4142 and requirements of the relevant LPAs.

17.0 SOCIO-ECONOMICS

17.1 Introduction

17.1.1 This Chapter of the Scoping Report presents the scope of the environmental assessment for Socio-Economics. Specifically, the Chapter presents the policy and legislative context, the approach to collecting baseline data and then an overview of the relevant baseline conditions within the Site and surrounding area, based on current knowledge and understanding. It concludes by setting out the scope of assessment including, with justification, those socio-economic matters that are proposed to be scoped out and in for detailed assessment and concludes by outlining the method that will be used to undertake the detailed assessment.

17.2 Legislation, Planning Policy and Guidance

17.2.1 There is no legislation which is directly applicable to the assessment of socio-economic effects. The assessment will include a review of the planning policy context (at the national, regional and local level) and take into account relevant economic strategies. The following policy is relevant to the Proposed Development:

National Planning Policy

- NPS EN-1 (2026) – specific reference to Section 5.13, which relates to Socio-Economics;
- NPS EN-3 (2026) – specific reference to paragraph 2.10.61; and
- NPPF (2025) – specific reference to Section 6: Building a strong, competitive economy, Section 12: Achieving well designed places and Section 15: Conserving and enhancing the natural environment.

Local Planning Policy

- South Derbyshire Local Plan (2016) – specifically policies SD6 Sustainable Energy and Power Generation; and Policy E7 Rural Development;

- East Staffordshire Local Plan (2012-2031) – specific reference to policy SP28 Renewable and Low Carbon Energy Generation; and
- Derbyshire Dales Local Plan (2017) – specifically policies S1 Sustainable Development Principles; S4 Development in the Countryside; and EC1: New and Existing Employment Development.

Guidance

- ISEP (2025) Social Impact Assessment in Environmental Impact Assessment in the UK[185];
- ISEP Guide to Determining Significance for Human Health in Environmental Impact Assessment (EIA) (2025)[186]; and
- ISEP Effective Scoping of Human Health in Environmental Impact Assessment (2022)[187].

17.3 Study Area

17.3.1 A LIA has been identified as MSOAs South Derbyshire 001, 002, 003, 005, East Staffordshire 004, 005, 007, 008, 011, and Derbyshire Dales 010, to provide an understanding of the characteristics of the area surrounding the draft Order Limits. A WIA is made up of the South Derbyshire, East Staffordshire and Derbyshire Dales local authority boundaries, as it is expected that they will capture a large proportion of the impacts.

17.3.2 The extent of this impact area may vary for some receptors following best practices or the availability of data. Where this is the case, this will be highlighted within the Socio-Economic Chapter of the ES. Indirect or multiplier effects of the Proposed Development, for example concerning the wider economy, will also be considered. A map of the proposed study area is shown in **Figure 17.1: Socio Economic Study Area** in **(Appendix 1.1: Figures)**.

17.4 Sensitive Receptors

17.4.1 The assessment will primarily focus on the effects on people and the economy in the study area. The extent of these impact areas may be varied for some

receptors following best practice or the availability of data. Whilst people are ultimately the receptors to any effects, how they are impacted will be assessed as well as the scale of any impacts and the spatial scale at which the impacts are most relevant.

Table 17.1 Sensitive Receptors

Receptor	Effect
Local labour market	Temporary direct and indirect construction employment will be generated. This will create positive economic impacts including the generation of GVA in the WIA. There will also be multiplier effects generated from the supply chain and the spending into the local economy.
Local Economy	Temporary construction injection of capital in the WIA

17.5 Baseline Environment and Future Baseline

Population

17.5.1 Based on the latest 2024 mid-year population estimates, the WIA had a population of 318,909 people. When compared to the East Midlands (22.9%) and England (23.1%), the WIA has a lower proportion of younger aged 0-19 (18.8%). There is a higher proportion of people aged 25 to 64 in the WIA (57.9%) than the East Midlands (51.2%) and England (52.1%). There is also a higher proportion of older people aged over 65 in the WIA (21.3%) when compared to the South East region (19.9%) and England (18.7%).

Labour Market

17.5.2 The labour profile of the WIA shows that 83.0% of residents are economically active which is higher than the average for the East Midlands (78.6%) and England (78.8%). A lower proportion of the population in the WIA are unemployed (2.3%) compared to the East Midlands (4.2%) and nationally (4.5%). A higher proportion of the population of the WIA (44.1%) has a RQF4+ (Regulated Qualifications Framework) qualification (equivalent to a Certificate of Higher Education/ first year of a bachelor's degree education) when compared to the East Midlands (41.1%) but fewer than England as a whole (48.0%).

Table 17.2 Labour Market Profile

Indicator	WIA	East Midlands	England
Working-age population (16-64 years) % of the Total Population (2024)	60.8%	62.1%	62.9%
Economic Activity Rate (Jan 2025 – Dec 2025)	83.0%	78.6%	79.5%
Unemployment - as a proportion of economically active aged 16-64 (Jan 2025 – Dec 2025)	2.3%	4.2%	4.5%
Tier 1-3 Occupations (managers, professionals, associate professional) (Jan 2025 – Dec 2025)	53.3%	47.9%	54.2%
RQF4+ Qualifications (Jan 2025 – Dec 2025)	44.1%	41.1%	48.0%
Earning by place of residence (2025), Gross Weekly Pay	£828.30	£720.80	£769.50
Earning by workplace base (2025), Gross Weekly Pay	£750.10	£703.80	£770.70

Economy

17.5.3 There are approximately 131,050 employee jobs in the WIA. The three largest employment sectors in the WIA in 2024[b] were Manufacturing (16.3%), Health (11.6%), and Accommodation and Food Services (10.1%). The construction sector accounts for 4.7% of the employment in South the WIA, which is lower than across the East Midlands (5.6%) and England (4.9%).

17.5.4 Electricity, Gas, Steam and Air Conditioning Supply account for less than 0.1% of employment in the WIA. This is lower than the rates for both the East Midlands (0.5%) and England (0.4%).

[b] ONS Business Register and Employment Survey, 2024

Deprivation

17.5.5 A review of the English IMD[188], (2025) shows that South Derbyshire is 210th out of 317 local authorities nationally meaning that it is less deprived than 71% of local authorities nationally.

17.5.6 Out of the seven indicators of deprivation, South Derbyshire is most deprived in terms of Health and Disability, falling within the 50% of least deprived local authorities.

17.6 Design, Mitigation and Enhancement Measures

17.6.1 The Proposed Development has the potential to affect the local area in a beneficial way, initially through the consideration of good design principles to ensure that any benefits are maximised. These beneficial effects may be either temporary, for example during the construction and decommissioning phases of the Proposed Development, or permanent during operation and maintenance.

17.6.2 Opportunities provided by the Proposed Development to enhance beneficial socio-economic outcomes for the community may include:

- A temporary increase in employment opportunities for relevant construction and decommissioning trades and associated supply chains;
- A permanent increase in both direct and indirect employment opportunities;
- The diversification of revenue for landowners;
- The optimisation of land use, with potential dual use of land for both the Proposed Development and agriculture; and
- An increase in renewable energy production and resultant contributions towards both achieving net zero targets and energy security.

17.7 Description of Potential Likely Significant Effects

17.7.1 Potential socio-economic effects that will be considered in relation to the construction, decommissioning and operational phases of the Proposed Development comprise:

- Impacts of temporary employment during the construction and decommissioning phases of the Proposed Development on the local workforce including multiplier effects generated from the supply chain and the spending into the local economy;
- Impacts of a temporary increase in economic activity during the construction and decommissioning phases of the Proposed Development,
- Impacts of demand for temporary accommodation by construction workers.

Table 17.3 Socio-Economic Receptors

Receptor	Effect
Local labour market	Temporary direct and indirect construction and decommissioning employment will be generated. This will create positive economic impacts including the generation of GVA in the WIA. There will also be multiplier effects generated from the supply chain and the spending into the local economy.
Local Economy	Temporary injection of capital in the WIA during the construction and decommissioning phases
Local accommodation	Temporary impacts on demand for accommodation for construction workers in the LIA

17.8 Impacts Scoped Out of the Assessment

17.8.1 The effects of the Proposed Development on school capacity will not be assessed, as the operational phase is not expected to result in a permanent increase in local population; thus, the demand for school places should not be affected.

17.8.2 Impacts of permanent employment during the operational phase of the Proposed Development, including consideration of changes to any existing employment on-Site (e.g. agricultural), or to the local workforce.

17.9 Assessment Methodology

17.9.1 A review of relevant national, regional and local policies will be carried out to identify the key issues relevant to the Proposed Development.

17.9.2 In addition to the baseline conditions set out above, the assessment of effects will determine baseline conditions for social infrastructure (including healthcare and other public services).

17.9.3 Data may be used at the Lower Super Output Area ('LSOA') and MSOA level. Where the 'Zol' of the Proposed Development differs from these spatial levels, as is often the case when considering the impact on social infrastructure, other metrics such as proximity, travel distances and/or defined planning areas may be more appropriate and will be considered in the baseline scenario.

Construction, Operation and Decommissioning

17.9.4 The assessment of effects will consider the following in relation to the impacts of the Proposed Development on baseline conditions:

- The likely scale and duration of impacts of the Proposed Development and any relevant Cumulative Schemes; and
- The sensitivity of the sensitive receptors to the impacts.

Significance Criteria

17.9.5 The scale attributed to each effect will be determined based on the sensitivity of the receptor and magnitude of impact arising as a result of the Proposed Development.

Receptors and Receptor Sensitivity

17.9.6 The sensitivity of each receptor is evaluated as being high, medium, low or negligible based on a review of the baseline position of each receptor and its performance against benchmark areas.

Table 17.4 Receptor Sensitivity Description

Value (Sensitivity)	Description
High	The economic or social infrastructure receptors are operating at full capacity with no surplus capacity for additional demand arising from additional residents.
Medium	The economic or social infrastructure receptors are operating at near capacity levels with limited surplus capacity for additional demand arising from additional residents.
Low	The economic or social infrastructure are operating below capacity with excess surplus capacity.
Very Low	Receptors of limited or no importance.

Magnitude of Impact

17.9.7 The magnitude of impact to a receptor has been determined by considering the estimated deviation from baseline conditions both before, and, if required, after mitigation.

Table 17.5 Magnitude of Impact Description

Impact Magnitude	Description
High	The Proposed Development could be expected to have substantial effects (by extent, duration, or magnitude) of more than local significance on the key elements/ features of the baseline conditions, including the population profile, levels of employment, levels of deprivation and facility provision.
Medium	Where the Proposed Development could be expected to have notable effects on the key elements/ features of the baseline conditions, including the population profile, levels of employment, levels of deprivation, and facility provision.
Low	Where the Proposed Development could be expected to have slight, short or localised effects on the key elements/ features of the baseline conditions, including the population profile, levels of employment, levels of deprivation, and facility provision.

Impact Magnitude	Description
Very Low	Where the Proposed Development could be expected to result in very little/ no distinguishable change from the baseline conditions including the population profile, levels of employment, levels of deprivation, and facility provision.

Assessing Significance

17.9.8 The table below provides a matrix for determining the significance of an effect based on the sensitivity of the receptor and the magnitude of impact.

Table 17.6 Significance of Effect Matrix

Receptor Sensitivity	Magnitude of Impact			
	High	Medium	Low	Very Low
High	Major Beneficial / Adverse	Major Beneficial / Adverse	Moderate Beneficial / Adverse	Minor Beneficial / Adverse
Medium	Major Beneficial / Adverse	Moderate Beneficial / Adverse	Minor Beneficial / Adverse	Negligible
Low	Moderate Beneficial / Adverse	Minor Beneficial / Adverse	Negligible	Negligible
Very Low	Minor Beneficial / Adverse	Negligible	Negligible	Negligible

17.9.9 Effects classified as major or moderate are considered ‘significant’. Effects classified as minor or negligible in scale are considered ‘not significant’.

17.9.10 Based on the information available on the baseline conditions, sensitivity of the receptor and magnitude of any socio-economic impacts, and in the context of local and national policies, professional judgement will be used to evaluate the significance of potential socio-economic effects. There is no published

guidance to define the significance of socio-economics effects, but it is recognised that effects are categorised based upon the relationship between the magnitude of effect and the sensitivity of the receptors in question, in line with published EIA guidance.

17.9.11 The assessment will aim to quantify effects where possible, although where this is not possible some effects will be assessed qualitatively. Effects are defined as follows:

- Beneficial classifications of effect indicate an advantageous or positive effect on the defined receptors within the study area;
- Negligible classifications of effect indicate no perceived effects on the defined receptors within the study area;
- Adverse classifications of effect indicate a disadvantageous or negative effect on the defined receptors within the study area; and
- No effect classifications indicate that there are no changes to baseline conditions.

17.9.12 The receptors in the study area for each potential effect will be defined according to the appropriate spatial scale, which may differ for each potential effect. It may be relevant to assess the significance of certain effects at multiple spatial scales (e.g. both locally and regionally).

17.9.13 Based on consideration of the above, where an effect is assessed as being adverse or beneficial, the scale of the effect will be categorised using the following criteria:

- Minor: the Proposed Development will cause a minor change in existing baseline conditions in terms of absolute and/or a small number of receptors will be affected;
- Moderate: the Proposed Development will cause a noticeable change in existing baseline conditions and/or a moderate number of receptors will be affected; and
- Major: the Proposed Development will cause a large change in existing baseline conditions and/or the majority of receptors will be affected.

- Effects which are found to be moderate or major, whether adverse or beneficial, will be considered to be 'significant'.

17.10 Limitations and Assumptions

17.10.1 There will be a number of assumptions, limitations and uncertainties associated with the assessment of likely significant effects. Where relevant, good practice guidance and professional judgment will be used to ensure a reasonable worst-case approach is adopted.

17.10.2 The sources used will be referenced throughout. Furthermore, while the latest available data will be used, it should be noted that many data sources are frequently updated and could be subject to change from the time of drafting or during the planning application process, however every effort will be made to ensure the data used is as up to date as possible at the time of drafting. Data cited is a secondary source, and therefore reliant on the methodology and limitations of those who collated the data.

17.10.3 The Hilton Cricket club located on Marston Lane is of particular importance to the community, catering to all players of all ages and abilities. Development affecting this site is not anticipated unless suitable alternative provision for the cricket club is secured.

18.0 TRANSPORT AND ACCESS

18.1 Introduction

18.1.1 This chapter sets out the methodology as to how the Transport and Access ES chapter will consider the potential effects of the Proposed Development on transport and access during construction, decommissioning and the operational phases of the Proposed Development.

18.2 Legislation, Planning Policy and Guidance

Legislation Context

18.2.1 There is no applicable legislation specific to the assessment of the transport and access impacts. following legislation is relevant to the Proposed Development:

National Planning Policy

18.2.2 The following national planning policy is relevant to the Proposed Development:

- NPPF (2025);
- NPS EN-1 (2026) (section 5.14); and
- NPS EN-3 (2026) (paragraph 2.10.112 - 118).

Regional Planning Policy

18.2.3 The following regional planning policies are relevant to the Proposed Development:

- Derbyshire Local Transport Plan 3 (LTP3) 2011 – 2026[189];
- Emerging East Midlands Combined County Authority EMCCA Mayor's Transport Plan[190]; and
- Staffordshire Local Transport Plan 2026[191].

Local Planning Policy

18.2.4 The following local planning policies are relevant to the Proposed Development:

- South Derbyshire Local Plan (Part 1 – 2016 and Part 2 – 2017); and
- East Staffordshire Local Plan (2012 – 2031).

Guidance

18.2.5 The following guidance is relevant to the Proposed Development:

- The NPPG 2014 – Travel Plans. Transport Assessments and Statements[192];
- The NPPG 2020 – Environmental Impact Assessments; and
- ISEP Guidelines: Environmental Assessment of Traffic and Movement (2023)[193].

18.3 Engagement

18.3.1 Engagement will be undertaken with all relevant stakeholders. Initial contact has been made with all parties. These include:

- DCC Highways Department;
- SCC Highways Department; and
- National Highways.

18.4 Study Area

18.4.1 The study area for the Proposed Development includes the transport networks surrounding the draft Order Limits. Links surrounding the draft Order Limits have been chosen where it is anticipated there will be an uplift in traffic flows as a result of the Proposed Development, with all traffic assumed to ultimately end back on the M1 Motorway.

18.4.2 A plan showing the links in relation to the draft Order Limits is included in **Figure 18.1: Transport and Access Study Area (Appendix 1.1: Figures)**.

18.4.3 **Table 18.1** below sets out each of these links and the parcel of land they are associated with.

Table 18.1 Study Area Links and Relevant Solar Development Site

Survey Link	Relevant Solar Development Site
Muse Lane	A
Aston Lane	A
Breach Lane	A
Coplow Lane	A
Hay Lane	A
Woodhouse Lane	A
Woodyard Lane	A, B
Uttoxeter Road (north of A50)	A
Foston Interchange	A, B
Foston – Hatton – Hilton Bypass	A, B
Cote Bottom Lane	B
Ashbourne Road	B
Church Road	B
Tipper's Lane	B
Boggy Lane	B
Main Street	B
Littlefield Road	B
Sutton Road	B
Longford Lane	B
School Piece Lane	B
Limbersitch lane	B
Sutton Lane	B
Derby Road	B, D
Uttoxeter Road (south of A50)	B
A50 Derby Southern Bypass	A, B, C
A516 Derby Road	C
Heage Lane	C

Survey Link	Relevant Solar Development Site
Radbourne Lane	C
Ashe Lane	C
Ash Lane	C
James's Lane	C
Hoon Lane	D
Derby Road	D
Uttoxeter Road	D
Main Street	D
Derby Road	D
Church Road	E
A38 Derby Road	E
A38 Burton Road	E
A5132 Twyford Road	National Grid Willington 400 kV substation
A5132 The Castle Way	National Grid Willington 400 kV substation
Carriers Road	National Grid Willington 400 kV substation

18.5 Sensitive Receptors

18.5.1 The final list of existing and future receptors is to be confirmed as future cable routes are settled on. Receptors will be selected based on their proximity to the links included in the study area. The links in the study area have been chosen as these are the routes where there are anticipated increases in traffic movements as a result of the Proposed Development. To identify receptors along these routes, online mapping and Site visits will be used to identify any receptors along these routes. These would then form the receptors used within the assessment.

18.6 Baseline Environment and Future Baseline

18.6.1 The baseline environment will be determined by a number of traffic surveys to determine existing traffic flows across the network. The geographical extent of these surveys will comprise the study area, as defined in Section 18.4 of this document with surveys undertaken on the links set out in the same Section. Baseline flows will be collected over a 7-day period using Automated Traffic Counts ('ATCs') and radar surveys. These are to be agreed with consultees prior to the surveys.

18.6.2 The future baseline will then be determined by adding the traffic flows of committed developments to the existing baseline. The list of schemes to be included for the Cumulative Effects Assessment will be agreed outside of the Scoping process.

18.7 Design, Mitigation and Enhancement Measures

18.7.1 Any mitigation and enhancement measures are not known at this stage but will be included within any submission documents. These documents will include the following:

- CEMP;
- CTMP
- DTMP;
- OEMP; and
- DEMP.

18.7.2 The design of the Proposed Development, however, will consider the functionality of the types of vehicles required for such a scheme at the various stages of the Proposed Development.

18.8 Description of Potential Likely Significant Effects

18.8.1 The likely significant effects identified for each relevant scenario for assessment in the ES are set out in the following tables.

Table 18.2 Likely Significant Effects during Construction and Mitigation Works

Receptor	Effects
People at home / work:	Changes in traffic flows Non-motorised user delay / amenity Fear and intimidation on and by road users Road user safety Hazardous / large loads
Sensitive and or vulnerable groups / locations	
Collision clusters and routes with road safety concerns	
Junctions and highway links at (or over) capacity (drivers)	

18.9 Impacts Scoped Out of the Assessment

18.9.1 All construction and decommissioning transport-related topics have been scoped into the ES chapter to ensure a robust assessment of the Proposed Development's potential effects on the surrounding transport network and relevant receptors. Given the scale and nature of the Proposed Development once operational, and its limited potential to generate any form of transport movements, it is considered appropriate and proportionate to scope out the assessment of the operational phase of the Proposed Development. For example, during the operational phase it is anticipated there will be approximately 20 FTE staff on-site at any one time. This would be spread across all parcels. There will also be a small number of visitor trips per week for deliveries and servicing of equipment. These vehicles will predominantly be vans and cars, with HGVs extremely rare and less than existing agricultural traffic. it would be considered that the Proposed Development would only result in 1 – 2 vehicle movements per day which could be considered to be the same or less as some of the existing agricultural uses. This would not be

expected to increase traffic flows by more than 30% as per the ISEP guidance. Where smaller rural roads have very low traffic flows and the 1 – 2 vehicle movements do register higher than a 30% increase, it is still considered that the increase in vehicle numbers whilst high in percentage terms is negligible in real terms and therefore operational traffic has been excluded from the assessment.

18.10 Assessment Methodology

18.10.1 This section presents the methodology set to be used to assess the potential effects of the Proposed Development in relation to Transport and Access.

Study area and Scope

18.10.2 The ISEP guidelines for the Environmental Assessment of Traffic and Movement (2023) suggest that a relevant study area for a Transport Assessment ('TA') within an ES should include highway links where traffic flows will increase by more than 30% or a sensitive area where traffic flows have increased by more than 10%. The scope of this assessment will consider these thresholds for the preliminary links set out in Section 18.4 during the construction and decommissioning phases.

18.10.3 The following links surrounding the draft Order Limits have been identified for assessment to determine whether they will reach the thresholds set out in the paragraph above.

18.10.4 A plan showing the location of these links is also included in Figure 18.1: Transport and Access Study Area (Appendix 1.1: Figures).

18.10.5 The ISEP Guidelines distinguish between the time of the greatest environmental impact and the greatest highway impact. Greatest environmental impact occurs at a period of greatest change i.e. highest percentage increase. To maintain consistency with the vehicle movement data to be utilised within the noise and air quality assessments also included within the future ES, daily flows will be considered to assess the impact from a transport perspective. This approach is also considered appropriate due to the different directions of travel at differing peak times; utilising daily flows

captures all traffic throughout the day providing an overall picture of the traffic associated with the construction and decommissioning of the Site.

Scope

18.10.6 The temporal scope of the chapter is the entire lifetime of the Proposed Development, which therefore covers construction and decommissioning works.

18.10.7 The duration of the effects has been reviewed on the basis of the following, as per ISEP guidance:

- Temporary: Short term – 0-5 years;
- Temporary: Medium term – 5-25 years; and
- Permanent: Long term – more than 25 years.

18.10.8 The following aspects will be considered in the chapter as a significant effect is considered likely:

- Changes in Traffic Flows – the difference in traffic flow on select links as a result of the Proposed Development;
- Severance – the actual or perceived separation of people from places, services and amenities;
- Pedestrian delay – the additional time pedestrians experience as a result of the Proposed Development;
- Pedestrian amenity – the overall quality of the pedestrian environment and how it is impacted by the Proposed Development;
- Driver delay – the additional time experienced by drivers on the surrounding highway network as a result of the Proposed Development;
- Fear and intimidation – the degree to which the presence, speed or behaviour of traffic makes pedestrian and cyclists feel uncomfortable when adjacent to the highway network;

- Accidents and road safety – the extent to which the Proposed Development will impact the number and severity of road traffic collisions; and
- Public transport capacity – the impact of the Proposed Development on public transport capacity surrounding the Site.

18.10.9 The following aspects will not be considered in the ES because potential effects on these receptors are not likely to be significant:

- Traffic movements with hazardous loads – albeit the impacts of any Abnormal Indivisible Load (AIL)[c] will be considered.

Assessment Methodology

Significance Criteria

18.10.10 The magnitude and significance of effects are to be determined using the criteria set out in the ISEP Guidelines. The ISEP Guidelines suggest that the assessment should:

- Rule 1 – include any highway links where the traffic flows or the number of HGVs will increase by more than 30%; or
- Rule 2 – include any other specifically sensitive areas where traffic flows have increased by 10% or more.

18.10.11 This chapter is to be prepared based upon the significance criteria as set out below. Likely significant effects are to be assessed as follows:

- Beneficial: Effects that produce benefits in terms of transport and access;

[c] Loads which, due to their size, weight or shape, cannot be divided into smaller loads for transport by road without undue expense or risk of damage, and which exceed the standard legal limits for vehicle dimensions or weight, therefore requiring movement under the provisions for abnormal loads (e.g. the Road Vehicles (Authorisation of Special Types) General Order).

- Adverse: Effects that produce a negative effect in terms of transport and access; and
- Negligible: Effects that produce insignificant change (no measurable change from existing mode share or habits to walking, cycling, public transport and private vehicular traffic or daily construction traffic fewer than 25 vehicles on all roads). ISEP Guidelines indicate that increases in traffic flow of less than 30% generally result in imperceptible changes in the environmental impacts of traffic and traffic flow changes of less than 10% create no discernible impact. For construction vehicles, this is also the case whereby the traffic only affects strategic routes or local roads immediately within the Site's proximity.

18.10.12 An assessment will be carried out for each of the identified impacts to determine the extent of any potential change in relevant factor compared to the baseline scenarios. The scale of change will be evaluated using the former Department of Transport's Manual of Environmental Appraisal as suggested by the ISEP Guidelines. According to this approach, changes in traffic levels of 30%, 60% and 90% are categorised as 'slight', 'moderate' and 'substantial' impacts, respectively. However, the 'minor' (<10%), 'moderate' (10-30%) and 'major' (>30%) impacts outlined in the standard assessment criteria within the ISEP Guidelines will be used for the purposes of this assessment, as lower thresholds are considered to be more robust as is standard practice in a Transport ES assessment i.e. it represents the worst case scenario for assessment.

18.10.13 The significance of adverse or beneficial effects will be defined as either negligible, minor, moderate or major:

Table 18.3 Significance of Effect Definitions

Significance of Effect	Definition
Negligible	Very slight, very short or highly localised impact of no significant consequence (up to +/- 1%) change to walking and cycling, public transport and private vehicular traffic, daily construction

Significance of Effect	Definition
	traffic flow less than 25 on major roads or 2-5 on minor roads, therefore the impact is considered to be 'negligible';
Minor	Slight, very short or highly localised impact of no significant consequence (up to +/- 10%) change to walking and cycling, public transport and private vehicular traffic, daily construction traffic flow less than 100 on major roads or 25-50 on minor roads, therefore the impact is considered to be 'insignificant'
Moderate	Limited impact, (by extent, duration or magnitude) which may be considered locally significant (between 10% and 30% change to walking and cycling, public transport and private vehicular traffic, or daily construction traffic flow greater than 100 on major roads or 50 on minor roads). Additionally, for walking and cycling this may mean that some people change their travel habits. For public transport this is where patronage increases without exceeding existing capacity and for private vehicles this is where changes to flows would occur but within the design capacity of roads/junctions. With regards to construction this would also mean that some traffic passes through residential areas.
Major	Considerable impact, (by extent, duration and magnitude) of more than local significance or in breach of recognised acceptability, legislation, policy or standards, (greater than +/- 30% change to existing levels of walking and cycling, public transport and private vehicular traffic or daily construction traffic flow greater than daily development flow). For walking and cycling this may mean the majority of people in the area change their habits. For public transport this is where patronage will exceed the capacity of existing services and for private vehicles this is where changes will lead to a perceived impact on delay

Significance of Effect	Definition
	and congestion. With regards to construction this would also mean that most traffic passes through residential areas.

Magnitude of Impact

18.10.14 The magnitude of impact to a receptor will be determined by considering the estimated deviation from baseline conditions both before, and, if required, after mitigation. The scale used for determining the magnitude of an impact has been based on **Table 18.4.**

Table 18.4 Magnitude of Impact Description

Impact Magnitude	Description
High	Long lasting impacts observed with a high frequency over a large area with no reversibility.
Medium	Medium lasting impacts observed with a medium frequency of a medium sized area with an element of reversibility.
Low	Short-lasting impacts observed with a low frequency in a small area that are mostly reversable.
Very Low	Very short-lasting impacts observed with a very low frequency in a small area that are reversable.

Receptor Sensitivity

18.10.15 The sensitivity of each receptor will be evaluated as being high, medium, low or negligible based on a review of the baseline position of each receptor and its performance against benchmark areas. The receptors and the definition of sensitivity of a receptor (high, medium, low) is based on a scale set out in **Table 18.5.**

Table 18.5 Receptor Sensitivity Description

Value (Sensitivity)	Description
High	Schools, colleges and other education institutions; Retirement / care homes for the elderly or infirm; Roads with no footway that may be used by pedestrians; and Collison 'clusters';
Medium	Hospitals, surgeries and clinics; Parks and recreation areas; Shopping areas; and Roads with narrow footways that may be used by pedestrians;
Low	Open spaces; Tourist / visitor attractions; Historical buildings; Churches and other places of worship; and Roads with generous footways that are used by pedestrians.
Very Low	N/A

Assessing Significance

18.10.16 **Table 18.6** provides a matrix for determining the significance of an effect based on the sensitivity of the receptor and the magnitude of impact.

Table 18.6 Significance of Effect Matrix

Receptor Sensitivity	Magnitude of Impact			
	High	Medium	Low	Very Low
High	Major Beneficial / Adverse	Major Beneficial / Adverse	Moderate Beneficial / Adverse	Minor Beneficial / Adverse
Medium	Major Beneficial / Adverse	Moderate Beneficial / Adverse	Minor Beneficial / Adverse	Negligible
Low	Moderate Beneficial / Adverse	Minor Beneficial / Adverse	Negligible	Negligible
Very Low	Minor Beneficial / Adverse	Negligible	Negligible	Negligible

18.10.17 Effects classified as major or moderate are considered 'significant'. Effects classified as minor or negligible in scale are considered 'not significant'.

Construction and Decommissioning Assessment Methodology

18.10.18 An estimation of construction traffic flows associated with the construction and decommissioning activities of the Proposed Development will be undertaken by Iceni in conjunction with the rest of the applicant team. Both of these scenarios are anticipated to cover a 30-month period. The flows, however, are still to be determined at this stage but will be based around similar schemes and the Applicant's experience elsewhere. The ability of the highway network to accommodate any additional trips during these scenarios will also be assessed within a TA.

18.11 Limitations and Assumptions

18.11.1 In forecasting the trips associated with the Proposed Development, it has been assumed that the current trends observed in vehicle trip patterns will continue based on recent trends and latest forecasts for growth. There will, however, be a continued unknown change in the way people travel meaning that ultimately it is difficult to assess the impacts of a development in future years. However, it is considered that any future estimations of development traffic will be both accurate, relying on previously used / collected data and robust, by including for contingency on the aforementioned data. Although, it is acknowledged there is the potential that technology will improve significantly between now and then, perhaps influencing the way people travel.

19.0 WATER ENVIRONMENT AND FLOOD RISK

19.1 Introduction

19.1.1 This chapter of the ES Scoping Report has been produced by Waterman Infrastructure & Environment Limited (Waterman) and sets out the proposed scope of assessment and methodologies to be undertaken in the ES with regard to the Water Environment and Flood Risk.

19.1.2 The Water Resources and Flood Risk chapter of the ES will present an assessment of the likely significant effects of the Proposed Development on the environment with respect to Water Resources and Flood Risk.

19.1.3 A desktop study will be undertaken to establish the hydrological conditions and other relevant surface water features within the vicinity of the Proposed Development, in order to determine the potential effects that the Proposed Development may have on Water Resources and Flood Risk, taking into account the scale of the Proposed Development.

19.1.4 This assessment will review key impacts on water resources and water supply infrastructure, flood risk, drainage, the surface water environment and water quality, for both the identified Sites and the Proposed CCO routing, collectively referred to as the Proposed Development.

19.1.5 The hydrological desktop study will identify the existing flood mechanisms and baseline flood risk affecting the Site. The assessment considers potential effects from fluvial, tidal, surface water, groundwater and artificial (reservoirs, sewers, canals) sources of flooding, including the frequency and impact of flooding from these sources.

19.1.6 The assessment will also consider water quality, water resource infrastructure (including capacity and efficiency), and surface water drainage requirements.

19.2 Legislation, Planning Policy and Guidance

Legislation

19.2.1 This proposed scope of assessment for a DCO NSIP has been prepared with reference to; and applicable to the following national legislation:

- Water Act, 2014[194];
- Land Drainage Act, 1991[195];
- Environmental Permitting (England and Wales) Regulations 2016[196];
- Flood and Water Management Act, 2010[197];
- Flood Risk Regulations, 2009[198];
- The EIA Regulations 2017;
- Reservoirs Act 1975[199];
- Water Environment (Water Framework Directive) (England and Wales) Regulations 2017[200];
- The Groundwater Directive (2006/118/EC)74[201];
- Water Resources Act 1991[202];
- The Conservation of Habitats and Species Regulations 2010 (updated 2017)[203];
- Environmental Damage (Prevention & Remediation) Regulations 2009[204]; and
- Control of Pollution (Oil Storage) (England) Regulations 2001[205]; NPS EN-1, NPS EN-3 and NPS EN-5.

19.2.2 This legislative framework promotes a risk based and proportionate approach to managing flood risk and impacts on the water environment, ensuring development does not increase flood risk elsewhere and, where possible, reduces overall risk.

19.2.3 The legislation establishes roles and responsibilities for key regulators, including the Environment Agency and Lead Local Flood Authorities ('LLFAs').

The managing LLFA for the Solar Development Sites A-D is SDDC, for Solar Development Site E the LLFA is SCC, the LLFA boundary line is to the southwest.

19.2.4 A small western section of the Navy Cable route, between Solar Development Site B and Solar Development Site C is located within the DDDC LLFA Boundary, the remaining section of the Navy Cable Route is located within the SDDC LLFA Boundary.

19.2.5 Other key authorities include the LPAs, specifically DCC, SDDC, ESBC, DDDC and SCC.

19.2.6 National and local legislation requires that development proposals take account of flood risk from all sources, as well as consider surface water management and sustainable drainage. Mitigation measures are expected to be appropriate to the scale and nature of the risk, taking into account the site context, proposed land use and receiving environment.

19.2.7 The application of this legislation is supported by national and local guidance, including statutory flood risk management strategies and technical guidance on Flood Risk Assessment ('FRA') and Sustainable Drainage Systems ('SuDS'). This guidance sets out how planning and consenting bodies should assess risk, determine when mitigation is required and ensure that flood risk and drainage proposals are reasonable, practical and deliverable over the lifetime of the Proposed Development.

Planning Policy

19.2.8 National, regional, and local planning policy relevant to the Proposed Development comprise the following:

- NPS EN-1 (2026);
- NPS EN-3 (2026);
- NPPF (updated February 2025);
- DCC Local Flood Risk Management Strategy ('LFRMS'), (2023)[206];
- SDDC Level 1 Strategic Flood Risk Assessment ('SFRA', 2025)[207];

- SDDC Level 1 SFRA, (undertaken in November 2008)[208];
- SCC Local Flood Risk Management Strategy (2015), (recent 2024 Action Plan update)[209];
- SDDC Local Plan (2017–2028);
- ESBC Strategic Flood Risk Assessment Level 1 Report, February (2008)[210];
- ESBC Strategic Flood Risk Assessment Level 2 Report, August (2008)[211];
- ESBC Local Plan (2012–2031);
- DDDC Level 1 Strategic Flood Risk Assessment, November (2021)[212]; and
- Derbyshire Dales Local Plan (2013–2033).
- Guidance
- NPPG Flood Risk and Coastal Change (updated 2025)[213];
- Environment Agency Flood Zone[214] and Surface Water[215] Opensource Datasets and Guidance (2025);
- DCC, SuDS and Surface Water Guidance, (2025)[216]; and
- SCC SuDS Handbook for Developers, (2017)[217].

19.3 Engagement

19.3.1 Environment Agency flood data requests have been submitted for each Solar Development Site within the draft Order Limits. The Applicant has received flood data for Site's A, B and E. The Applicant is currently waiting for a response for Site's C, D and the National Grid Willington 400kV substation. The Environment Agency, as the consenting authority for 'Main Rivers', will be consulted on any required Flood Risk Activities Permits ('FRAPs'), for any work within eight meters of any local main river or flood defence structure.

19.3.2 Engagement will be made with the LLFAs and each relevant LPA on any specific flooding issues, as well as obtaining flood risk and drainage LLFA Pre-Application advice, if required. The LLFA, as the consenting authority for local ordinary watercourses, will be consulted on any Section 23 of the Land Drainage Act (1991) Consent for works affecting ordinary watercourses. Engagement can be made with the LLFA when, or if, required.

19.3.3 The Canal & River Trust, have been contacted to confirm any construction regulations required for nearby works to the Trent & Mersey Canal, associated with Solar Development Site E and the National Grid Willington 400 kV substation construction works, between Egginton and Willington. Their response is currently pending.

19.3.4 It is unlikely that any surface water discharge connections will be made to the canal, which the Canal & River Trust will be consulted on.

19.3.5 Water Companies (Severn Trent Water, South Staffordshire Water) engagement and pre-development enquiries can be made if sewer and potable water supply and capacity is required as part of the Proposed Development. Engagement can be made with the respective water companies when, or if, required.

19.4 Study Area

19.4.1 The Proposed Development Site area comprises 383 hectares (401 ha including National Grid Willington 400 kV substation POC) of a primarily open agricultural landscape. The Proposed Development Site also includes associated above ground and below ground grid connection cable infrastructure to connect between all five solar development sites parcels across an expansive area, for final connection to the existing National Grid Willington 400 kV substation.

19.4.2 The identified exact cable route is still under assessment; therefore, a CCO has been proposed, whereby, a cable routing radius to confirm the most suitable cable connection route has been created as part of the Proposed Development.

Environment Agency 'Main Rivers'

19.4.3 There are a number of Environment Agency 'Main Rivers' that intersect with the draft Order Limits which will be considered as part of the study area. These main rivers will be under the Environment Agency's managing authority and are identified in Section 19.29 below.

Ordinary Watercourses

19.4.4 There are a number of existing ordinary watercourses located within the vicinity of the Proposed Development, particularly within the draft Order Limits associated with parcels B, C, D, and E, and the cable corridor routes.

19.4.5 These ordinary watercourses fall in the jurisdiction of SDDC, as the consenting LLFA. The LLFA have the responsibility for consenting and enforcing works on ordinary watercourses unless they are within an internal drainage district managed by an Internal Drainage Board ('IDB'). There are no IDB administrate authorities within the draft Order Limits, nor within Derbyshire.

Geographical Extent

19.4.6 The geographical extent of flood risk sources, the surface water environment, and the water supply and sewer infrastructure study area has been defined as the extent of the surface and groundwater waterbodies; and the waterbodies water quality risk, and existing or required water supply, sewer and surface water drainage infrastructure that intersect within a 1-2km radius, and or, surrounding the draft Order Limits, that could be impacted by the Proposed Development.

19.4.7 The draft Order Limits associated with Sites A–D are situated in predominantly rural locations, with surrounding land use characterised by agricultural fields and sporadic farmsteads. Existing supply and drainage connections in these areas are therefore expected to be limited and primarily associated with isolated agricultural properties rather than dense urban infrastructure.

19.4.8 The draft Order Limits associated with Solar Development Site E are located in proximity to the town of Burton upon Trent and the village of Egginton, where

it is anticipated that existing public water supply and drainage infrastructure serves established urban and semi-urban receptors.

19.4.9 The draft Order Limits associated with the National Grid Willington 400 kV substation parcel lay close to the town of Willington, which similarly benefits from existing utility connections associated with the surrounding settlement.

19.4.10 The Proposed Cable Corridor Options, cable routing radius, covers a large extensive area that intersects through; rural, urban towns, motorways, and A - Road receptors, as well as a number of ordinary and main river watercourses; and surface waterbody features.

19.5 Sensitive Receptors

19.5.1 The (EIA) has been undertaken in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 and relevant Planning Inspectorate Advice Notes, including Advice Note Seven (EIA process) and Advice Note Seventeen (cumulative effects).

19.5.2 The assessment approach has been informed by applicable National Policy Statements (including EN-1), national planning policy (NPPF and associated Planning Practice Guidance), and relevant legislation relating to flood risk and water management, including the Flood and Water Management Act 2010, Land Drainage Act 1991 and Flood Risk Regulations 2009.

19.5.3 Topic-specific methodologies have been developed using recognised UK good practice and guidance, including Environment Agency guidance, Strategic Flood Risk Assessments, Local Flood Risk Management Strategies and relevant SuDS design guidance.

19.5.4 This approach is considered appropriate and proportionate for a solar NSIP development, ensuring that likely significant effects on the water environment are robustly identified, assessed and reported, without reliance on sector-specific standards developed for other infrastructure types (e.g. highways).

19.5.5 The Proposed Development has the potential to impact on the following receptors:

- Flood risk to the draft Order Limits and surrounding area including buildings and infrastructure (including road infrastructure) – potential to impact the entirety of the draft Order Limits (during construction and operation);
- Site workers and existing local residents - potential to impact the entirety of the Order Limits (during construction); Existing local residents - potential to impact the entirety of the Order Limits (during operation);
- Off-Site users such as residents, workers and the public - potential to impact the entirety of the Order Limits (during construction);
- Existing and new National Grid Substation infrastructure - potential to impact the entirety of the Order Limits (during construction and operation);
- Existing drainage and water main infrastructure – potential impact from the Proposed Development at National Grid Willington 400 kV substation; and
- Surface Water Environment features, including ponds and ordinary watercourses within the draft Order Limits.

Solar Development Site A

- Foston Brook watercourse (Environment Agency classified 'Main River').

Solar Development Site B

- Longford Brook watercourse (Environment Agency classified 'Main River');
- The Bent Brook (ordinary watercourse); and
- A small pond is located in the west of Site B.

Solar Development Site C

- Trusley Brook watercourse (ordinary watercourse);
- Radbourne Brook watercourse (ordinary watercourse);

- Etwall Brook watercourse (Environment Agency classified ‘Main River’); and
- A small pond is located within the northwestern parcel of Site C.

Solar Development Site D

- The River Dove watercourse (Environment Agency classified ‘Main River’); and
- Hilton Brook watercourse (Environment Agency classified ‘Main River’).

Solar Development Site E

- The River Dove watercourse (Environment Agency classified ‘Main River’);
- The Trent & Mersey Canal (flows adjacent to the southern boundary);
- Eggington Brook watercourse (Environment Agency classified ‘Main River’); and
- A small pond is located within the large eastern parcel of Solar Development Site E.

Proposed CCO

- Pale blue cable route;
- The Foston Brook (Environment Agency classified ‘Main River’); and
- Unnamed ordinary watercourse associated with the Limbersitch Brook.

Navy blue cable route

- The Longford Brook (Environment Agency classified ‘Main River’);
- Longford CP Derbyshire Dales / South Derbyshire stream an ‘ordinary watercourse’ associated with the Longford Brook;
- The Sutton on the Hill stream (central watercourse) and the Sutton on the Hill stream (eastern watercourse) both ‘ordinary watercourse’; and
- 2 small ponds located in the west that intersect with the cable route.

Green cable route

- The Limberstich Brook an ordinary watercourse; and
- The Sutton Brook (Environment Agency classified 'Main River').

Purple cable route

- The Trusley Brook an 'ordinary watercourse'.

Yellow cable route

- The Sutton Brook (Environment Agency classified 'Main River'); and
- The Limberstich Brook an 'ordinary watercourse'.

Orange cable route

- The Sutton Brook (Environment Agency classified 'Main River');
- The Trusley Brook an 'ordinary watercourse';
- The Etwall Brook (Environment Agency classified 'Main River');
- A small pond; and
- Two large unnamed lakes located adjacent to the southwestern edges (outside of the cable route).

Grey cable route

- The Hilton Brook (Environment Agency classified 'Main River');
- The River Dove (Environment Agency classified 'Main River');
- There are a number of unnamed surface waterbodies and lakes that surround the cable route;
- Maroon cable route;
- The northern unnamed 'ordinary watercourse' that appears to be a tributary to the Etwall Brook;
- The far southern edge of the routing intersects with the Trent & Mersey Canal;
- The Mercia Marina and a large lake are located adjacent to the routings far southeastern boundary
- Pink cable route;

- The Etwall Brook (Environment Agency classified ‘Main River’);
- The Sands Brook an ‘ordinary watercourse’ flows along the cable routes southern edge boundary;
- A number of small stream field ditches are also located within the routing. A small pond is located in the north of the routing;
- The far southern edge of the routing intersects with the Trent & Mersey Canal; and
- The Mercia Marina and a large lake are located adjacent to the routings far southeastern boundary.

19.6 Baseline Environment and Future Baseline

19.6.1 Based on the information gathered to date, a summary of the baseline environment is provided below.

Solar Development Sites A-E and the National Grid Willington 400 kV substation

Fluvial Flood Risk

Solar Development Site A

19.6.2 The Environment Agency Flood Map for Planning (Rivers and Sea) shows that the entirety of Solar Development Site Ais located in Flood Zone 1 (defined as land having a ‘low probability’ of flooding, i.e. a less than 0.1% annual probability of river flooding).

19.6.3 The mapping shows Flood Zone 2 ‘Medium Probability’, (between a 1.0% and 0.1% annual probability of river flooding), and Flood Zone 3 ‘High Probability’ (1.0% or greater annual probability of river flooding) extents are located approximately 200m east of Solar Development Site A, associated with the Foston Brook watercourse, an Environment Agency classified ‘Main River’.

19.6.4 A main river is defined by the Environment Agency as a significant watercourse that is designated for flood risk management. The Environment Agency is responsible for maintaining and improving these rivers to manage

flood risk, while other watercourses are classified as ordinary watercourses and are managed by local authorities or the IDB.

Solar Development Site B

19.6.5 Solar Development Site B is shown to be largely located in Environment Agency classified Flood Zone 1. However, Flood Zone 2 and 3 extents are identified in the northeast corner of Solar Development Site B, associated with the Longford Brook watercourse (Environment Agency 'Main River'). Longford Brook is located within 75m east of Solar Development Site B and runs parallel to the eastern boundary.

Solar Development Site C

19.6.6 Solar Development Site C comprises three parcels, all intersecting floodplains within Flood Zones 2 and 3. Nearby are three River Trent tributaries: Trusley Brook, Radbourne Brook, and Etwall Brook. The north-western parcel borders Trusley Brook along its southern edges; the eastern parcel intersects Radbourne Brook to the north; and the southern parcel intersects the Etwall Brook floodplain, designated an Environment Agency Main River.

Solar Development Site D

19.6.7 Solar Development Site D is divided into two separate parcels. The northern parcel is located entirely within a Flood Zone 1 (low probability of flooding). The southern parcel includes Flood Zone 2 and 3 extents, associated with the Hilton Brook and River Dove floodplains which are located to the east and south of this parcel respectively. Both of these watercourses are designated as a 'Main River' by the Environment Agency.

Solar Development Site E

19.6.8 Solar Development Site E is on land shown to be entirely within Environment Agency Flood Zone 2 and 3 extents, associated with the floodplain of the nearby River Dove and Eggington Brook, both 'Main River' watercourses. The River Dove divides the eastern and western parcels of Solar Development Site E.

National Grid Willington 400 kV substation

19.6.9 The entirety of the substation connection site is located within an Environment Agency Flood Zone 1.

Tidal Flood Risk

19.6.10 Solar Development Sites A-E and National Grid Willington 400 kV substation are located inland, as such they are not considered to be at risk of flooding from tidal or sea sources.

Surface Water Flood Risk

Solar Development Site A

19.6.11 The Environment Agency Surface Water Flood Maps indicate that the majority of land within the Parcel is shown to be at a 'Very Low' (<0.1% Annual Exceedance Probability (‘AEP’)) risk of surface water flooding.

19.6.12 There are small pocket areas at ‘Low’ (0.1% - 1% AEP), ‘Medium’ (1% - 3.3% AEP) and ‘High’ (>3.3% AEP) surface water flood risk scattered around the parcel at flood depths up to 300mm; however, no major surface water flood extents are identified on the land. There are no defined surface water environment features within Solar Development Site A.

19.6.13 The land slopes down from the north to south, falling from approximately 105m Above Ordnance Datum (‘AOD’) to 80.0m AOD.

Solar Development Site B

19.6.14 The majority of land within Solar Development Site B is shown to be at a 'Very Low' risk of surface water flooding, there are small pocket areas at 'Low – High' flood risk scattered around the parcel at flood depths up to 300mm.

19.6.15 There are significant ‘Low – Medium’ surface water flood extents, with some ‘high-risk’ channel water, located in the centre of the parcel, associated with the interlinking Bent Brook ‘ordinary watercourse’ and field drainage ditches at flood depths up to 300mm. A small pond is located in the west of Site B.

19.6.16 The topography across Solar Development Site B falls north to south, falling from approximately 68.0m AOD to 88.0m AOD.

Solar Development Site C

19.6.17 Solar Development Site C and the watercourse / field drainage channelling which intersects the site, is shown to be at ‘Low-High’ risk of surface water flooding at flood depths of up to 300mm. A small pond is located within the northwestern parcel of Site C.

19.6.18 The land gently slopes down from north to south across Solar Development Site C, ranging from approximately 72.0m AOD to 56.0m AOD.

Solar Development Site D

19.6.19 There are dense pocket areas at 'Low – High' risk of surface water flooding within Solar Development Site D at flood depths up to 300mm. There are no defined surface water environment features within Solar Development Site D. The topography is relatively even across Solar Development Site D; the smaller parcel to the north lies at approximately 58.0m AOD and the larger southern parcel lies at approximately 52.0m AOD.

Solar Development Site E

19.6.20 Solar Development Site E is comprised of four separate parcels; the large eastern parcel contains a small pond. There are dense pocket areas at 'Low – High' risk of surface water flooding within the parcel at flood depths up to 300mm.

19.6.21 The topography is relatively even across Solar Development Site E, with the land lying at approximately 45.0m AOD.

National Grid Willington 400 kV substation

19.6.22 The Environment Agency Surface Water Flood Maps shows pocket areas of 'Low – High' risk located across the National Grid Willington 400 kV substation Site at flood depths up to 300mm. There are no defined surface water environment features within the National Grid Willington 400 kV substation Site.

19.6.23 The topography is relatively even across the National Grid Willington 400 kV substation Site, ranging between 41.0m and 43.0m AOD.

Groundwater Flood Risk

19.6.24 Groundwater flooding occurs when levels rise above the ground surface, typically after prolonged rainfall in low-lying areas, near springs, or where chalk underlies the ground.

19.6.25 The SDDC Level 1 SFRA (November 2008) assesses groundwater risk using vulnerability mapping based on aquifer presence and ground permeability.

19.6.26 As this remains the most up-to-date district-wide mapping for the Proposed Development, groundwater risk has been assessed using the SDDC (2008) map, alongside BGS deposit and borehole records.

Solar Development Site A

19.6.27 Solar Development Site A has no superficial deposits in the north and east; the southern half comprises Mid Pleistocene sand and gravel (Glaciofluvial terrace deposits), a Secondary A Aquifer. Bedrock is Mercia Mudstone (Secondary B Aquifer) across the site, with low permeability except where fractured.

19.6.28 SDDC SFRA mapping classifies most of Solar Development Site A as 'unproductive' (low groundwater flood risk), with a more vulnerable 'Minor Aquifer' in the south. Nearby BGS boreholes record groundwater at 9.45m and 7.50m below ground level ('bgl'), indicating deep levels above low permeability soils. Overall groundwater flood risk is low.

Solar Development Site B

19.6.29 Superficial deposits are mostly absent at Solar Development Site B, with a narrow alluvium strip through the centre and River Terrace Deposits along the eastern boundary; both are Secondary A Aquifers. Alluvium (clay, silt, sand) has low permeability, while River Terrace Deposits (sand and gravel) are more permeable.

19.6.30 Bedrock is Mercia Mudstone (Secondary B Aquifer) across the Site. SDDC SFRA mapping classifies most of Solar Development Site B as 'unproductive' (low groundwater flood risk), with a small high vulnerability 'Minor Aquifer' where alluvium is present. A nearby borehole records groundwater at 3.35m bgl, indicating relatively deep levels. Overall groundwater flood risk is low, as most of the site lies in Flood Zone 1 and is not influenced by elevated river levels.

Solar Development Site C

19.6.31 In the north west parcel of Solar Development Site C, superficial deposits are absent in the north and west, with Alluvium, Oadby Till and River Terrace Deposits present to the east and south. The eastern parcel lacks deposits in the east and south, with Alluvium and Head (clay, silt, sand and gravel)

elsewhere. The southern parcel has no deposits in the north, a strip of Head beneath, and Alluvium across the remainder.

19.6.32 SDDC SFRA mapping classifies most of Solar Development Site C as 'unproductive', indicating low groundwater flood risk; however, Alluvium along the Trusley, Radbourne and Etwall Brooks is classed as a high vulnerability 'Minor Aquifer'. Alluvium and River Terrace Deposits are Secondary A Aquifers, while Head is Secondary (undifferentiated).

19.6.33 Bedrock comprises Gunthorpe Member Mudstone and Mercia Mudstone, with a small sandstone strip near Highlands Farm; all are Secondary B Aquifers. Boreholes recorded groundwater at between 4.9m and 4.3m bgl, indicating relatively deep levels above low permeability soils. Overall groundwater flood risk is low.

Solar Development Site D

19.6.34 Superficial deposits at both Solar Development Site D parcels comprise Alluvium (Secondary A Aquifer), over Mercia Mudstone bedrock (Secondary B Aquifer).

19.6.35 SDDC SFRA mapping classifies the site as a high vulnerability 'Minor Aquifer'. Nearby Boreholes recorded groundwater at between 2.8m - 4.2m bgl, indicating relatively deep/intermediate levels in variable soils. Given the higher fluvial flood risk, there is potential interaction between groundwater and elevated river levels, so overall groundwater flood risk is considered Medium.

Solar Development Site E

19.6.36 Superficial deposits at Solar Development Site E comprise Alluvium, Hemington Gravel and Holme Pierrepont Sand and Gravel, all Secondary A Aquifers. Bedrock includes the Tarporley Siltstone, Edwalton, Radcliffe and Gunthorpe Mudstone formations, designated Secondary B Aquifers.

19.6.37 SDDC SFRA mapping identifies the east as a high vulnerability 'Minor Aquifer' and the west as intermediate. Boreholes nearby recorded shallow groundwater at between 0.9m – 2.4 m bgl. Given the permeable deposits, shallow groundwater and higher fluvial flood risk, interaction with river levels is likely; groundwater flood risk is therefore Medium.

National Grid Willington 400 kV substation

19.6.38 Superficial deposits comprise Holme Pierrepont Sand and Gravel (Secondary A Aquifer) over Gunthorpe Mudstone bedrock (Secondary B Aquifer). SDDC SFRA mapping classifies the Willington substation parcel as a high vulnerability 'Minor Aquifer'. A borehole on site records groundwater at 9.60 m bgl, indicating relatively deep levels above low permeability soils. Overall groundwater flood risk is low.

Reservoir Flood Risk

19.6.39 Environment Agency Reservoir Flood Mapping[218] shows that Solar Development Sites A–C are not affected under either 'Wet' or 'Dry' breach scenarios.

19.6.40 However, several large reservoirs in Derbyshire could generate extensive flood events. The southern parcel of Solar Development Site D and all of Solar Development Site E fall within the predicted flood extents (likely associated with Foremark Reservoir) under both scenarios, while the National Grid Willington 400 kV substation Site is affected under 'Wet' conditions only.

19.6.41 These maps represent extreme worst-case scenarios, and the likelihood of reservoir failure is very low due to strict regulation under the Reservoirs Act 1975 and subsequent amendments.

Sewer Flood Risk

19.6.42 Sewers are not designed for prolonged, intense rainfall, which can cause flooding via manholes and gullies and lead to overland flows. Flood risk has been reviewed for any existing sewer or water infrastructure within the sites and cabling corridors. The SDDC SFRA does not provide historical sewer flood incident data.

19.6.43 Solar Development Sites A–E: As largely greenfield sites, they are expected to have minimal existing sewer infrastructure; sewer flood risk is therefore negligible.

19.6.44 National Grid Willington 400 kV substation: Some existing sewer and water connections are likely present to serve the operational National Grid facility and staff amenities.

Proposed CCO – Baseline Review

Pale blue cable route

19.6.45 The cable route mainly crosses agricultural land, intersecting Crowfoot Lane, Ashbourne and Church Road, and approaching the western edge of Church Broughton. It crosses two watercourses—Foston Brook (Environment Agency Main River) and an unnamed tributary of Limbersitch Brook.

19.6.46 The route is largely within Flood Zone 1, with localised Flood Zones 2 and 3 in the west and east near the watercourses. Most areas are at Very Low surface water flood risk, with small Low–High risk pockets (up to 300mm depth).

19.6.47 Topography falls west to east, from 82.0m to 72.0 m AOD. Geology is mainly Mercia Mudstone, with Alluvium deposits in parts of the west and east. SDDC mapping classifies most of the route as ‘unproductive’, indicating low groundwater flood risk.

Navy blue cable route

19.6.48 The cable route mainly crosses agricultural land, intersecting School Piece Lane, Dickinson’s and James Lane. It crosses four watercourses: Longford Brook (Environment Agency Main River), an associated ordinary watercourse, and two Sutton on the Hill streams; two small ponds are also present to the west.

19.6.49 The route is largely in Flood Zone 1, with localised Flood Zones 2 and 3 in the west, centre and east near the watercourses. Most areas are at Very Low surface water flood risk, with scattered Low–High risk pockets (depths up to 300 mm), particularly near channels and low lying areas.

19.6.50 Topography falls west to east, from 72.0m to 62.0m AOD. Geology is mainly Mercia Mudstone, with Alluvium and River Terrace Deposits along watercourse corridors. SDDC mapping shows most of the route as ‘unproductive’, with high vulnerability ‘Minor Aquifers’ near watercourses; overall groundwater flood risk is low.

Green cable route

19.6.51 The cable route mainly crosses agricultural land, and crosses Limbersitch Brook (ordinary watercourse).

19.6.52 The route is largely within Flood Zone 1, with Flood Zones 2 and 3 extents in the centre (linked to the Limbersitch Brook floodplain). Most areas are at Very Low surface water flood risk, with isolated Low–High pockets (depths up to 300 mm), mainly near watercourses and low lying areas.

19.6.53 Topography undulates across the green cable route. Bedrock geology consists of Mercia Mudstone, with superficial deposits of alluvium in the centre. SDDC mapping classifies the route as largely 'unproductive' (low groundwater risk), with high vulnerability 'Minor Aquifers' in the centre. Groundwater flood risk is largely low, and low–medium in the centre.

Purple cable route

19.6.54 This route comprises agricultural land, and borders Trusley Brook to the south. The purple route is largely located within a Flood Zone 3.

19.6.55 Most areas are at Very Low surface water flood risk, with scattered Low–High risk pockets, particularly in the southwest corner.

19.6.56 The topography is relatively even across the purple cable route, at approximately 64.0m AOD. Superficial deposits consist of alluvium and bedrock geology comprises Mercia Mudstone to the west and Gunthorpe Member – Mudstone to the east. SDDC mapping classifies this route as largely high vulnerability 'Minor Aquifers', indicating a low-medium groundwater flood risk.

Yellow cable route

19.6.57 The cable route mainly crosses agricultural land. It crosses two watercourses Limbersitch Brook (ordinary watercourse) and Sutton Brook (Environment Agency Main River), with the former feeding the latter. Most of the route is located within a Flood Zone 1 however the west of the route is located in Flood Zone 2 and 3 extents associated with the Limbersitch and Sutton Brooks.

19.6.58 Most areas are at Very Low surface water flood risk, with scattered Low–High risk pockets.

19.6.59 The topography rises to approximately 87.0m AOD around Ash Lane; the rest of the route site at between approximately 60.0m AOD to 67.0m AOD.

19.6.60 Superficial deposits comprise Alluvium, River Terrace Deposits and Glaciofluvial terrace deposits in west, surrounding the Limbersitch and Sutton Brooks. Bedrock geology consists of the Mercia Mudstone Group. SDDC mapping classifies the route as largely 'unproductive' (low groundwater risk), with high vulnerability 'Minor Aquifers' in the west. Groundwater flood risk is largely low, and low–medium in the west.

Orange cable route

19.6.61 This route crosses mainly agricultural land with some semi urban areas, intersecting Dish Lane, Sutton Lane, Ash Lane and Willowpit Lane. It crosses four watercourses: Trusley Brook (ordinary watercourse), and Sutton Brook and Etwall Brook (Environment Agency Main Rivers).

19.6.62 The routes are largely within Flood Zone 1, with localised Flood Zones 2 and 3 along the eastern edge and the west of the route, near watercourses mentioned above. A small pond lies in the south, with two larger lakes adjacent to its southwest (outside the corridor).

19.6.63 Most areas are at Very Low surface water flood risk, with scattered Low–High risk pockets, mainly near watercourses. A notable High risk flow path occurs along the southwestern edge, linked to falling ground towards nearby ponds, with additional localised ponding, up to 300 mm depth.

19.6.64 Topography rises in the centre of the route, to approximately 80.0m AOD. The rest of the cable route sits at approximately 60.0m AOD. Geology comprises Mercia Mudstone to the west and Gunthorpe Mudstone to the east, with superficial deposits (glaciofluvial, till, alluvium and river terrace) along watercourses. SDDC mapping shows central areas as 'unproductive' (low groundwater risk), with high vulnerability 'Minor Aquifers' in the east and west. Groundwater flood risk is low centrally and low–medium near watercourses.

Grey cable route

19.6.65 The cable route mainly crosses agricultural land, intersecting the Crewe–Derby railway and Marston Lane. It follows the Hilton Brook and River Dove

corridors, crossing both Environment Agency Main Rivers, with several nearby ponds and lakes.

19.6.66 The route lies entirely within Flood Zones 2 and 3, with extensive Flood Zone 3 areas linked to the River Dove floodplain. Most areas are at Very Low surface water flood risk, with isolated Low–High pockets (300–600 mm depths), mainly due to local ponding rather than river flooding.

19.6.67 Topography falls north to south, from 52.0m to 46.0m AOD. Geology comprises Mercia Mudstone bedrock overlain by alluvium, Hemington Gravel, and river terrace deposits along watercourses. SDDC mapping classifies the route as 'Minor Aquifers' (high vulnerability in the north, intermediate in the south). Groundwater flood risk is low–medium in the north and low in the south.

Maroon cable Route

19.6.68 The cable route mainly crosses agricultural land, with some semi urban areas, intersecting the Great Northern Greenway, Crewe–Derby railway, and several roads including the A516, A38 and A50.

19.6.69 It crosses one unnamed ordinary watercourse in the north (a tributary of Etwall Brook), with additional field ditches, and meets the Trent & Mersey Canal at the southern edge. Mercia Marina and a large lake lie near the southeast boundary.

19.6.70 The route is largely within Flood Zone 1, with minor Flood Zones 2 and 3 in the north. Most areas are at Very Low surface water flood risk, with scattered Low–High pockets (up to 300 mm deep), including High risk areas along the northern watercourse and a central flow path linked to runoff from the nearby Toyota facility.

19.6.71 Topography generally falls north to south, from 64.0m to 55.0 m AOD, rising to 80m centrally. Geology is mainly Gunthorpe Mudstone, with local alluvial, lacustrine and sand/gravel deposits.

19.6.72 SDDC mapping classifies the north as 'unproductive' and the south as 'Minor Aquifers' (varying vulnerability). Groundwater flood risk is negligible in the north and low in the south.

Pink cable route

19.6.73 The cable route mainly crosses agricultural land with some semi urban areas, intersecting the Crewe–Derby railway, Sutton Lane, Willowpit Lane, the A516, Hilton Road, A50, Egginton Road, A38, Boundary Road, Etwall Road and Findern Lane.

19.6.74 It crosses Etwall Brook (Environment Agency Main River) centrally and follows Sands Brook (ordinary watercourse) along the southern edge, with additional field ditches and a small pond to the north. The southern boundary meets the Trent & Mersey Canal, with Mercia Marina and a large lake nearby.

19.6.75 The route is largely within Flood Zone 1, with localised Flood Zones 2 and 3 in the north, centre and south near watercourses. Most areas are at Very Low surface water flood risk, with isolated Low–High pockets (≤300 mm depth), and higher risk pooling in the north near Hilton Gravel Pits (up to 600 mm depths).

19.6.76 Topography falls north to south, from 74.0 m to 52.0 m AOD. Geology is mainly Gunthorpe Mudstone, with local alluvial, lacustrine and sand/gravel deposits. SDDC mapping shows the north as ‘unproductive’ and the south as ‘Minor Aquifers’ (varying vulnerability). Groundwater flood risk is negligible in the north and low in the south.

19.7 Design, Mitigation and Enhancement Measures

19.7.1 At this early-stage mitigation is not currently known but is likely to include the following:

- The Proposed Development will be designed to be resilient to projected future changes to the climate affecting rainfall and flood risk;
- Suitable construction management techniques, incorporated through a CEMP such as silt traps, wheel washers, temporary SuDS can provide protection of water quality and mitigate the risk of water pollution during the construction stages;
- The inclusion of SuDS would restrict and control the rate of surface water runoff from the Proposed Development, as well as considerations for

SuDS measures. This would ensure that flood risk is not increased off-Site due to the additional impermeable surfaces;

- SuDS features would be designed to ensure appropriate treatment of surface water runoff, and that there would be no effects on water quality during operation;
- Hydrological Flood Modelling of nearby and intersecting watercourses can be undertaken to determine the actual fluvial and surface water flood risks present at the Sites;
- The LLFA, as the consenting authority for local ordinary watercourses, will be consulted on any works affecting local ordinary watercourses;
- The Environment Agency, as the consenting authority for Environment Agency 'Main Rivers', will be consulted on any required FRAP, for any work within eight meters of any local main river or flood defence structure; and
- Given the Proposed Developments hydrogeological setting, with a high number of intersecting watercourses and permeable superficial geology, the potential for elevated groundwater levels during prolonged or intense rainfall events, it is recommended that groundwater flood risk is monitored as part of the EIA.

19.7.2 With the implementation of suitable mitigation and management, some of the impacts could potentially offer beneficial effects such as a reduction in flood risk to the immediate area surrounding the Site.

19.8 Description of Potential Likely Significant Effects

Enabling and Construction

Fluvial Flood Risk:

- Temporary obstruction or alteration of watercourses may increase flood risk downstream; and
- Reduced floodplain storage due to construction activities near rivers.

Surface Water Environment:

- Temporary effects from the accidental release of contaminants and/or silts during the construction phase.

Water Quality Impacts:

- Runoff carrying sediments, oils, concrete washout, or chemicals into the southern watercourses and central lake. Accidental spills or leaks contaminating surface or groundwater.

Groundwater Flood Risk:

- Excavation works may intercept high groundwater tables, leading to localised flooding; and
- Dewatering activities could alter local groundwater flow patterns.

Potable Water Supply:

- Increase in water demand to support construction work.

Operation

Fluvial Flood Risk:

- Permanent minor loss of floodplain or changes to flow paths increasing downstream risk (the solar panels will be mounted 3.5m above the ground; however, instalment of associated infrastructure, e.g. access roads, ground instalments, any site facilities would result in a minor loss in floodplain land; and
- Inadequate flood mitigation measures may expose the Site or others to flooding.

Surface Water Environment (Water Quality):

- During operation, surface water runoff will increase as more rainfall falls onto newly developed hardstanding impermeable surfaces such as; access roads, site facility buildings, the solar panels themselves, resulting in increased surface water runoff to discharge into the surrounding water environment.
- Increased impermeable surfaces will reduce natural infiltration of water to the ground, and increase water runoff flows to natural low point, water

discharge points and water capture points, such as existing ponds and watercourses within the Site. This can obstruct floodplain flow paths, reduce flood storage capacity and increase flood levels. Mitigation that will be implemented through the instalment of SuDS will significantly reduce any surface water flood risk to the development and provide benefits to water quality.

Groundwater Flood Risk:

- Altered infiltration patterns may raise groundwater levels; and
- Subterranean structures may be vulnerable to groundwater ingress.

Sewer Flood Risk / Foul Water Infrastructure Capacity:

- Increased foul and surface water discharge may exceed sewer capacity. Risk of sewer flooding during storm events if not properly managed.

Potable Water Supply:

- Increase in water demand to support associated solar farm facilities.

Decommissioning

Fluvial Flood Risk:

- Temporary obstruction or disturbance of watercourses during removal of infrastructure (e.g. access tracks, culverts, cable crossings) may increase localised flood risk;
- Removal of infrastructure and ground disturbance within the floodplain could temporarily reduce floodplain storage capacity; and
- Uncontrolled reinstatement or poor regrading of land may alter natural flow paths and drainage patterns.

Surface Water Flood Risk:

- Short-term increase in surface water runoff due to soil compaction from plant and machinery; and
- Progressive removal of impermeable surfaces may improve infiltration over time, reducing runoff rates in the long term.

Surface Water Environment / Water Quality:

- Temporary increase in sediment-laden runoff due to ground disturbance, vegetation removal and soil stripping during decommissioning works;
- Disturbance of previously stabilised ground may increase erosion rates and silt deposition in adjacent watercourses and waterbodies;
- Risk of contamination from accidental spills or leaks of fuels, oils, hydraulic fluids and other chemicals during dismantling and removal of equipment; and
- Disturbance or removal of solar panels, transformers and BESS infrastructure could release contaminants (e.g. residual oils, battery electrolytes) if not properly managed.

Groundwater Flood Risk:

- Excavation associated with removal of foundations, cables and below-ground infrastructure may intersect groundwater, causing localised flooding;
- Changes in ground conditions following removal of impermeable areas may alter groundwater recharge and flow pathways; and
- Backfilling and reinstatement may locally modify groundwater levels if not appropriately designed.

Sewer Flood Risk:

- Demobilisation of solar farm facilities will reduce foul water generation.

Potable Water Supply:

- Temporary demand for water for dust suppression, cleaning, and decommissioning activities; and
- Overall reduction in operational water demand following Site closure.

19.9 Impacts Scoped Out of the Assessment

19.9.1 Based on the baseline conditions section set out above, some topics have been scoped out for certain parts of the Site.

19.9.2 Where parcels are solely located within a Flood Zone 1, fluvial flood risk has been scoped out.

19.9.3 For parcels which largely have a very low risk of surface water flooding (A, C, D, E, and the National Grid Willington 400 kV substation), surface water flood risk has been scoped out.

19.9.4 The topics of surface water quality, groundwater flood risk, and potable water supply have been scoped in for all parts of the Proposed Development.

19.9.5 The absence of existing sewers as a result of Solar Development Site A-E's existing greenfield nature, size and topography means that risk of flooding from sewers is not considered notable for the Site. The nature of the proposed Solar PV Panels infrastructure across these Site's will likely mean sewer and water supply facilities requirements will be minimal. Therefore, sewer flood risk is likely to be scoped out of the assessment for Solar Development Site's A-E.

19.9.6 Water supply connections are not expected to be required for the cable connection route, as the cable route is expected to be self-sufficient electrical supply infrastructure, installed above and below ground, that will not require direct worker facilities, nor any water supply or sewage infrastructure.

19.9.7 National Grid Willington 400 kV substation and Cable Corridor Options

19.9.8 There is expected to be some existing sewer and water supply connections present as part of the employee site facilities, at the existing National Grid Willington 400 kV substation. The below ground cable routing is expected to pass through some semi-rural developments where existing sewer and water supply connections are expected.

19.9.9 Therefore, sewer flood risk would remain scoped in for the National Grid Willington 400 kV substation Site and the Cable Routes.

19.9.10 Based on the baseline information presented above, **Table 19.1** summarises the potential likely construction, operational, and decommissioning effects of the Proposed Development at each of the parcels and cable routes which will be scoped into the assessment.

Table 19.1 Water Resources and Flood Risk Topics to be Scoped In/Out

Topic	Potential Effect	Scoped In						
		A	B	C	D	E	National Grid Willington 400 kV substation	Cable Corridor Options
Construction								
Fluvial Flood Risk	Temporary obstruction/alteration of watercourses increasing downstream risk; temporary loss of floodplain storage			√	√	√		√
Surface Water / Water Quality	Sediment, silt, contaminant runoff to watercourses/lake	√	√	√	√	√	√	√
Groundwater Flood Risk	Interception of groundwater leading to localised flooding; dewatering altering groundwater flow patterns	√	√	√	√	√	√	√
Sewer Flood Risk	Increased discharge exceeding sewer capacity						√	√
Potable Water Supply	Increased potable water demand from construction activities	√	√	√	√	√	√	√
Operation								
Fluvial Flood risk	Minor permanent floodplain loss (infrastructure footprint)			√	√	√		√
Surface Water Flood Risk	Increased runoff from impermeable surfaces		√	√				√
Surface Water /	Increased runoff affecting receiving water		√	√				√

Topic	Potential Effect	Scoped In						
		A	B	C	D	E	National Grid Willington 400 kV substation	Cable Corridor Options
Water Quality								
Groundwater Flood Risk	Altered infiltration raising groundwater levels; vulnerability of potential subterranean structures of the Proposed Development to groundwater ingress	√	√	√	√	√	√	√
Sewer Flood Risk	Increased discharge exceeding sewer capacity						√	√
Potable Water Supply	Increased potable water demand from solar farm activities	√	√	√	√	√	√	√
Decommissioning								
Fluvial Flood Risk	Temporary obstruction/disturbance of watercourses during removal works increasing localised flood risk; temporary loss of floodplain storage; altering of flow paths			√	√	√		√
Surface Water Flood Risk	Short-term increase in runoff due to soil compaction by plant/machinery; reduction in runoff due to removal of impermeable surfaces		√	√				√
Surface Water / Water Quality	Increased erosion and silt deposition in watercourses/waterbodies; contamination from accidental spills/leaks (fuels, oils, chemicals);	√	√	√	√	√	√	√

Topic	Potential Effect	Scoped In						
		A	B	C	D	E	National Grid Willington 400 kV substation	Cable Corridor Options
	release of contaminants from dismantled PV panels, transformers or BESS							
Groundwater Flood Risk	Excavations intercepting groundwater causing localised flooding; changes to flow pathways; changes to groundwater levels	√	√	√	√	√	√	√
Sewer Flood Risk	Reduction in foul water generation following decommissioning						√	√
Potable Water Supply	Temporary water demand for decommissioning activities; reduction in operational water demand post decommissioning	√	√	√	√	√	√	√

19.10 Assessment Methodology

19.10.1 The assessment will adopt the following staged process:

- Identification of a study area for the assessment;
- Identification of existing sensitive receptors within the vicinity of the draft Order Limits;
- Establishing the baseline flood risk, surface water and groundwater conditions at and around the Site;
- Predicting the likely effects arising from the Proposed Development during the construction and operation stage;
- Formulating proposals for mitigation (where appropriate); and

- Assessing the likely significance of any residual effects.

19.10.2 The assessment methodology comprises assessing the sensitivity of identified receptors alongside the impact magnitude to determine the significance of the effect. Appropriate receptors have been determined as aspects of the environment that are sensitive to changes in the baseline water environment, with the sensitivity established based upon the extent to which it is susceptible to change.

19.10.3 The assessment for the draft Order Limits will be supplemented by a FRA and Drainage Strategy presented in the Appendix of the ES Chapter.

19.10.4 The FRA approach, with regard to the cabling, will be determined once there is greater certainty over the cable route locations.

19.10.5 The FRA will include a review of the likely flood risk mechanisms along with an identification of the likely significance of these and how any high-risk elements may be overcome.

19.10.6 The FRA will focus on flood resilience to demonstrate that the Proposed Development will not exacerbate flood risk to on-Site and off-Site areas. In addition to this, the FRA will demonstrate that the Proposed Development and drainage system meet the requirements of the NPPF, NPS, together with local planning policy, CIRIA best practice guidance and compliance with current local and national guidance.

19.10.7 The FRA and the Drainage Strategy, will be undertaken in accordance with the guidance described above and in engagement with statutory consultees (Severn Trent Water, South Staffordshire Water, LLFAs, LPAs and the Environment Agency), this will be used to inform the baseline conditions and likely significant effects of the Proposed Development on flood risk, drainage, surface water environment features, sewer and water supply network infrastructure.

19.10.8 A qualitative DBA will be undertaken to ascertain the likely significant effects of the Proposed Development with regard to flood risk and changes to foul water demand, based on the calculations and strategies set out in the FRA and Drainage Strategy.

19.11 Limitations and Assumptions

19.11.1 At this stage it is unknown whether the transmission cables will below ground or above ground; and the Cable Corridor Options are still being determined, so it is unclear what flood risks or hydrological mechanism are intersecting with the proposed transmission cable route.

19.11.2 The Cable Corridor Options is still being determined; therefore, a large area of proposed land has been assessed for flood risk and water resource. However, once the cable route has been determined for the Cable Corridor Options, land radius for each cable route is expected to reduce from approximately a 350m width to a 1-2m wide construction and instalment width. This will likely significantly change the outcome of any current fluvial, pluvial and groundwater flood risks that have been identified in this EIA Scoping Report.

19.11.3 At this early stage, the flood risks assessed across the Proposed Development, will be assessed for the purpose of this Scoping, via a desk-based study using available online Environment Agency / GOV.UK / DEFRA flood data, BGS geology records, as well as LLFA and LPA flood guidance & documents; and SFRA mapping.

19.11.4 As part of the ES any associated flood assessment reporting. A more detailed review of Environment Agency hydraulic flood data will be undertaken for the draft Order Limits, particularly to assess actual fluvial and pluvial flood risk.

19.11.5 Due to the scale and area of the current Proposed CCO, and unclear certainty of the exact cable route, or, above or below ground status of the infrastructure, as well as potential flood compatible infrastructure status, a detailed flood assessment may not be required nor would be possible, until more certain cable route information has been provided.

19.11.6 At this stage, groundwater flood risk will be assessed via a desk-based review. Given the Proposed Developments hydrogeological setting, with a high number of intersecting watercourses and permeable superficial geology, the potential for elevated groundwater levels during prolonged or intense rainfall

events, it is recommended that groundwater flood risk is monitored as part of the EIA.

19.11.7 Groundwater level monitoring would provide an improved understanding of seasonal and long-term fluctuations, enable early identification of rising groundwater conditions, and inform the assessment of potential impacts on proposed below-ground structures, surface water drainage performance, and surrounding receptors.

19.11.8 Baseline and ongoing monitoring data would support the refinement of drainage and erosion control measures, ensure that mitigation strategies remain effective over the operational lifetime of the Proposed Development, and demonstrate that groundwater flood risk can be managed without increasing off-Site flood risk.

20.0 TOPICS TO BE SCOPED OUT

20.1 Introduction

20.1.1 This section presents the technical topics proposed to be 'scoped out' of the ES, whereby the Proposed Development is not anticipated to result in likely significant effects during the construction, operational, or decommissioning phases. The following discussion of the topics proposed to be scoped out has been informed by professional judgement, initial site surveys, and desk-based research.

20.1.2 Given the Site's location, the Proposed Development is not anticipated to result in transboundary effects, and an assessment of these effects is therefore proposed to be scoped out of the ES.

20.2 Electric, Magnetic and Electromagnetic Fields

20.2.1 The Proposed Development will utilise a mixture of underground cables and overhead line infrastructure with a maximum voltage of 132kV.

20.2.2 The planning system does not include statutory provisions relating to protection from electric, magnetic, and electromagnetic fields ('EMFs'); however, the Department for Energy and Climate Change ('DECC') guidance (2012) advises that the International Commission on Non-Ionizing Radiation Protection ('ICNIRP', 1998) guidelines for occupational and public exposure should be applied. These guidelines confirm that overhead power lines, underground cables, and substations operating at or below 132kV are not capable of exceeding the recommended exposure limits at publicly accessible locations.

20.2.3 Given the nature, scale, and voltage of the Proposed Development, and in accordance with ICNIRP guidance, it is not anticipated to result in likely significant effects relating to electric, magnetic, or electromagnetic fields. This topic is therefore proposed to be scoped out of the ES.

20.3 Lighting

20.3.1 Lighting during the construction and decommissioning phases of the Proposed Development will be managed in accordance with the relevant best practice measures and implemented through measures such as a CEMP. The Site is not located within an area identified as sensitive to dark skies, and lighting effects during these phases are expected to be limited in extent, intensity, and duration. As such, significant effects on the night sky or sensitive ecological receptors are not anticipated, and lighting effects will be addressed within the Ecology chapter of the ES, with no standalone assessment required.

20.3.2 During the operational phase, the Proposed Development will not be permanently lit. Any lighting would be limited to manually operated lights or passive infrared ('PIR') systems associated with substation buildings, inverter/ transformer equipment, or energy storage units, and would only be used intermittently for maintenance or emergency purposes during hours of darkness.

20.4 Major Accidents and Disasters

20.4.1 There is no definition of "major accidents or disasters" provided in the EIA Regulations. However, the ISEP Quality Mark Article on 'Assessing Risks of Major Accidents/ Disasters in EIA' provides the following definition: '*man-made and natural risks which are considered to be likely, and are anticipated to result in substantial harm that the normal functioning of the project is unable to cope with/rectify i.e. a significant effect*.'

20.4.2 A standalone chapter for Major Accidents and Disasters is not considered appropriate given the nature, scale and location of the Proposed Development. The Proposed Development is not considered to be vulnerable or give rise to significant impacts relating to Major Accidents and Disasters.

20.4.3 Therefore, the short listed elements of Major Accidents and Disasters have been scoped out of the assessment. The following disciplines have potential risks associated with them, and therefore will be assessed within the relevant ES chapters. The scoped out elements are presented in **Table 20.1**.

Table 20.1 Elements Scoped Out of the assessment of Major Accidents and Disasters

Element	Scoped Out Rationale
Extreme weather events and in particular flood risk	The Proposed Development is not likely to be vulnerable from extreme weather and climate change and the Proposed Development will be designed to comply with relevant health and safety legislation, regulations and industry guidance helping to control any extreme weather-related events. **Chapter 19: Water Environment and Flood Risk** and **Chapter 10: Climate Change and Greenhouse Gases** of this EIA Scoping Report cover the risks associated with flooding (including climate change), which are scoped into the EIA and the assessment reported in the ES. In addition, an ODS and FRA will be prepared to accompany the DCO application for the Proposed Development to ensure that the Proposed Development and its impact on drainage do not increase the risk of flooding on-or off-Site. The CEMP, Drainage Strategy, LEMP and DEMP with measures provided in outline versions as part of the DCO application will carefully manage flood risk and drainage to ensure any potential risks are managed appropriately and will be secured through the DCO Requirements.
Fire risk	The Proposed Development's proposed mitigation measures would reduce the likelihood of a fire resulting in a major accident or disaster to a very low level. In the unlikely event that such an incident was to occur, mitigation measures secured through the DCO Requirements would minimise the potential for adverse effects on the environment, including human health. Consequently, significant environmental effects arising from battery fires or other electrical fires are not anticipated. Further assessment of the risks and effects associated with such incidents is therefore proposed to be scoped out of the ES. Further information on battery safety and fire risk management will be provided within the OBSMP and the BESS Fire Emissions Assessment, both of which will accompany theDCO application and set out the measures and procedures that will be implemented to manage potential battery-related risks during the construction, operation, and decommissioning phases of the Proposed Development.
Glint and Glare risk	**Chapter 12: Glint and Glare** of this EIA Scoping Report cover the risks associated with glint and glare, which are scoped into the EIA and the assessment reported in the ES. The ES assessment will consider the potential for significant effects arising from solar reflections associated with the Proposed Development on identified sensitive receptors, including

Element	Scoped Out Rationale
	residential properties, road users, rail users and aviation receptors, where relevant. The assessment will identify the likelihood, duration and extent of any glint and glare effects and will determine whether mitigation measures are required to avoid or reduce significant effects.
Accidental Spillages	Accidental spillages associated with the Proposed Development are considered to be low-consequence events. Should a spillage occur, it would be of a scale that would not meet the definition of a major accident or disaster and would be managed through the implementation of appropriate mitigation measures and management plans. Significant environmental effects arising from accidental spillages are therefore not anticipated. Accordingly, further assessment of the risks and effects associated with accidental spillages in the context of major accidents and disasters is proposed to be scoped out of the ES.
Traffic and Movements Infrastructure and users	Changes in traffic flows associated with the Proposed Development during the construction, operation and decommissioning phases will be assessed in **Chapter 18: Transport and Access** of the ES. The assessment will consider the potential effects of traffic and transport movements on the surrounding highway network, including any implications for road safety and the potential for road traffic accidents. In addition, a CTMP, to be secured through a Requirement in the DCO and submitted in outline form as part of the application, will set out measures to manage construction traffic access, routing and vehicle movements, thereby minimising potential risks. The potential for road or rail safety effects arising from glint and glare associated with the solar PV panels will be assessed in **Chapter 12: Glint and Glare** of the ES. Any mitigation identified as necessary through the assessment will be incorporated into the design of the Proposed Development and/or secured through appropriate management measures.
Crime/terrorism	Cyber security in relation to solar development in the UK is important to protect the integrity of energy supply systems and associated data from cyber threats. In the UK, the Product Security and Telecommunications Infrastructure (PSTI) Regulations[219], which came into force on 29 April 2024, impose cyber security requirements on manufacturers of connected consumer devices, including solar inverters. These requirements are expected to apply to manufacturers supplying inverters for the Proposed Development. Security measures, including fencing, gates and CCTV, will be incorporated into the Proposed Development, as described in

Element	Scoped Out Rationale
	Chapter 15: Landscape and Visual Impact. On this basis, the risk of crime and terrorism is considered to be very low, and significant effects arising from a major accident or disaster associated with crime or terrorism are therefore not anticipated.
Unstable ground conditions	A PRA will be appended to the ES, as stated in **Chapter 13: Ground Conditions and Contamination** of this Scoping Report. The findings of the PRA will be used to ensure that ground-related risks are fully understood, with mitigation embedded into the design of the Proposed Development where required, and additional mitigation measures implemented where necessary. On this basis, it is considered unlikely that significant environmental effects would arise from a major accident or disaster associated with interactions between the Proposed Development and unstable ground conditions.
Health risk	Potential human health effects arising from major accidents and disasters are not likely due to the nature of the Proposed Development. Human health effects from the Proposed Development will be addressed within **Chapter 14: Health** of the ES. The Proposed Development will be designed and operated in accordance with relevant health and safety legislation, regulations, and industry guidance to prevent and mitigate such risks.
Utilities	As the design of the Proposed Development progresses, ongoing engagement will be undertaken with relevant utility providers to confirm the location of existing assets and associated required offset distances. These offsets will be incorporated into the design to minimise the risk of major accidents or disasters arising from interactions with utility infrastructure. Good practice measures will also be implemented through appropriate management plans to prevent interference with below-ground utilities during construction, operation and decommissioning, including relevant Protective Provisions within the DCO. These mitigation measures will be secured through DCO Requirements. On this basis, the risk of a major accident or disaster associated with interactions between the Proposed Development and existing utilities is considered to be very low, and significant environmental effects are not anticipated.

20.4.4 On this basis, it is proposed that a standalone Major Accidents and Disasters chapter is scoped out of the ES, as any likely significant effects arising from these risks will be adequately considered within the relevant technical chapters.

20.5 Materials and Waste

20.5.1 A description of the potential types and approximate volumes of construction materials and waste will be provided within the Site and Proposed Development chapters of the ES. Construction-phase waste will be managed in accordance with a CEMP and Site Waste Management Plan ('SWMP'), which will set out measures to minimise waste generation and promote the reuse and recycling of materials where practicable. An Outline CEMP and Outline SWMP will be submitted with the DCO application; the CEMP and SWMP will be secured through a Requirement of the DCO.

20.5.2 Similarly, a DEMP will be secured to manage materials and waste arisings during the decommissioning phase and ensure appropriate mitigation measures are implemented. An Outline DEMP will be submitted with the DCO application.

20.5.3 No significant operational materials and waste arisings are anticipated from the Proposed Development, with only limited inert waste likely to arise from routine maintenance activities.

20.5.4 On this basis, materials and waste is not anticipated to give rise to likely significant environmental effects and is therefore proposed to be scoped out of the ES.

20.6 Minerals

20.6.1 The Site is not located within a Mineral Safeguarding Area ('MSA'). As such, the Proposed Development is not expected to impact any safeguarded mineral resources or affect the future extraction of minerals.

20.6.2 On this basis, likely significant effects relating to minerals are not anticipated, and therefore this topic is proposed to be scoped out of the ES.

20.7 Telecommunications, Television Reception and Utilities

20.7.1 Likely significant effects to television reception and telecommunications are not anticipated, given the use of the Proposed Development.

20.7.2 The design of the Proposed Development will seek to avoid impacts on existing telecommunications infrastructure and utility networks wherever possible, through the use of design and implementation of the appropriate easements. Should any diversion or modification to existing services be required, engagement will be undertaken with the relevant utility and telecommunications providers, and any necessary agreements or mitigation measures will be identified as part of the design process.

20.7.3 On this basis, likely significant effects relating to telecommunications, television reception, and utilities are not anticipated. Therefore, this topic is proposed to be scoped out of the ES.

20.8 Wind Microclimate, Daylight, Sunlight and Overshadowing

20.8.1 Due to the nature of the Proposed Development, there are no sensitive neighbouring receptors that could be affected by changes to wind microclimate, daylight, sunlight or overshadowing. The solar development sites and associated ancillary infrastructure are of low height and dispersed across the Site in an open arrangement, meaning they do not introduce any massing capable of altering wind conditions, or daylight or sunlight availability at nearby residential properties or amenity spaces.

20.8.2 Given the low height, open configuration and rural context of the Proposed Development, there is no realistic pathway for significant effects. As such, these matters do not constitute likely significant environmental effects for the purposes of the EIA Regulations.

21.0 CUMULATIVE EFFECTS ASSESSMENT

21.1 Introduction

21.1.1 There is no single universally adopted methodology for assessing cumulative effects within an EIA. However, established guidance, particularly the Planning Inspectorate's Advice Note Seventeen on Cumulative Effects Assessment ('Advice Note on CEA'), provides a structured basis for identifying and assessing both Intra project and Inter project cumulative effects. The approach for the Proposed Development will draw on this guidance, professional judgement, and the characteristics of the receptors and environmental pathways relevant to the Proposed Development.

21.1.2 The Advice Note on CEA sets out the Planning Inspectorate's expectations for cumulative assessment, including the need for a transparent and proportionate methodology, clear criteria for identifying other developments to be included in the assessment, and the use of a consistent and auditable project list. The Cumulative Effects Assessment ('CEA') for the Proposed Development will follow these principles, ensuring that cumulative effects are assessed in a manner that is aligned with NSIP good practice.

21.1.3 The ES will assess the potential for significant Cumulative Effects as a result of the Proposed Development in the form of a CEA. The CEA be presented as a standalone chapter of the ES.

21.1.4 In line with Schedule 4, paragraph 5(e) of the EIA Regulations the ES will consider "the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources". Furthermore, it will address Schedule 4, paragraph 5 of the EIA Regulations, which states "the description of the likely significant effects on the factors specified in regulation 4(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects

of the development. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project, including in particular those established under Council Directive 92/43/EEC and Directive 2009/147/EC".

21.1.5 The EIA Regulations require that a description of the likely significant effects of the development on the environment should be included in the ES, including cumulative effects. On this basis, each technical chapter will provide an assessment of likely significant cumulative environmental effects with other projects in the area. This will include:

- intra-project effects, which are also known as interactive effects (those resulting from multiple impacts/aspects of the Proposed Development affecting a single receptor); and
- inter-project effects (those resulting from the Proposed Development combined with other schemes in the area).

21.2 Inter-Project Effects

Basis of the Assessment

21.2.1 The intra project assessment will be informed by the study areas and findings of the technical chapters. All non-negligible residual effects will be considered. Minor effects will also be included, as multiple minor effects acting together may result in a significant combined effect. Residual effects assessed as negligible are unlikely to combine to produce a significant Intra project effect.

Policy, Legislation and Guidance

21.2.2 The policy, legislation and guidance relevant to CEA is detailed in **Table 21.1**. The NPPG (2016) has been excluded due to a lack of specific policies regarding CEA.

Table 21.1 CEA Relevant Policy, Legislation and Guidance

Policy / Legislation / Guidance	Description
Policy	
Overarching NPS EN-1 2026	Sets out the UK Government's policy for delivery of major energy infrastructure and will be the primary basis for decision making. EN-1 (2026) requires applicants to assess how the likely significant effects of a Proposed Development may interact with, or combine with, the effects of other existing, consented or reasonably foreseeable developments. In particular, the NPS (Chapter 4: Environmental Impact Assessment) requires that cumulative effects are identified and assessed in a transparent and proportionate manner, using available information from other relevant environmental assessments, development plans and supporting studies. The ES should provide sufficient information to enable the decision maker to understand the nature and scale of cumulative effects and determine whether additional mitigation is required.
NPPF (2025)	The NPPF includes policy requirements relevant to cumulative effects. In summary, the Framework expects planning policies and decisions to ensure that development is appropriate for its location by taking into account the combined and interacting effects of pollution and other environmental pressures on human health, residential amenity and the natural environment. It also requires decision-makers to consider the sensitivity of the site and surrounding area to potential impacts arising from the proposed development.
Legislation	

Policy / Legislation / Guidance	Description
The Infrastructure Planning (EIA) Regulations 2017	The EIA Regulations cover the process of EIA in the context of Nationally Significant Infrastructure Projects. They apply the amended EU Directive 2014/52/EU. Schedule 4, paragraph 5 and 5(e) (see paragraph 1.1.3 above) is of relevance to Cumulative Effects. These Regulations provide specific thresholds of scale to determine if a development requires EIA. Planning Inspectorate's Advice Note Seventeen on CEA specifies that statutory definitions of EIA screening thresholds can be of assistance when considering whether the scale and nature of developments identified in ZOI are likely to interact with the proposed project development and to result in a cumulative effect.
Guidance	
Planning Inspectorate Advice Note on CEA	This Advice Note identifies the nature of projects (referred to as 'Other Developments') that should be considered in a CEA. It advises that a pragmatic approach should be used, in respect of what is feasible and reasonable, where there is a lack of information to identify impacts and assess effects.

Methodology

Stage 1 – Screening of Sensitive Receptors

21.2.3 Sensitive Receptors identified in each technical chapter will be reviewed to determine whether any receptor may be exposed to more than one type of residual effect during construction or operation. Receptors meeting this criterion will be identified as Common Receptors and taken forward to Stage 2.

Stage 2 – Identification of Residual Effects on Common Receptors

21.2.4 Common Receptors with two or more non negligible residual effects will be shortlisted for detailed assessment in Stage 3.

Stage 3 – Assessment of Intra Project Effects

21.2.5 The combined significance of effects on each Common Receptor will be evaluated using the technical assessments and professional judgement. The ES will set out the significance criteria used for this assessment. Where significant Intra project Effects are identified, the ES will propose additional mitigation measures where appropriate.

21.3 Inter-Project Effects

Basis of the Assessment

21.3.1 The inter project assessment will identify and evaluate the incremental changes to baseline conditions that may arise when the Proposed Development is considered alongside other relevant developments.

Methodology

21.3.2 The approach will follow the staged process set out in Advice Note on CEA, expanded to include project specific selection criteria.

Stage 1 – Identification and Evaluation of Other Developments

21.3.3 A ZoI will be defined for each technical topic, based on the study areas used in the ES. Within each ZoI, a search will be undertaken to identify 'Other Developments' using:

- LPA registers;
- the Planning Inspectorate's NSIP register;
- adopted and emerging development plans; and
- other relevant plans and programmes that set a framework for future development.

Table 21.2 Assigning Certainty to 'Other Developments' Advice Note Seventeen

Tier	Certainty
Tier 1	• Under construction; • Permitted applications under the Planning Act or other regimes but not yet implemented; • Submitted applications under the Planning Acting or other regimes but not yet determined; and • All refusals subject to appeal procedures not yet determined.
Tier 2	• Projects on the Planning Inspectorate's programme of projects.
Tier 3	• Projects on the Planning Inspectorate's programme of projects where a scoping report has not been submitted; • Identified in the relevant Development Plan and emerging Development Plans, with appropriate weight given as they near adoption, recognising that there will be limited information available on the relevant proposals; and • Identified in other plans and programmes, as appropriate, which set the framework for future development consents or approvals, where such development is reasonably likely to come forward

21.3.4 To ensure proportionality, the following criteria will be applied when determining whether a development should be included in the long list:

- developments of at least an equivalent scale to 30 residential units;
- developments under construction but not yet completed;

- developments permitted within the last five years but not yet implemented;
- submitted applications that are undetermined, or refused but subject to an active appeal;
- allocations in adopted or emerging Local Plans that are reasonably likely to come forward;
- other plans or programmes that indicate future development likely to interact cumulatively with the Proposed Development.

Engagement on the Long List

21.3.5 The draft long list will be shared with the relevant LPAs for comment. A preliminary long list will be prepared as part of the engagement process, and updated at the ES stage to ensure it reflects the most current information.

Stage 2 – Identification of a Short Lise of Other Developments

21.3.6 The long list will be refined to a short list using the following criteria:

- Temporal overlap: Does the Other Development have construction or operational phases that coincide with the Proposed Development?
- Shared receptors: Could the Other Development affect the same Sensitive Receptors as the Proposed Development?
- Availability of information: Developments with insufficient environmental information will typically be excluded, as cumulative effects cannot be reliably assessed.

Stage 3 – Information Gathering for Short Listed Developments

21.3.7 For each short listed Other Development, relevant information will be collected from publicly available sources. This will include, where available:

- proposed design and site boundary;
- construction and operational programme;
- baseline data and environmental effects relevant to shared receptors.

Selection Criteria for Inclusion in the Long List

21.3.8 Table 2 of Advice Note on CEA also provides criteria to indicate the level of certainty that can be applied to each of the 'Other Developments' being implemented. **Table 21.2** has been based on Table 2 of Advice Note on CEA. The criteria are presented, descending from Tier 1 (most certain) to Tier 3 (least certain) and reflect a diminishing degree of certainty that can be assigned to each 'Other Development'.

Stage 4 – Assessment of Inter Project Effects

21.3.9 The assessment will consider how baseline conditions at each Common Receptor may change as a result of the Proposed Development in combination with one or more Other Developments. This corresponds to Stage 4 of Advice Note on CEA.

21.3.10 The assessment will draw on:

- residual effects identified in the technical chapters of the ES;
- environmental information available for Other Developments; and
- professional judgement.

21.4 Assessment Parameters

21.4.1 The evaluation will consider:

- the combined magnitude of change;
- the sensitivity, value or importance of the receptor;
- the duration and reversibility of effects.

21.4.2 The ES will identify whether Inter project Effects are likely to be significant, i.e., whether they exceed or differ from the effects of the Proposed Development alone.

21.4.3 Where significant Inter project Effects are identified, the ES will propose appropriate mitigation measures.

Significance Criteria

21.4.4 The significance of cumulative effects will be determined by considering the capacity of receptors and environmental resources to accommodate change, consistent with the Advice Note on CEA. The ES will set out clear, explicit terminology to ensure transparency in how significance has been determined.

Cumulative Schemes

21.4.5 To take decision as to whether to include prospective list in Scoping Report or for agreement separately, as is a mixed bag as to whether projects agree list at scoping or ES.

22.0 CONCLUSION

22.1.1 This Scoping Report represents a notification under Regulation 8(1)(b) of the EIA Regulations that the Applicant will undertake EIA for the Proposed Development and prepare an ES to report the findings of the EIA for submission with the DCO application.

22.1.2 The Scoping Report is also a request under Regulation 10 of the EIA Regulations for a formal Scoping Opinion on the information to be provided with the ES.

22.1.3 **Table 22.1** on the following pages presents an overall summary of the proposed scope of the EIA.

Table 22.1 Summary of Proposed Scope of EIA

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
Agricultural Land and Soils				
Effects on agricultural land use and the use of BMV land	Scoped Out	Scoped In	Scoped Out	The Proposed Development would temporarily remove agricultural land from arable production. The impacts of this would be assessed for the operational phase of the Proposed Development, recognising that construction and decommissioning effects would be short-term and primarily relate to potential impacts on soils.
Effect on soil structure from soils being trafficked	Scoped In	Scoped In	Scoped In	There is the potential for adverse effects on agricultural land quality and soil structure arising from soils being trafficked (i.e. driven over) or moved during construction and decommissioning works. These impacts are generally temporary in nature and are typically capable of rectification through appropriate soil management and reinstatement measures. There is also the potential for adverse effects during the operational phase, although these are expected to be limited and intermittent, primarily associated with maintenance activities such as repair works or panel replacement, where required.
Farm business effects (severance, disturbance and effects on drainage)	Scoped In	Scoped In	Scoped Out	Potential for the Proposed Development to result in reduced agricultural land availability, severance of farm holdings, disturbance to ongoing farming operations, and impacts on existing field drainage systems. These effects may influence the efficient management and productivity of agricultural businesses through changes to access, field configuration and land use continuity.

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
Land based rural economy	Scoped out	Scoped in	Scoped out	There is potential for wider effects on the land-based economy, and for the supply of agricultural products and services produced on the land.
Air Quality				
Changes in construction traffic and construction plant emissions (NOx, NO_2, PM_{10}, $PM_{2.5}$), potential impacts on human and ecological receptors	Scoped In	Scoped Out	Scoped Out	Application will be supported by an OCTMP, which would include measures in relation to the management of routing of construction vehicles, to be formalised in the Detailed CTMP. A qualitative construction phase assessment is scoped into the ES.
Construction effects from dust emissions generated by construction activities such as earthworks, material handling and trackout	Scoped In	Scoped Out	Scoped Out	Construction (and decommissioning) dust can be readily mitigated using standard industry techniques; however, a qualitative construction phase dust assessment is scoped into the ES.
Construction effects for NRMM	Scoped Out	Scoped Out	Scoped Out	The use of NRMM and plant will give rise to combustion emissions. However, given the small number of plant vehicles that are expected to be required these are not likely to result in significant impacts and effects. Suitable mitigation measures for NRMM and plant would be included in the OCEMP where necessary, to be formalised in the CEMP.
Operational phase traffic	Scoped Out	Scoped Out	Scoped Out	Not anticipated to generate traffic exceeding the EPUK/IAQM criteria for detailed assessment
Operational effects associated with	Scoped Out	Scoped Out	Scoped Out	Accidental fire risks associated with the BESS infrastructure will be addressed in detail within the Battery Safety

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
accidental major fire incidents related to BESS infrastructure				Management Plan and the BESS Fire Emissions Assessment accompanying the DCO application
Archaeology				
Construction effects upon known or unknown archaeological remains	Scoped In	Scoped Out	Scoped Out	Potential effects of works that penetrate the ground surface as they have the potential to damage and/or remove archaeological deposits, features and finds. These will likely all occur during the enabling and construction phases and include activities such as (but not limited to) piling, excavation of service trenches, foundations or any other element, probing, coring ground levelling, road construction, compound constructions and below ground demolition.
Installation of solar panels	Scoped Out	Scoped Out	Scoped Out	Impact on below-ground deposits is localised, dispersed, and confined to relatively small areas
Effects during operation upon known or unknown archaeological remains	Scoped Out	Scoped Out	Scoped Out	Limited to maintenance, landscaping, utility repairs or groundworks, as well as visual and setting impacts on monuments, reducing their significance
Effects during decommissioning upon known or unknown archaeological remains	Scoped Out	Scoped Out	Scoped Out	Impacts are expected to be of low magnitude and mitigated through requirements of the ODEMP, to be formalised in the Detailed DEMP.
Built Heritage				

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
Designated Heritage Assets within 1km of Site	Scoped In	Scoped In	Scoped In	Potential effects on the setting of heritage assets may arise during construction, operation and decommissioning. During construction and decommissioning, temporary effects may result from the presence of plant (e.g. cranes) and increased noise, dust and traffic, which could affect tranquillity, character and the appreciation of setting where this contributes to asset value. During operation, effects may arise from the introduction of solar arrays and associated infrastructure (including BESS and substations), including changes to key views such as long or open views of church towers and designed landscapes, as well as potential effects on historic landscape character where this contributes to significance, including encroachment on historically associated land such as farmland
Non Designated Heritage Assets within 1km	Scoped In	Scoped In	Scoped In	Potential effects on the setting of heritage assets may occur during construction, operation and decommissioning. Construction and decommissioning may result in temporary visual effects from plant such as cranes, alongside increased noise, dust and traffic, which could affect tranquillity, character and the appreciation of setting where this contributes to heritage value. During operation, effects may arise from the introduction of solar arrays and associated infrastructure (including BESS and substations), including changes to key views such as long or open views of church towers and designed landscapes, as well as potential effects on historic landscape character where this contributes to significance, including encroachment on historically associated land such as farmland.

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
Highly designated Heritage Assets within 1-2km radius of Site	Scoped In	Scoped In	Scoped In	Potential effects on the setting of heritage assets may arise during construction, operation and decommissioning. Construction and decommissioning may result in temporary visual effects associated with the presence of plant such as cranes, which could affect the contribution of setting to heritage value and its appreciation. During operation, effects may arise from the introduction of solar arrays and associated infrastructure (including BESS and substations), particularly in relation to long or open views of church towers, designed landscapes, farmhouses or country estates where the surrounding landscape contributes to the significance of the asset.
Direct Effects	Scoped In	Scoped In	Scoped In	There is no potential for any direct effects on designated or non-designated assets as none have been identified within the Site.
Non-designated Heritage Assets further than 1km	Scoped Out	Scoped Out	Scoped Out	Potential effects are considered unlikely to be significant. During construction and decommissioning, there may be limited, temporary noise, vibration and visual effects, but these are not expected to result in significant effects. During operation, due to the distance from the Draft Order Limits, effects on setting through development encroachment on farmland or visual effects from solar arrays and associated infrastructure are also considered unlikely.
Grade II Listed Buildings further than 2km	Scoped Out	Scoped Out	Scoped Out	Potential effects are considered unlikely to be significant. During construction and decommissioning, there may be limited, temporary noise, vibration and visual effects; however, these are not expected to give rise to significant effects.

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
				During operation, due to the distance from the Draft Order Limits, effects on setting arising from development encroachment on farmland or visual effects associated with solar arrays and related infrastructure are also considered unlikely.
Greenhouse Gases				
Raw material extraction and manufacturing of products required for the Proposed Development, in addition to the transportation of raw materials to the place of manufacturing	Scoped In	Scoped Out	Scoped Out	There is potential for the embodied GHG emissions associated with the extraction, transportation and manufacturing of raw materials to impact on the overall GHG emissions savings associated with the Proposed Development.
Transportation of materials and products to the Site (where not accounted for at the Product Phase)	Scoped In	Scoped Out	Scoped Out	Due to the distance over which products may need to be transported, there is potential that the associated GHG emissions may impact on the overall GHG emissions savings associated with the Proposed Development.
On-Site construction activities, including emissions from plant vehicles and generators	Scoped In	Scoped Out	Scoped In	There is potential for the GHG emissions associated with construction activities to impact on the overall GHG emissions savings associated with the Proposed Development.
Energy consumption associated with the	Scoped In	Scoped In	Scoped In	Given the scale of the Proposed Development, the GHG emissions associated with the provision of clean water and

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
provision of clean water and the treatment of wastewater				treatment of wastewater during the construction, operation and decommissioning of the Proposed Development has the potential to impact on the overall GHG emissions savings associated with the Proposed Development.
Worker travel	Scoped In	Scoped In	Scoped In	There is potential for the GHG emissions associated with construction, operational and decommissioning activities to impact on the overall GHG emissions savings associated with the Proposed Development.
Leakage of GHGs	Scoped Out	Scoped In	Scoped Out	Given the scale of the Proposed Development, minor leakages of highly potent GHGs have the potential to impact on the overall GHG emissions savings associated with the Proposed Development.
Energy Generated	Scoped Out	Scoped In	Scoped Out	The energy generated by the Proposed Development will displace energy generated from other sources, with the displacement of energy generated using non-renewable sources resulting in GHG emissions savings.
Energy consumption, material use and waste generation associated with the operation and maintenance of the Proposed Development	Scoped Out	Scoped In	Scoped Out	Given the scale of the Proposed Development, the emission of GHGs associated with energy consumed, materials used and waste generated during the operation of the Proposed Development has the potential to impact on the overall GHG emissions savings associated with the Proposed Development.
On-Site decommission-related activities, including emissions from plant vehicles and generators	Scoped Out	Scoped Out	Scoped In	There is potential for the GHG emissions associated with decommissioning activities to impact on the overall GHG emissions savings associated with the Proposed Development.

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
Transport and disposal of waste materials	Scoped Out	Scoped Out	Scoped In	Due to the distance over which materials may need to be transported and in consideration of the potential uses of waste materials, there is potential that the associated GHG emissions may impact on the overall GHG emissions savings associated with the Proposed Development.
Net loss of carbon sink features	Scoped In	Scoped In	Scoped In	The potential loss of carbon sink features present within the draft Order Limits of the Site may impact on the overall GHG emissions savings associated with the Proposed Development.
Climate Change Resilience				
Increase in winter precipitation	Scoped In	Scoped In	Scoped In	During its operational lifetime, there is potential for the Proposed Development to lead to fluvial or pluvial flooding at the Site, to which the Proposed Development would need to be resilient. During its construction and decommissioning, there is potential for increased winter precipitation to cause waterlogged or muddy conditions at the Site, which may impact on the ability of workers to construct or decommission the Proposed Development.
Decrease in summer precipitation	Scoped Out	Scoped In	Scoped Out	During its operational lifetime, there is potential for reduced summer precipitation to lead to drought that has the potential to affect ecology- and landscape-related receptors at the Site. During the shorter timescales of the construction phase, it is not expected that there will be significant changes in climate. Further to this, mitigation measures relating to dust impacts at the time of construction will be included within the OCEMP, or

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
				similar. Similarly, during the shorter timescales of the decommissioning phase, it is not expected that there will be significant changes in climate. Further to this, mitigation measures relating to dust impacts at the time of decommissioning will be included within the ODEMP, or similar.
Changes in water availability	Scoped Out	Scoped Out	Scoped Out	Whilst changes in water availability could affect the mobilisation of pollutants, and potentially the acidity of soils, which may deteriorate construction materials, the materials chosen for the construction of the Proposed Development will be appropriate for the existing ground conditions, and will be able to withstand potential changes in water availability. During its operation, the Proposed Development will not have a significant demand for water, with any water usage during operation being associated with cleaning activities.
Increased frequency and magnitude of wind and storms	Scoped Out	Scoped In	Scoped Out	During the operation of the Proposed Development, increased frequency and magnitude of wind and storms would have the potential to cause damage to the infrastructure associated with and, therefore, the amount of power generated by the Proposed Development. It is not expected that the climate will change significantly prior to or during the anticipated construction timescales. In addition, the construction phase will be shorter than the operational lifetime of the Proposed Development. Further to this, measures to mitigate against the impacts of increased frequencies and magnitudes of wind and storms at the time of construction will be included within the OCEMP, and subsequent CEMP, or similar.

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
				Similarly, during the shorter timescales of the decommissioning phase, it is not expected that there will be significant changes in climate. Further to this, measures to mitigate against the impacts of increased frequencies and magnitudes of wind and storms at the time of decommissioning will be included within the ODEMP, and subsequent Detailed DEMP, or similar.
Increase in summer temperatures	Scoped Out	Scoped In	Scoped Out	During the operation of the Proposed Development, increased temperatures during the summer would have the potential to affect the electrical infrastructure associated with and, therefore, the amount of power generated by the Proposed Development. It is not expected that the climate will change significantly prior to or during the anticipated construction timescales. In addition, the construction phase will be shorter than the operational lifetime of the Proposed Development. Further to this, measures to mitigate against the impacts of increased temperatures at the time of construction will be included within the OCEMP, and subsequent CEMP, or similar. Similarly, during the shorter timescales of the decommissioning phase, it is not expected that there will be significant changes in climate. Further to this, measures to mitigate against the impacts of increased temperatures at the time of decommissioning will be included within the ODEMP, and subsequent Detailed DEMP, or similar.
Changes in cloud cover	Scoped Out	Scoped In	Scoped Out	During the operation of the Proposed Development, changes in cloud cover would have the potential to impact the amount

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
				of incoming solar radiation received and, therefore, the amount of power generated by the Proposed Development. During the shorter timescales of the construction and decommissioning phases, it is not expected that there will be significant changes in cloud cover. Further to this, it is not expected that changes in cloud cover would have a significant negative effect on construction or decommissioning activities.
Sea level rise	Scoped Out	Scoped Out	Scoped Out	The Site is located a significant distance from the coast, therefore risks to the Proposed Development associated with projected sea level rise are not expected to be significant.
Changes to snow and ice	Scoped Out	Scoped Out	Scoped Out	The UKCP18 study indicates that there will be less snow and ice in the future when compared to the existing baseline. It is considered, therefore, that risks to the Proposed Development associated with snow and ice will be reduced when accounting for projected climate change.
Ecology and Biodiversity				
Hilton Gravel Pits SSSI	Scoped In	Scoped In	Scoped In	Hilton Gravel Pits SSSI is located immediately adjacent to the CCO and as such may experience indirect impacts during construction
Other Nationally designated Sites for Nature Conservation	Scoped Out	Scoped Out	Scoped Out	All other sites are considered sufficiently distanced that impacts are unlikely to occur with the implementation of embedded mitigation (management plans).
Locally designated sites for Nature conservation	Scoped In	Scoped In	Scoped In	Non-statutory designated sites are located within and immediately adjacent to the draft Order Limits and may experience indirect impacts during construction. All other sites beyond 200m are considered sufficiently distanced that impacts are unlikely to occur with the

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
				implementation of embedded mitigation (management plans).
Priority habitats	Scoped In	Scoped In	Scoped Out	The extent and distribution of priority habitats could be affected through direct and indirect construction impacts and through the embedded landscape design.
Other on-Site habitats	Scoped In	Scoped In	Scoped Out	On-site habitats may be directly impacted during construction of the Proposed Development. The embedded landscape design and BNG is likely to increase the value of habitats within the Order Limits.
Breeding birds	Scoped In	Scoped In	Scoped Out	Adverse impacts may occur due to habitat loss, destruction of nesting sites or disturbance. Ground nesting birds will continue to be displaced throughout the operational lifetime of the Proposed Development.
Non-breeding birds	Scoped In	Scoped In	Scoped Out	Non-breeding bird species may experience disturbance during construction and displacement during operation.
Bats – foraging and commuting	Scoped In	Scoped In	Scoped Out	Important bat foraging and commuting features such as field boundary habitats would be retained and protected through embedded avoidance and mitigation measures with only small scale and localised impacts. There is limited evidence the presence of solar PV panels may affect bat foraging and commuting habits. The embedded landscape design is likely to enhance the site for bats.
Amphibians	Scoped In	Scoped In	Scoped Out	Ponds within the Site and ZoI offer suitable habitat for great crested newt and other amphibians (e.g., toad). Construction works have the potential to impact amphibians directly and through loss of habitat.

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
				The embedded landscape design is likely to enhance the site for amphibians.
Otter	Scoped In	Scoped Out	Scoped In	Watercourses within and adjacent to the Site are likely to support otter which may be subject to disturbance during construction and decommissioning.
Water vole	Scoped In	Scoped Out	Scoped Out	Watercourses within and adjacent to the Site may support water vole. In the absence of a detailed design, water vole be affected through installation of crossing points.
Other notable mammals	Scoped In	Scoped In	Scoped Out	Notable mammal species are common and widespread locally and nationally but may be affected by changes to habitats during construction and operation.
Invertebrates	Scoped In	Scoped In	Scoped Out	Aquatic invertebrates may be affected by the presence of solar panels. The embedded landscape design is likely to enhance the site for invertebrates.
Internationally designated Sites for Nature Conservation	Scoped Out	Scoped Out	Scoped Out	N/A – no internationally designated sites with the Zone of Interest (ZoI)
Irreplaceable habitats	Scoped Out	Scoped Out	Scoped Out	Irreplaceable habitats including ancient and veteran trees would be retained and protected.
Bats – roosting	Scoped Out	Scoped Out	Scoped Out	Trees offering bat roosting potential will be retained and protected in line with embedded avoidance and mitigation measures. No buildings with roost potential are anticipated to be affected by the Proposed Development.
Reptiles	Scoped Out	Scoped Out	Scoped Out	Habitats offering suitable reptile habitat (e.g., field margins) would be retained and protected through construction of the

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
				Proposed Development with protection measures within the CEMP. The embedded landscape design is likely to enhance the site for reptiles.
Badger	Scoped Out	Scoped Out	Scoped Out	Badgers are a common and widespread species at both a local and national level, and while protected by law this is primarily due to welfare concerns. Any effect is not likely to be considered significant. Badger will be considered with regards to legislative compliance (mitigation).
Fish	Scoped Out	Scoped Out	Scoped Out	The embedded , formalised through the CEMP, would include best practice measures to ensure no adverse impacts (e.g., pollution) to aquatic habitats
Glint and Glare				
Construction and decommissioning phases	Scoped Out	Scoped Out	Scoped Out	Glint and Glare occurs as a result of the presence of reflective surfaces, i.e. solar panels. The number of solar panels present during the construction and decommissioning phases will not exceed the number of solar panels present during the operational phase. Effects predicted as a result of the operational phase will therefore provide a worst-case assessment of effects during the construction and decommissioning phases. The impact of the Proposed Development can only reliably be determined via detailed geometric modelling; this will be undertaken in accordance with the methodology and guidance

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
				as laid out in previous sections, and inform the scope of the ES chapter.
Road Safety, Residential Amenity and Railway Operations	Scoped Out	Scoped Out	Scoped Out	Glint and Glare effects identified during the technical impact assessment will be suitably mitigated upon these receptors such that residual effects will not be significant. The impact of the Proposed Development can only reliably be determined via detailed geometric modelling; this will be undertaken in accordance with the methodology and guidance as laid out in previous sections, and inform the scope of the ES chapter.
Aviation receptors, pilots and ATC towers	Scoped Out	Scoped In	Scoped Out	Due to their elevated nature, mitigation via screening is not typically effective for aviation receptors. Mitigation may therefore take the form of changes to the site layout and/or panel mounting system. It is recommended that this mitigation process (if required) is discussed within the EIA to provide additional reassurance to relevant stakeholders, i.e. airfields and airports. Aviation receptors are therefore scoped into the EIA.
Ground Conditions and Contamination				
The construction, and ground workers during the works arising from potentially contaminated soils and groundwater	Scoped In	Scoped Out	Scoped Out	The construction of the Proposed Development will involve the excavation of soils, construction of small foundations and installation of underground cables in utility trenches
On-Site and off-Site users during the works due to	Scoped In	Scoped Out	Scoped Out	The construction of the Proposed Development will involve the excavation of soils, construction of small foundations and installation of underground cables in utility trenches .

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
disturbance of the ground				
Potential ground gas and vapour emissions to development from potentially contaminated soils and groundwater	Scoped In	Scoped Out	Scoped Out	The construction of the Proposed Development will involve the excavation of soils, construction of small foundations and installation of underground cables in utility trenches
On-Site and off-Site controlled waters, including underlying aquifers and surface waters during the Works	Scoped In	Scoped Out	Scoped Out	The construction of the Proposed Development will involve the excavation of soils, construction of small foundations and installation of underground cables in utility trenches
Effects on ground conditions and contamination on Cable Routes, potential migration of ground gas along cable routes if suitable mitigation is not installed	Scoped Out	Scoped In	Scoped Out	The operation of the Proposed Development will be passive and comprise PV panels with no proposed end-users. The cable routes will be buried. A number of buildings are expected on the Willington Substation Site to receive the cable routes.
BESS and Willington Substation – potential impacts to controlled waters receptors	Scoped Out	Scoped In	Scoped In	The BESS and Willington substation will include buildings and associated infrastructure with operational aspects.
Health				

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
Effects on health and wellbeing arising from construction-related environmental changes (e.g. noise, air quality and disturbance), particularly affecting nearby residents and sensitive groups	Scoped In	Scoped In	Scoped In	The health assessment has been scoped to focus on those pathways through which likely significant effects on health and wellbeing may arise, in line with EIA best practice and ISEP guidance. This includes consideration of potential effects associated with environmental changes during the construction, operation and decommissioning phases (e.g. noise, air quality, access and amenity), as well as differential effects on vulnerable population groups. These pathways are considered because they represent the primary mechanisms by which the Proposed Development may influence health outcomes.
Effects associated with changes in access and connectivity, including temporary or permanent disruption to PRoWs, with implications for physical activity and recreation	Scoped In	Scoped In	Scoped In	
Effects on mental and physical wellbeing arising from changes to local amenity, including visual amenity, landscape character and environmental quality	Scoped In	Scoped In	Scoped In	
Potential indirect socio-economic and	Scoped In	Scoped Out	Scoped In	

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
community effects associated with the temporary presence of construction workers				
Potential differential effects on vulnerable population groups, including those more susceptible to environmental stressors or experiencing existing health inequalities	Scoped In	Scoped In	Scoped In	
Potential wider health effects associated with land use change and renewable energy generation, including contributions to climate change mitigation	Scoped In	Scoped In	Scoped In	
Healthcare capacity	Scoped Out	Scoped Out	Scoped Out	Effects that are unlikely to be significant have been scoped out. Impacts on healthcare capacity have been excluded, as the Proposed Development is not expected to result in a permanent increase in the local population and therefore would not materially affect demand for healthcare services. Mental health effects are scoped into the assessment as there is a recognised and growing evidence base demonstrating that environmental conditions, including noise, access to amenities

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
				and perceptions of place, can influence wellbeing and psychological health. Indirect or higher-order effects, such as those associated with renewable energy generation and climate change mitigation, are considered qualitatively where relevant but are not subject to detailed assessment. This approach ensures that the assessment remains proportionate and focused on likely significant effects.
Landscape Impact				
Changes to National Landscape Character: NCA 68: Needwood and South Derbyshire Claylands NCA 69: Trent Valley Washlands	Scoped Out	Scoped Out	Scoped Out	The geographical extent of NCAs is generally very large such that changes arising from the Proposed Development would be very localised and unlikely to give rise to significant effects on their key characteristics.
Changes to Regional Landscape Character: Needwood & South Derbyshire Claylands LCA Riverside Meadows LCT Settled Farmlands LCT Trent Valley Washlands LCA	Scoped In	Scoped In	Scoped In	Regional LCAs covering the LVIA Study Area are proposed to be scoped in to help demonstrate the scale of landscape effects of the Proposed Development.

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
Wet Pasture Meadows LCT Lowland Village Farmlands LCT Riverside Meadows LCT Riparian alluvial lowlands LCT				
Changes to Local Landscape Character: Local Landscape Character Areas	Scoped In	Scoped In	Scoped In	Local LCAs will be defined across the LVIA Study Area and are proposed to be scoped in to provide a finer scale of landscape assessment of the Proposed Development.
Changes to Site Landscape Character: Landscape character of the Site	Scoped In	Scoped In	Scoped In	The Site Landscape Character is anticipated to be subject to significant changes as a result of the Proposed Development so is proposed to be scoped in.
Changes to Landscape Features: Trees, hedgerows and watercourses within the Site	Scoped In	Scoped In	Scoped In	The landscape features within the Site are proposed to be scoped in to demonstrate effects of the Proposed Development on their landscape resource.
Visual Impact				
Changes to views and visual amenity of residents:	Scoped In	Scoped In	Scoped In	Residential receptors are highly susceptible to changes in views from their homes so considered likely to experience significant effects; therefore, the effects of the Proposed

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
People living in Boylsetone, Sapperton, Harehill, Sudbury, Foston, Oaks Green, Church Broughton, Sutton on the Hill, Dalbury, Trusley, Etwall, Marston on Dove, Hatton, Willington, Eggington, Stretton, and Hilton, as well as people living in dispersed properties beyond the settlements				Development on their views and visual amenity are therefore proposed to be scoped in.
Changes to views and visual amenity of people engaged in recreation which depends upon the appreciation of views of the landscape: People using the National Cycle Network Route 6, and local PRoW	Scoped In	Scoped In	Scoped In	Recreational receptors are susceptible to changes in views where their experience depends upon views of the landscape so considered likely to experience significant effects. Therefore, the effects of the Proposed Development on their views and visual amenity are therefore proposed to be scoped in.
Changes to views and visual amenity of motorists:	Scoped In	Scoped In	Scoped In	Motorists may experience close distance views of the Proposed Development from transport routes within the study area so considered likely to experience significant effects.

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
People travelling on the A50, A38, A516, A5132 and the local road network				Therefore, the effects of the Proposed Development on their views and visual amenity are therefore proposed to be scoped in.
Visitors to heritage assets where views are an important contributor to experience: Visitors to Sudbury Estate	Scoped In	Scoped In	Scoped In	Sudbury Estate comprises the Grade II Registered Park and Garden of Sudbury Hall, and the official list entry notes views across the parkland and vistas of the hall. Given the proximity to the draft Order Limits, it is considered likely to experience significant effects. Therefore, the effects of the Proposed Development on their views and visual amenity are therefore proposed to be scoped in.
Lighting assessment	Scoped Out	Scoped Out	Scoped Out	Task-specific lighting would be used during construction and decommissioning to enable works within parts of the Site boundary and works during hours of darkness within the agreed typical working hours. The substation compound will not be permanently lit, but rather lighting would be used when access or exit is required during hours of darkness, designed in accordance with Health and Safety requirements. External lighting will be mounted on columns up to 10 metres high. Task-specific lighting will be used in the case of emergency works. Passive Infra-Red controlled lighting will be used where access is required outside of working hours. Where internal lighting is used within control buildings, light spillage will be controlled. CCTV installed along the perimeter of the Solar PV area will not require visible lighting.

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
				Because of its temporary and specific nature, construction, operation and decommissioning lighting is considered unlikely to give rise to significant landscape or visual effects. The impact of temporary and occasional lighting as detailed above will be considered as part of the wider assessment of landscape and visual impacts but a standalone lighting assessment is proposed to be scoped out.
Lighting during operation	Scoped Out	Scoped Out	Scoped Out	The substation compound will not be permanently lit, but rather lighting would be used when access or exit is required during hours of darkness, designed in accordance with Health and Safety requirements. External lighting will be mounted on columns up to 10 metres high. Task-specific lighting will be used in the case of emergency works. Passive Infra-Red controlled lighting will be used where access is required outside of working hours. Where internal lighting is used within control buildings, light spillage will be controlled. CCTV installed along the perimeter of the Solar PV area will not require visible lighting. Because of its temporary and specific nature, operation lighting is considered unlikely to give rise to significant landscape or visual effects. The impact of temporary and occasional lighting as detailed above will be considered as part of the wider assessment of landscape and visual impacts but a standalone lighting assessment is proposed to be scoped out.
Changes to views and visual amenity of	Scoped Out	Scoped Out	Scoped Out	This receptor group is acknowledged in GLVIA3 as being less sensitive to change in views and visual amenity such that for

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
people at their place of work				them to experience significant effects would require a high magnitude of change. No people at their place of work have been identified within or immediately adjacent to the Site boundary, so it is considered that the Proposed Development is not likely to give rise to significant effects on their views and visual amenity. Effects on these receptors are therefore proposed to be scoped out.
Changes to views and visual amenity of people engaged in outdoor sport or recreation which does not depend upon the appreciation of views of the landscape	Scoped Out	Scoped Out	Scoped Out	This receptor group is acknowledged in GLVIA3 as being less sensitive to change in views and visual amenity such that for them to experience significant effects would require a high magnitude of change. No people engaged in outdoor sport or recreation which do not depend upon the appreciation of views of the landscape have been identified within or immediately adjacent to the Site boundary, so it is considered that the Proposed Development is not likely to give rise to significant effects on their views and visual amenity. Effects on these receptors are therefore proposed to be scoped out.
Noise and Vibration				
Temporary noise effects on existing sensitive receptors surrounding the draft Order Limits as a result of the works on-Site and from	Scoped In	Scoped Out	Scoped OutN/A	Construction work is likely to involve Site preparation, the movement of soil, installation of access tracks and piling works, which would be followed by the construction of plant infrastructure and installation of solar PV and BESS plant equipment.

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
construction plant/ equipment activities				
Temporary vibration effects on existing sensitive receptors surrounding the draft Order Limits as a result of the works on-Site and from construction plant/ equipment activities	Scoped In	Scoped Out	Scoped OutN/A	The Proposed Development has the potential to generate short-term vibration from on-Site works from the use of construction plant and equipment.
Temporary change in road traffic noise due to construction HGV movements on the local road network	Scoped In	Scoped Out	Scoped OutN/A	Temporary changes in road traffic noise due to construction HGV movements are scoped into the assessment as construction activities will generate additional vehicle movements on the local road network, which have the potential to increase traffic noise levels at nearby sensitive receptors. The magnitude and duration of these changes will depend on the volume and routing of construction traffic and will be assessed to determine whether significant effects could arise during the construction phase of the Proposed Development.
Permanent noise effects, including where necessary consideration of low frequency noise due to on-Site plant noise emissions generated from plant	Scoped Out	Scoped In	Scoped Out	Permanent noise effects associated with the operation of the Proposed Development are scoped into the assessment as on-Site plant and equipment have the potential to generate noise emissions that could affect nearby noise-sensitive receptors.

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
Permanent noise effects from above ground electricity network infrastructure	Scoped Out	Scoped In	Scoped Out	Permanent noise effects from above-ground electricity network as part of the caballing infrastructure are scoped into the assessment as operational electrical equipment has the potential to generate continuous noise emissions that could affect nearby noise-sensitive receptors.
Operational vibration	Scoped Out	Scoped Out	Scoped Out	Due to the nature of the Proposed Development, it is anticipated that no vibration sources will be introduced as part of the Proposed Development.
Operational road traffic noise	Scoped Out	Scoped Out	Scoped Out	As described in Chapter 18 Transport and Access of this Scoping Report, once operational, traffic movements to and from the Proposed Development will generally be very light, in some instances as little as a few visits each month by a light commercial vehicle or car for maintenance. Should there be a need to replace machine components, this may generate heavier commercial vehicle movements, but these are likely to be infrequent and would not result in permanent significant noise effects.
Temporary noise effects from dismantling of solar infrastructure	Scoped Out	Scoped Out	Scoped In	Decommissioning activities will involve the use of plant, machinery and vehicle movements that have the potential to generate noise at nearby sensitive receptors.
Temporary vibration effects from dismantling of solar infrastructure	Scoped Out	Scoped Out	Scoped In	Decommissioning activities will involve the use of plant, machinery and vehicle movements that have the potential to generate vibration at nearby sensitive receptors.
Socio-Economics				
Impacts of temporary employment during the construction and	Scoped In	N/A	Scoped In	The assessment has been scoped to focus on socio-economic effects likely to give rise to significant impacts, in accordance with established EIA practice. This includes consideration of

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
decommissioning phases of the Proposed Development on the local workforce including multiplier effects generated from the supply chain and the spending into the local economy				temporary employment generation, economic activity, and associated multiplier effects during the construction and decommissioning phases, as these represent the primary pathways through which the Proposed Development will influence the local economy.
Impacts of a temporary increase in economic activity during the construction and decommissioning phases of the Proposed Development	Scoped In	N/A	Scoped In	
Impacts of demand for temporary accommodation by construction workers	Scoped In	N/A	N/A	
School capacity	Scoped Out	Scoped Out	Scoped Out	The effects of the Proposed Development on school capacity will not be assessed, as the operational phase is not expected to result in a permanent increase in local population; thus, the demand for school places should not be affected,
Permanent employment	Scoped Out	Scoped Out	Scoped Out	Impacts of permanent employment during the operational phase of the Proposed Development, including consideration

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
				of changes to any existing employment on-Site (e.g. agricultural), or to the local workforce.
Transport and Access				
Changes in traffic flows and non-motorised user delay amenity on: People at home / work, sensitive and or vulnerable groups / locations and collision clusters and routes with road safety concerns	Scoped In	Scoped Out	Scoped In	Increases in traffic could have potentially significant impacts on driver and pedestrian delay during construction and decommissioning.
Fear and intimidation on and by road users, road user safety and hazardous / large roads on: Junctions and highway links at (or over) capacity (drivers)	Scoped In	Scoped Out	Scoped In	Increases in traffic from construction and decommissioning activities could have potentially significant impacts on pedestrian and cyclist amenity and/or fear and intimidation during construction.
Operational traffic effects	Scoped Out	Scoped Out	Scoped Out	Given the scale and nature of the Proposed Development once operational, and its limited potential to generate any form of transport movements, it is considered appropriate and proportionate to scope out the assessment of the operational phase of the Proposed Development. For example, it would be considered that the Proposed

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
				Development would only result in 1 – 2 vehicle movements per day which could be considered to be the same or less as some of the existing agricultural uses. This would not be expected to increase traffic flows by more than 30% as per the ISEP guidance. Where smaller rural roads have very low traffic flows and the 1 – 2 vehicle movements do register higher than a 30% increase, it is still considered that the increase in vehicle numbers whilst high in percentage terms is negligible in real terms and therefore operational traffic has been excluded from the assessment.
Water Environment and Flood Risk				
Fluvial Flood Risk	Scoped In	Scoped In	Scoped In	Construction: • Temporary obstruction/alteration of watercourses increasing downstream risk; and • Temporary loss of floodplain storage. Operation: • Minor permanent floodplain loss (infrastructure footprint). Decommissioning: • Temporary obstruction/disturbance of watercourses during removal works increasing localised flood risk;

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
				• temporary loss of floodplain storage; and • altering of flow paths.
Surface Water Flood Risk, Surface Water Environment and Water Quality	Scoped In	Scoped In	Scoped In	Construction: • Sediment, silt, contaminant runoff to watercourses/lake; Operation: • Increased runoff from impermeable surfaces; and • Increased runoff affecting receiving water Decommissioning: • Short-term increase in runoff due to soil compaction by plant/machinery; reduction in runoff due to removal of impermeable surfaces; and • Increased erosion and silt deposition in watercourses/waterbodies; contamination from accidental spills/leaks (fuels, oils, chemicals); release of contaminants from dismantled PV panels, transformers or BESS.

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
Groundwater Flood Risk	Scoped In	Scoped In	Scoped In	Construction: • Interception of groundwater leading to localised flooding; and • dewatering altering groundwater flow patterns. Operation: • Altered infiltration raising groundwater levels; and • vulnerability of potential subterranean structures of the Proposed Development to groundwater ingress. Decommissioning: • Excavations intercepting groundwater causing localised flooding; and • changes to flow pathways; changes to groundwater levels.
Potable Water Supply	Scoped In	Scoped In	Scoped In	Construction: • Increased potable water demand from construction activities. Operation:

Receptor / Effect	Construction	Operation	Decommissioning	Rationale
				• Increased potable water demand from solar farm activities. Decommissioning: Temporary water demand for decommissioning activities; and • Reduction in operational water demand post decommissioning.
Sewer Flood Risk and Foul Water Capacity	Scoped In	Scoped In	Scoped In	Construction: • Increased discharge exceeding sewer capacity Operation: • Increased discharge exceeding sewer capacity. Decommissioning: • Reduction in foul water generation following decommissioning.

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