

Windsock Solar Farm

Environmental Impact Assessment Scoping Report

Volume 1: Main text

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Windsock Solar Farm

CONTENTS

Volume 1: Main text

1 INTRODUCTION 1
1.1 Background 1
1.2 Grid connection 2
1.3 Definition of an EIA 3
1.4 Purpose of the report 3
1.5 References 6
2 DESCRIPTION OF THE NATURE AND PURPOSE OF THE PROPOSED DEVELOPMENT 7
2.1 Need for the proposed development 7
2.2 Proposed development location 7
2.3 Approach to addressing uncertainty 11
2.4 Proposed development objectives 12
2.5 Proposed development description 13
2.6 References 28
3 REASONABLE ALTERNATIVES CONSIDERED 29
3.1 Introduction 29
3.2 Approach to site selection 30
3.3 References 32
4 APPROACH TO EIA 33
4.1 Introduction 33
4.2 Consultation 33
4.3 General difficulties and uncertainties 35
4.4 Defining the study area 36
4.5 Establishing baseline conditions 36
4.6 Establishing future baseline conditions 37
4.7 Assessment scenarios 37
4.8 Approach to mitigation 37
4.9 Assessment of likely significant effects 41
4.10 Opportunities for enhancing the environment 42
4.11 Coordination of assessments 42
4.12 References 42
5 ENVIRONMENTAL FACTORS PROPOSED TO BE SCOPED OUT OF FURTHER ASSESSMENT 44
5.2 Electric, magnetic and electromagnetic fields 44
5.3 Glint and glare 44
5.4 Heat and radiation 48
5.5 Human health 49
5.6 Major accidents and disasters 53

5.7 Material assets and waste 57
5.8 Transboundary effects 60
5.9 Water 60
5.10 References 69
6 ENVIRONMENTAL FACTORS PROPOSED TO BE SCOPED INTO FURTHER ASSESSMENT 72
6.1 Air quality 72
6.2 Biodiversity 80
6.3 Climate 95
6.4 Cultural heritage 108
6.5 Land and groundwater 122
6.6 Landscape and visual 135
6.7 Noise and vibration 150
6.8 Population 158
6.9 Soil 176
6.10 Transport and access 187
7 INTERACTION EFFECTS AND CUMULATIVE EFFECTS 197
7.1 Proposed assessment methodology 197
7.2 Difficulties and uncertainties 205
7.3 Grid connection 205
7.4 References 205

Volume 2: Appendices

APPENDIX A: SITE LOCATION PLAN .....
APPENDIX B: PROPOSED DEVELOPMENT CONCEPT MASTERPLAN .....
APPENDIX C: ENVIRONMENTAL FEATURES PLAN .....
APPENDIX D: SIGNIFICANCE CRITERIA .....
APPENDIX E: PROPOSED STRUCTURE OF THE ENVIRONMENTAL STATEMENT .....
APPENDIX F: EIA SCOPING REPORT COMMITMENTS REGISTER .....
APPENDIX G: BIODIVERSITY REPORTS .....
APPENDIX H: CULTURAL HERITAGE FIGURES AND STAGE 1 SETTING ASSESSMENT .....
APPENDIX I: LAND AND GROUNDWATER FIGURE .....
APPENDIX J: PRELIMINARY RISK ASSESSMENT .....
APPENDIX K: LANDSCAPE FIGURES .....
APPENDIX L: SOIL FIGURES .....
APPENDIX M: TRANSPORT AND ACCESS FIGURE .....
APPENDIX N: GLOSSARY AND ACRONYMS .....

1 INTRODUCTION

1.1 Background

1.1.1 RSK Environment Limited (hereafter referred to as 'RSK') has been instructed by Trio Windsock Solar Farm Ltd. (hereafter referred to as the 'Applicant') to prepare an Environmental Impact Assessment (EIA) Scoping Report to accompany a request for a scoping opinion from the Planning Inspectorate (prepared on behalf of the Secretary of State) for the proposed Windsock Solar Farm (hereafter referred to as the 'Proposed Development').

1.1.2 The Proposed Development comprises the installation of solar photovoltaic (PV) electricity generating modules and battery storage facilities with an export capacity exceeding 100 megawatts (MW) and associated infrastructure, located in Lincolnshire. The Site boundary (hereafter referred to as the 'Site') is shown in **Appendix A**. The grid connection will not form part of the Development Consent Order (DCO) application and will be subject to a separate consenting process; further detail on how the grid connection will be considered is presented in **Chapter 7**.

1.1.3 The Proposed Development is classified as a Nationally Significant Infrastructure Project (NSIP) and will require a DCO under sections 14(1)(a) and 15(1) and (2) of the Planning Act 2008, being an onshore generating station in England exceeding 100MW **[Ref. 1-1]**.

1.1.4 The Proposed Development also falls under the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (hereafter referred to as the 'EIA Regulations 2017') **[Ref. 1-2]**. The EIA Regulations 2017 set out the types of development which must be subject to an EIA (referred to as Schedule 1 development) and other developments, which may be subject to an EIA depending on certain parameters and/or their potential to give rise to significant environmental effects (referred to as Schedule 2 development). Having regard to its nature, scale and location, the Proposed Development is considered to have the potential to give rise to significant environmental effects. The Proposed Development therefore constitutes EIA development as per Schedule 2 paragraph 3(a) of the EIA Regulations 2017.

1.1.5 This EIA Scoping Report forms a formal request for a scoping opinion under Regulation 8(1)(b) and 10(1) of the EIA Regulations 2017. This EIA Scoping Report is also accompanied by a notification to the Secretary of State (under Regulation 8(1)(b)) of the intention to prepare and submit an Environmental Statement (ES) in support of a DCO application without prior request for a Screening Opinion.

1.1.6 Following the completion of the surveys, assessments and consultation processes outlined in this EIA Scoping Report, an application for a DCO will be made to the Secretary of State for determination in accordance with the Planning Act 2008. The DCO application will be accompanied by an ES in accordance with Regulation 5(2)(a) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 ('APFP Regulations') **[Ref. 1-3]**. The ES will set out the methods and findings of a comprehensive EIA undertaken in accordance with the EIA Regulations 2017.

1.2 Grid connection

1.2.1 The Applicant has been engaged with the National Energy System Operator Limited (NESO) on potential grid connections to allow export and import of electricity to and from the National Grid. The Applicant originally received a partial grid connection offer to the proposed Navenby substation, located to the north of the Site. This offer has been superseded by a grid offer to connect to a new, yet-to-be-developed 400kV substation, known as the Trent Valley South Connection Node C. It is understood that the substation, part of a series of substations named A to D, will be located on the Burton-Bicker 400kV transmission line. The grid connection offer relating to the Trent Valley South Connection Node C (with a grid connection date of 2034) has been accepted by the Applicant. The precise location of the Trent Valley South Connection Node C substation is unknown at this stage, with further detail to be released by NESO. Whilst engagement will continue during the DCO pre-application period, it is not expected that certainty regarding the location of the point of connection will be obtained within timescales that would enable the grid connection to form part of the DCO application.

1.2.2 The grid connection infrastructure required to connect the Proposed Development to the wider transmission or distribution network would be subject to a separate consenting process and does not form part of the Proposed Development for which development consent is being sought. This approach to consenting the offsite grid connection is recognised by, and is consistent with, paragraph 4.11.8 of the Overarching National Policy Statement (NPS) for Energy (EN-1) **[Ref.1-4]**. It is noted that the on-site Substation would facilitate the export and import of electricity from the Proposed Development to the National Grid and will be developed regardless of the grid connect point and is included within the Proposed Development.

1.2.3 It is anticipated that the ES will identify an appropriate grid connection corridor, where sufficient information is available, and will include a robust assessment of any cumulative environmental effects associated with the proposed grid connection infrastructure.

1.3 Definition of an EIA

1.3.1 The term 'Environmental Impact Assessment' ('EIA') describes a procedure that must be followed for certain types of project before it can be given 'consent'. The procedure is a means of drawing together, in a systematic way, an assessment of a project's likely significant environmental effects. This helps to ensure that the importance of the predicted effects and the scope for avoiding, preventing, reducing or, if possible, offsetting them are properly understood by the public and the authority granting consent (the 'determining authority') before it makes its decision.

1.4 Purpose of the report

1.4.1 This EIA Scoping Report has been prepared in accordance with Regulation 10(3) of the EIA Regulations 2017 and the following Planning Inspectorate's Advice notes:

- Nationally Significant Infrastructure Projects: Pre-Application Advice on Environmental Impact Assessment **[Ref. 1-5]**;
- Nationally Significant Infrastructure Projects: Technical Advice page for Scoping Solar Development **[Ref. 1-6]**; and
- Nationally Significant Infrastructure Projects: Advice on EIA Notification and Consultation **[Ref. 1-7]**.

1.4.2 The purpose of this EIA Scoping Report is to ensure that the subsequent EIA is focused on the key impacts likely to give rise to significant environmental effects, and to obtain agreement on the EIA approach and scope. As well as identifying matters to be considered in the EIA, this EIA Scoping Report also identifies those matters 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.

1.4.3 Whilst this EIA Scoping Report seeks to establish the overall framework for the EIA in relation to the environmental factors and associated effects, the exact scope of the EIA will be influenced by the scoping opinion received, the on-going design evolution of the Proposed Development, and through on-going baseline data collection (e.g. field surveys etc.).

1.4.4 **Table 1.1** sets out what information the EIA Regulations 2017 state that a request for a scoping opinion must include and where this information can be found in this EIA Scoping Report.

Table 1.1: Information required by the EIA Regulations 2017 to accompany a request for a scoping opinion

Information required	Location within this EIA Scoping Report
A plan sufficient to identify the land	**Appendix A**
A description of the proposed development, including its location and technical capacity	**Chapter 2**
An explanation of the likely significant effects of the development on the environment	**Chapter 6**
Such other information or representations as the person making the request may wish to provide or make	**Chapters 2 to 7**

1.4.5 **Table 1.2** sets out what information the Planning Inspectorate's Pre-Application Advice on Environmental Impact Assessment recommends that a request for a scoping opinion should include and where this information can be found in this EIA Scoping Report.

Table 1.2: Information required by the Planning Inspectorate's Pre-Application Advice on Environmental Impact Assessment to accompany a request for a scoping opinion

Information suggested	Location within this EIA Scoping Report
A description of all elements of the Proposed Development.	**Chapter 2**
A description of the location of the Proposed Development.	**Chapter 2**
Referenced plans presented at an appropriate scale to ensure legibility and all known features associated with the Proposed Development.	**Appendix B**
An explanation of the approach to addressing uncertainty in relation to elements of the Proposed Development where this remains, and the clear identification of where flexibility or optionality is likely to be sought.	**Chapter 2 and Chapter 4**
A description of the development phases and how each phase will be assessed in the ES (construction, operation including maintenance, and decommissioning).	**Chapter 2 and Chapter 6**

Information suggested	Location within this EIA Scoping Report
An outline of the reasonable alternatives studies and the reasons for selecting the preferred option including any views sought through consultation and/or engagement and how these have informed decision-making – or, where alternatives remain under consideration, a description of how it proposes to select the preferred option(s) taking into effects on the environment.	**Chapter 3**
Results of desktop and baseline studies undertaken to date, where available.	**Chapter 5 and Chapter 6**
A detailed description of the aspects and matters proposed to be scoped out of further assessment with reasoning and supporting information provided.	**Chapter 5 and Chapter 6**
A summary table depicting each of the aspects and matters that are requested to be scoped out.	**Chapter 6**
For aspects and matters to be scoped in, a description of the methods to be used to refine baseline conditions and to assess the significance of effects.	**Chapter 6 and Appendix D**
A summary of any measures proposed to avoid, reduce or prevent likely significant effects that are known at this stage and how they may be secured (with reference to a draft commitments' register where relied upon to scope matters out).	**Chapter 6 and Appendix F**
References to any guidance and best practice to be applied when defining the baseline, assessing effects or prescribing mitigation.	**Chapter 5 and Chapter 6**
Evidence of any agreements on the proposed scope of assessment with relevant bodies (e.g. the statutory nature conservation bodies or local authorities).	**Chapter 6**
An outline of the structure of the proposed ES.	**Appendix E**

1.4.6 In accordance with the EIA Regulations 2017, the ES will be based on the scoping opinion received.

1.4.7 A Statement of Competence will be prepared as an appendix to the ES, in accordance with Regulation 14(4) of the EIA Regulations 2017. The Statement of Competence will be prepared by RSK as the EIA coordinator for the Proposed Development, and will outline the relevant professional

experience, capabilities and competency of the individuals responsible for preparing the ES.

1.4.8 RSK is a registrant to the Institute of Sustainability and Environmental Professional (ISEP) EIA Quality Mark, a voluntary scheme through which EIA activity is independently reviewed. All registrants to the scheme are required to adhere to the ISEP EIA Quality Mark's seven key commitments.

1.5 References

Ref. 1-1: Planning Act 2008. Online. Available at: https://www.legislation.gov.uk/ukpga/2008/29/contents

Ref. 1-2: The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. Online. Available at: https://www.legislation.gov.uk/uksi/2017/572/contents/made

Ref. 1-3: Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009. Online. Available at: https://www.legislation.gov.uk/uksi/2009/2264/contents/made

Ref. 1-4: Department for Energy Security and Net Zero. (2026). *Overarching National Policy Statement for Energy (EN-1), 2025*. Online. Available at: Overarching National Policy Statement for Energy (EN-1) – December 2025

Ref. 1-5: Planning Inspectorate. (2026). *Nationally Significant Infrastructure Projects: Pre-Application Advice on Environmental Impact Assessmen*t. Online. Available at: Nationally Significant Infrastructure Projects: Pre-Application Advice on Environmental Impact Assessment - GOV.UK

Ref. 1-6: Planning Inspectorate. (2026). *Nationally Significant Infrastructure Projects: Technical Advice Page for Scoping Solar Development*. Online. Available at: Nationally Significant Infrastructure Projects: Technical Advice Page for Scoping Solar Development - GOV.UK

Ref. 1-7: Planning Inspectorate. (2026). *Nationally Significant Infrastructure Projects: Advice on EIA Notification and Consultation*. Online. Available at: Nationally Significant Infrastructure Projects: Advice on EIA Notification and Consultation - GOV.UK

2 DESCRIPTION OF THE NATURE AND PURPOSE OF THE PROPOSED DEVELOPMENT

2.1 Need for the proposed development

2.1.1 Low carbon solar generation is an essential step to meeting the Government's objectives to enable decarbonisation. Overarching National Policy Statement (NPS) for Energy (EN-1), published in 2026, states that "*a secure, reliable, affordable, net zero consistent system in 2050 is likely to be composed predominantly of wind and solar*" **[Ref. 2-1]**. The Proposed Development would be considered Critical National Priority under NPS EN-1.

2.1.2 Clean Power 2030 Action Plan sets out a pathway to a clean power system by 2030 **[Ref. 2-2]**. It cites the construction of new solar farms as key component in order to deliver Clean Power 2030, which will *"see clean sources produce at least as much power as Great Britain consumes in total over the whole year, and at least 95% of Great Britain's generation"*. The UK Government has ambitious targets to deliver 45-47GW of solar power by 2030. The Proposed Development would help meet this target.

2.1.3 The Proposed Development seeks to contribute towards the significant capacity of low-carbon solar generation that is urgently needed in the UK. The Proposed Development would contribute towards the achievement of government net zero targets and a UK energy supply that is secure, low carbon and low cost.

2.2 Proposed development location

Site location and boundary

2.2.1 The Site is located in close proximity to the settlements of Cranwell Village, Brauncewell, and Byards Leap. Further afield, Sleaford is located approximately 6km to the south-east, Leasingham approximately 3.5km to the south-east, and Ruskington approximately 5km to the east.

2.2.2 The Site comprises Solar PV module areas and associated electrical infrastructure, including battery storage, within the administrative boundary of North Kesteven District Council, in the county of Lincolnshire. The Site measures approximately 255 hectares (ha) and extends across eight fields, each with a unique ID (see **Appendix B**). The land within the Site predominantly consists of agricultural fields, and one pig farm, with hedgerows.

2.2.3 The expected area of land potentially required for the construction, operation (including maintenance) and decommissioning of the Proposed Development is shown in **Appendix A**. It is important to note that this will be subject to change as the Proposed Development is refined through ongoing, detailed masterplanning in response to environmental and technical factors as identified as part of the EIA process. However, together with the description of the Proposed Development set out in **Section 2.5**, this is the envisaged current maximum extent of temporary and permanent land take expected to be required for the full range of possible development options which could form part of the Proposed Development. This allows for consideration of the potential environmental effects of the full range of options under consideration, to ensure that the likely significant environmental effects of each option have been scoped into further assessment.

2.2.4 At this stage, there is no known existing infrastructure within the Site that will need to be removed as part of the Proposed Development.

Surrounding area

2.2.5 The main environmental features of the Site are set out below and in **Appendix C**. Further detail on the environmental baseline can be found in **Chapters 5** and **6**.

Water resources

2.2.6 There are no Main Rivers located within the Site, nor are there any minor watercourses or drainage ditches. The nearest Main River is Leasingham Beck which flows approximately 3.5km south-east of the Site and the nearest Ordinary Watercourse is an artificial drain which flows approximately 40m north-east of the Site.

2.2.7 The Site is located wholly within Flood Zone 1. There is a small area of surface water flooding located within Field 3 and Field 8.

2.2.8 The Site is located above a Source Protection Zone 3.

2.2.9 See **Section 5.9** for further information.

Access and recreation

2.2.10 Field 8 is bordered by Cranwell Avenue to the south, an unnamed road to the west, and a public right of way (PRoW) Bridleway to the east (Cran 1/1, Brau 4/1 and Brau 4/2), which also runs up the eastern border of Field 7. PRoW Brau 11/1 joins the Bridleway from the east.

2.2.11 Fields 2, 3 and 6 are bordered by Long Lane to the north on which three PRoW footpaths finish. These are:

- Brau 9/1;
- Brau 10/1; and
- Brau 1/1 and 1/2.

2.2.12 The track known as Devil's Dip runs between Fields 2 and 3 from Long Lane to the Royal Air Force (RAF) housing estate; however, it does not provide access to the base. Devil's Dip is a PRoW (Brau 2/1) that turns into a restricted bridleway (Cran 2/1) as it goes further into the RAF base.

2.2.13 See **Sections 6.6**, **6.8** and **6.10** for further information.

Biodiversity

2.2.14 The Site comprises predominately arable farmland and supports a network of boundary habitats including hedgerows, woodland parcels, and grassland margins.

2.2.15 There are no statutory designations for nature conservation located within the Site. The closest Site of Special Scientific Interest (SSSI) is High Dyke located approximately 400m west of the Site and is designated for calcareous grassland and notable plant species. There are six additional SSSIs within 10km, all located over 6km away from the Site.

2.2.16 Cranwell Grassland Local Wildlife Site (LWS) is immediately adjacent to the south-western Site boundary and is designated for unimproved calcareous grassland and woodland habitats. There are seven other LWSs and three Roadside Nature Reserves within 2km of the Site.

2.2.17 See **Section 6.2** for further information.

Landscape

2.2.18 The Site and its immediate surroundings is not covered by any statutory landscape designations. The nearest National Landscape or National Park is Lincolnshire Wolds National Landscape, located more than 30km to the north-east of the Site.

2.2.19 The Site comprises predominantly arable farmland located on the gently undulating eastern dip slope to the east of the Lincoln Cliff, which gradually descends towards the Lincolnshire Fens. The Site falls entirely within the Southern Lincolnshire Edge, National Character Area Profile 47 (NCA 47), and is classified as part of the 'Central Plateau' landscape character type and the 'Limestone Heath' landscape character sub-area.

2.2.20 Field surveys indicate that these character area descriptions are broadly reflective of the Site and wider landscape, which includes a dry valley, scattered plantation woodland, and nearby solar energy developments.

2.2.21 Cranwell village, residential quarters within the barracks at RAF Cranwell and the hamlet at Brauncewell all lie just outside of the Site boundary.

2.2.22 See **Section 6.6** for further information.

Cultural heritage

2.2.23 There are no designated assets within the Site.

2.2.24 There are 150 listed buildings within 5km of the Site, including seven Grade I and 12 Grade II* buildings. There are eight Scheduled Monuments, six Conservation Areas, and two Registered Park Gardens within 5km of the Site. There are no Registered Battlefields or World Heritage Sites within 5km of the Site.

2.2.25 There are four non-designated assets within the Site, which include a later prehistoric crop mark of a boundary ditch in the east, a former farmstead in the west of the Site, and RAF Cranwell airfield. There are a further 52 non-designated assets within 1km of the Site.

2.2.26 See **Section 6.4** for further information.

Geology

2.2.27 The bedrock geology across the Site comprises the following units:

- Upper Lincolnshire Limestone Member – Limestone;
- Lower Lincolnshire Limestone Member – Limestone;
- Upper Lincolnshire Limestone Member – Ooid-limestone;
- Lower Lincolnshire Limestone Member – Mudstone and limestone; and
- Lower Lincolnshire Limestone Member – Lime-mudstone;

2.2.28 The superficial geological units within the Site include Head-Clay, silt, sand and gravel.

2.2.29 There are no operational mineral extraction sites within the Site and there is no evidence of historical quarrying or mineral extraction.

2.2.30 East of Site is Brauncewell Quarries which is an operating quarry.

2.2.31 There is a mineral safeguarding area for limestone located within the Site.

2.2.32 See **Section 6.5** for further information.

Existing infrastructure

2.2.33 There are no existing structures within the Site.

2.2.34 There are three underground services that cross the Site:

- Openreach telecommunications;
- National Grid 11kV cables; and
- Two Anglian Water sewerage pipes, one final effluent pipe and the other a foul sewer rising main.

2.2.35 The Openreach and National Grid underground cables are located below the unnamed road, which is also a PRoW (Brau 2/1). The road runs north-south between Fields 2 and 3, extending from Long Lane to the RAF Cranwell site.

2.2.36 The Anglian Water sewerage pipes traverse Field 8 east-west from the sewage treatment works located approximately 220m west of the Site.

2.2.37 Adjacent to the Site boundary, there are a number of underground services that run along the roads Cranwell Avenue, Long Lane, and Bristo House Road, including:

- Openreach telecommunications (Cranwell Avenue, Long Lane, Bristo House Road);
- Anglian Water potable water pipes (Cranwell Avenue and Long Lane);
- National Grid 11kV cables (Cranwell Avenue, Long Lane, Bristo House Road); and
- Cadent Gas low pressure pipeline (Bristo House Road only).

2.2.38 Above ground, there is an overhead 11kV line adjacent to the Site boundary that traverses Long Lane.

2.3 Approach to addressing uncertainty

2.3.1 In order to define the Proposed Development and determine where detail is to be included at the DCO application stage and where it may be deferred until after consent is granted, the Applicant will identify the level of flexibility required (e.g., in relation to the size and footprint of the substation and/or Battery Energy Storage System (BESS), or construction methods).

2.3.2 Many promoters of renewable energy projects seek to maximise flexibility in their consents, given the long lead in times to consent and subsequent engagement of EPC (engineering, procurement, and construction) contractors. It is typical for large infrastructure projects to contain the ability to alter the final design of a scheme by having “limits of deviation” or including for a “micro-siting allowance”.

2.3.3 In order to maintain flexibility in the design, it is the Applicant’s intention to use the ‘Rochdale Envelope’ approach within parameter ranges, as outlined in the Planning Inspectorate’s Pre-Application Advice on Environmental Impact Assessment **[Ref. 2-3]**.

"*The 'Rochdale Envelope' assessment approach is an acknowledged way of assessing a proposed development comprising EIA development where uncertainty exists and necessary flexibility is sought. It was derived from case law following two court judgments: R. v Rochdale MBC ex parte Milne (1) and R. v Rochdale MBC ex parte Tew [1999] and R. v Rochdale MBC ex parte Milne (2) [2000]*".

2.3.4 The term is used to describe those elements of a scheme that have not yet been finalised, but yet can be accommodated within certain limits and parameters allowing the likely significant effects of a project to be presented in the ES as a 'worst case'. It also provides the opportunity to assess aspects of a development where the detailed design is to be developed by the Applicant and approved by the determining authority under a DCO Requirement, subsequent to the DCO being made.

2.3.5 Furthermore, such flexibility may be useful where a change in the design or capacity of the Proposed Development is anticipated, but not yet certain. Therefore, it may be possible that a particular element of the design will be subject to on-going technological advancements. It will be important that a lack of flexibility in the DCO application does not unduly hinder the Applicant's ability to consider and adopt such future technological advancements which could lead to further environmental gains or project benefits. This is of particular importance to maintaining flexibility due to the rapid pace of change in renewable energy technologies.

2.3.6 To remain in accordance with the EIA Regulations 2017, it will be essential that the parameters are defined to ensure that 'likely significant environmental effects' are identified, rather than unrealistically amplified effects, which could be deemed unlikely. These parameters will be considered in detail by the technical authors in the ES to ensure the realistic 'worst case' effects of the Proposed Development are assessed for each potential receptor/matter.

2.3.7 Further detail on the draft design approach to inform the scope of the EIA is presented in **Section 2.5**. The potential locations for Solar PV development, Collector Compounds, BESS, Substation and mitigation and/or enhancement, are displayed in **Appendix B** and will be refined as the design of the Proposed Development develops. The 'worst case' scenario for each receptor/matter has been considered in this EIA Scoping Report. Design parameters will be further refined and the final parameters and any limits of deviation will be presented in the ES, draft DCO and works plans.

2.4 Proposed development objectives

2.4.1 The Proposed Development will seek to fulfil the following objectives:

- Generate renewable energy to help alleviate climate change and the social issues associated with this.

- Contribute towards an independent, secure energy supply in the UK, which is particularly relevant given the current geopolitical climate.
- Deliver biodiversity net gains to provide an overall positive impact on local biodiversity[1].

2.5 Proposed development description

2.5.1 The Proposed Development will adopt the principals of the Planning Inspectorate's Advice on Good Design **[Ref. 2-4]**.

2.5.2 The Proposed Development will include the following key components:

- Solar PV modules and associated mounting structures;
- Balance of Solar System (BoSS) which comprises inverters, transformers, and switchgears;
- BESS compound which would include office/control/welfare buildings and associated inverters, switchgear and ancillary equipment and their containers, enclosures, monitoring systems, air conditioning, electrical cables, and fire safety infrastructure;
- An on-site Substation to connect the Solar PV development area to the National Grid;
- 33kV underground cabling within the area of the Solar PV development that would connect the Solar PV modules to the Substation;
- Associated infrastructure including underground cables, boundary treatments, access tracks, parking, security measures and equipment, landscaping, security lighting, drainage infrastructure and any other works identified as necessary to enable the development;
- Landscaping, habitat management, environmental mitigation, biodiversity enhancement, biodiversity net gain and amenity improvements;
- Highway works to facilitate vehicular access to the Site; and
- Temporary development during the construction phase including construction compounds, parking and temporary access roadways.

2.5.3 Each of the components outlined above and their associated key features are set out in the following sections.

2.5.4 The potential areas within the Site for the above elements are detailed in **Appendix B**.

Solar PV modules and associated mounting structures

2.5.5 Solar PV modules generate electrical power by converting sunlight into direct current (DC) electricity. Individual Solar PV modules, more commonly known

[1] As of November 2026, it will be mandatory for all developments to achieve a 10% Biodiversity Net Gain (BNG) in accordance with the Environment Act 2021 (Environment Act 2021).

as solar panels, are made up of individual bifacial photovoltaic cells that are wired and encapsulated within layers of toughened glass. Solar PV modules are sealed for weatherproofing and held together by a metal frame in a mountable unit.

2.5.6 Individual Solar PV modules are typically 2.4m in length, 1.3m wide and 3.5m in height.

2.5.7 The Solar PV modules are fixed to a mounting structure and are known as a 'table'. Once the Solar PV modules are electrically connected together in groups, they are known as 'strings'. Various factors will help inform the number and arrangement of the Solar PV modules and it is likely some flexibility will be required to accommodate for future technology developments. The Solar PV modules are typically dark blue/black in colour and held together by a metallic frame.

2.5.8 The Solar PV modules would be installed as fixed arrays. The Solar PV modules are typically mounted on a galvanised steel structure supported by vertical posts, known as a mounting structure.

2.5.9 Typically, the structure legs are fixed by screw anchors; however, there is an option for some to be supported by concrete footings to reduce piling depths or by shallow tripod-style piles, if required, due to the ground conditions or to reduce impacts on areas of archaeological sensitivity.

2.5.10 The mounting structure carrying the fixed Solar PV modules will be designed to face southwards and angled at a slope of 10 to 30 degrees from horizontal to optimise daylight absorption.

2.5.11 Once attached to the mounting structure, the minimum height of the lowest part of the Solar PV modules would be approximately 1m above ground level (AGL). It is anticipated that the Solar PV modules would be up to 3.5m AGL in height.

2.5.12 The height of the Solar PV modules can be influenced by several design factors including flood risk (and associated historic flood levels), local topography, visual receptors, land use practices, and the Solar PV module type and configuration.

2.5.13 Archaeological investigation surveys (in the form of geophysical surveys) and ground investigation surveys are being undertaken. Both sets of surveys will help inform the mounting structure design and construction method.

Balance of solar system

2.5.14 The BoSS refers to the components and equipment that convert the direct current (DC) electricity collected by the Solar PV modules into alternating

current (AC) and provide control and onward distribution of electricity across the Site. Primarily, this includes inverters, transformers, switchgear and the associated cables.

2.5.15 This section sets out the different configuration options available for the Proposed Development, including the use of Collector Compounds.

Inverters

2.5.16 Inverters are required to convert the DC electricity collected by the Solar PV modules into AC, which allows the electricity generated to be distributed to the Collector Compounds and then onto the on-site Substation where the voltage is increased for export to the National Grid. Inverters are typically sized to match characteristics of the DC electricity output from the Solar PV modules.

2.5.17 It is currently expected that string inverters would be used for the Proposed Development. String inverters are small enough to be mounted underneath the Solar PV modules, as shown indicatively on **Plate 2.1**. A string inverter would be required for every Solar PV string.



Plate 2.1: Typical String Inverter

Transformers

2.5.18 Transformers are required to step up the voltage of the electricity generated across the Site before it reaches the on-site Substation or Collector Compound.

2.5.19 Transformers would either be located standalone outdoors adjacent to the inverters and switchgear, as displayed in **Plate 2.2**, or housed indoors, alongside the inverters and switchgear within a container of similar size to a shipping container.

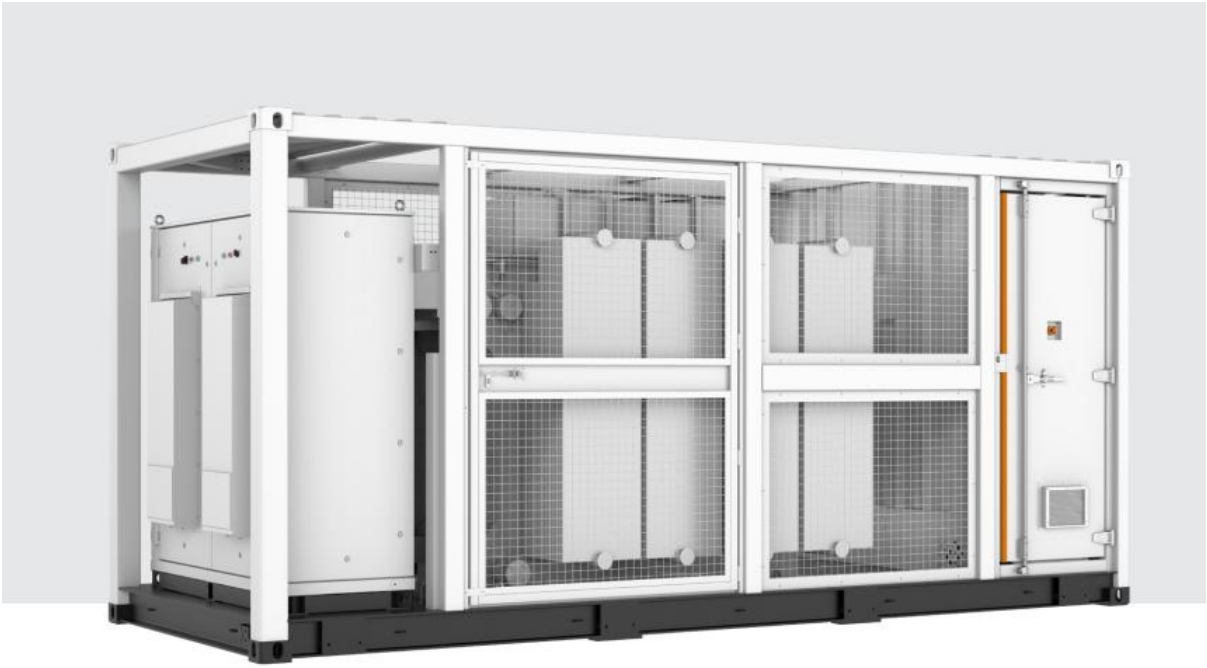


Plate 2.2: Typical transformer station

Switchgears

2.5.20 Switchgears are the combination of electrical disconnect switches, fuses or circuit breakers to control, protect and isolate electrical equipment. Switchgear is used both to de-energise equipment to allow work to be done and to maintain safe operation. Switchgears are typically housed indoors within a container or can be located independently outdoors, adjacent to the outdoor transformer.

Configuration options for BoSS

2.5.21 The option under consideration is for the equipment to be located independently outdoors within the Solar PV development areas. The approximate height of this equipment would be up to 3m.

2.5.22 As the design develops, the configuration of the BoSS will be determined post-consent based upon environmental and technical factors. A reasonable worst-case scenario will be assessed and presented in the ES.

Collector compound

2.5.23 Consideration has been given to the potential use of Collector Compounds to reduce the underground cabling across the Site. The Collector Compounds would receive the medium voltage (33kV) underground cables from independent outdoor equipment within the surrounding Solar PV areas, depending on the final configuration. Underground cabling would then connect the Collector Compounds to the on-site Substation.

2.5.24 If required, the Collector Compounds would include switchgear and transformers to step up the voltage to 66 kV or 132 kV. The Collector Compounds would also include a security cabin, expected to be single storey.

2.5.25 The Collector Compounds are anticipated to be up to approximately 60m x 60m in plan, and the maximum height of the equipment within each compound may be up to 5m.

2.5.26 The location of the Collector Compounds will be determined as the design of the project progresses with further detail presented in the ES.

Battery Energy Solar System (BESS)

Potential areas for the BESS

2.5.27 Based on early site selection work completed by the Applicant (further detail provided in **Chapter 3**), the potential areas considered suitable for the BESS are presented in **Appendix B**, which comprise areas within Fields 6, 7 and 8. The location of the BESS will be determined as the design of the project progresses with further detail presented in the ES.

Description

2.5.28 The BESS is designed to provide peak generation and grid balancing services to the electricity grid. It would do this primarily by allowing excess electricity generated from the Solar PV generating station to be stored for a long duration in batteries and dispatched when required. It may also import surplus energy from the electricity grid when energy available to the grid exceeds demand.

2.5.29 The BESS units each comprise an enclosure for BESS electro-chemical components and associated equipment including transformers, inverters, switchgear, power conversion systems, monitoring and control system, Heating, Ventilation and Air Conditioning (HVAC) systems, electrical cables and fire infrastructure including water storage tanks and a shut off valve.

2.5.30 The BESS typically comprises a number of shipping container units, which could be either individual enclosures or housed within a large building.

2.5.31 The BESS may comprise DC/DC and AC/DC converters to control the charge of the batteries from the Solar PV energy output and/or AC/DC inverters to control their charge using energy drawn from the National Grid.

2.5.32 Each BESS would require a HVAC system to ensure the efficiency of the batteries, which are integrated into the containers. This may involve a HVAC system that is external to the containerised unit located either on the top of the unit or attached to the side of the unit. If this uses air to heat and cool, it will have a fan built into it that is powered by auxiliary power.

2.5.33 A switchgear/control room operates, isolates and controls the exported power from the BESS. This would be located adjacent to the BESS within the same compound.

2.5.34 The BESS compound is anticipated to have an approximate footprint of up to 80,000m^2, with a height of up to approximately 3m.

2.5.35 As the design develops, the configuration of the BESS will be determined based upon environmental and technical factors and informed by the feedback received during the consultation process. A reasonable worst-case scenario will be assessed and presented in the ES.

Substation compound

Potential areas for the Substation

2.5.36 Based on early site selection work completed by the Applicant (further detail provided in **Chapter 3**), the potential areas considered suitable for the on-site Substation are presented in **Appendix B**, which comprise areas within Fields 6, 7 and 8. The location of the Substation will be determined as the design of the project progresses with further detail presented in the ES.

Description

2.5.37 The Substation would consist of electrical infrastructure such as transformers, switchgear and metering equipment. This would also include a control building alongside office space, material storage and welfare facilities, and a security cabin and parking, as well as operational monitoring and maintenance equipment. The building(s) housing the above facilities would be of painted block or of prefabricated construction with external colours and finishes sensitive to the context to be confirmed prior to construction.

2.5.38 The Substation compound is anticipated to have a footprint of approximately 80,000m^2, with some electrical infrastructure reaching up to approximately 12m in height such as closed-circuit television (CCTV) poles and lightening masts.

Ancillary infrastructure work

Electrical connections

2.5.39 The electrical connection associated with the Proposed Development can be separated into two elements:

- **On-site cabling** - comprising the electrical infrastructure required to connect the Solar PV modules to the on-site substation, including underground electrical and communication cables within the Site boundary; and
- **Off-site grid connection infrastructure** - comprising the infrastructure required to connect the Proposed Development to the wider electricity transmission or distribution network.

2.5.40 The on-site electrical infrastructure forms part of the Proposed Development and will be included within the DCO application and assessed within the EIA.

2.5.41 Discussions to date with NESO regarding the off-site grid connection infrastructure have most recently focussed on the yet-to-be-developed 400kV substation, known as the Trent Valley South Connection Node C. This remains subject to further engagement with, and confirmation from, NESO. Accordingly, any route alignment associated with the grid connection to the Proposed Development's point of connection, together with the detailed design and technology to be utilised, has not yet been determined and would be subject to separate detailed appraisal, and assessment. The information currently available suggests the grid connection would comprise an underground cable together with associated infrastructure.

2.5.42 The off-site grid connection infrastructure will not form part of the application for development consent for the Proposed Development and would instead be designed and consented (and environmentally assessed, if required) outside this DCO application process.

2.5.43 It is proposed that the relationship between the off-site grid connection and the Proposed Development would be considered cumulatively as part of the EIA process. The assessment will be undertaken at a level proportionate to the information available to the Applicant regarding the off-site grid connection at the time the ES is prepared.

2.5.44 On the basis of the information available, the assessment will use an indicative grid connection corridor and available desk-based environmental information to consider, on a factor-by-factor basis, whether the Proposed Development, together with the off-site grid connection, could give rise to any indirect, secondary, cumulative or other significant environmental effects. Where detailed information relating to the off-site grid connection is unavailable, the assessment will identify the assumptions made and any

limitations arising from the maturity of the Proposed Development's design. Reasonable precautionary assumptions will be used where appropriate.

2.5.45 The Applicant will keep the available information regarding the off-site grid connection under review as the Proposed Development design progresses during pre-application. The approach to the consideration of the off-site grid connection within the ES will take account of the scoping opinion, as well as any related advice provided by the Planning Inspectorate, statutory environmental bodies, NESO and any other relevant consultees.

On-site cabling

2.5.46 The on-site cabling will include 33kV underground cabling within the areas of the Solar PV development that would connect the Solar PV modules to the on-site Substation.

2.5.47 Low voltage on-site electrical cabling is required to connect the Solar PV modules and BESS units to inverters (typically via 1.5/1.8kV cables), and the inverters to the transformers on-site (typically via 0.6/1.0kV cables).

2.5.48 Higher rated cables (around 33kV) are then required between the transformers and the switchgears and from switchgears (Collector Compounds) to the on-site electrical infrastructure (typically via 33kV cables).

2.5.49 On-site cabling would be laid underground. The dimensions of the trenches would vary depending on the number of cables they contain and are assumed to be up to approximately 3m in width and generally down to approximately 2m in depth. Cabling between Solar PV modules and the Inverters are typically required to be above ground level (along a row of racks), fixed to the mounting structure, and then underground (between racks and the inverter input).

2.5.50 Open-cut trenching methods would be used for a majority of the cable routing. However, subject to on-going engagement with utility providers and other stakeholders, there may be a requirement for trenches deeper than 1.5m or specialist trenchless techniques (e.g., Horizontal Directional Drilling (HDD)) for crossings of roads, environmental receptors, and other existing sensitive infrastructure.

Fencing and security

2.5.51 Fencing would enclose the operational areas of the Proposed Development. The fields encompassing the Solar PV modules and supporting infrastructure would likely be fenced using a steel meshed fence with a maximum height of 2 - 2.5m and mammal access. The colour finish of the fence would be green powder; however, this will be confirmed during the design process.

2.5.52 Permanent palisade steel fencing (up to 3m high) would be installed around the perimeter of the on-site Substation and BESS.

2.5.53 Pole mounted CCTV systems which typically have a maximum height of up to 4.5m, are assumed to be deployed around the perimeter of the operational areas of the Site, including the Substation compound.

2.5.54 The Substation, BESS compound, and Collector Compounds would include manually operated or sensor activated lighting, in accordance with relevant standards, but would not be permanently lit.

2.5.55 External lighting will be assessed in a lighting assessment as part of the landscape and visual assessment (see **Section 6.6**) which will detail measures that are proposed to minimise light spill and impacts to sensitive receptors, including the use of directional lighting.

Access tracks

2.5.56 Access to and within the Proposed Development during operation would be required for maintenance and replacement of infrastructure elements when they reach their end of life. Vehicle access would be located off Long Lane or Rauceby Lane, either off the A15 or A17, with appropriate site junction improvements. See **Section 6.10** for further detail on transport.

Drainage

2.5.57 The detailed operational drainage design for the Proposed Development will be undertaken prior to construction and an Outline Drainage Strategy will be submitted in support of the DCO application. The overarching principle of the drainage strategy for the Proposed Development is to provide Sustainable Drainage Systems (SuDS) at source, ensuring that surface water run-off mimics existing site conditions as far as is reasonably practicable.

2.5.58 The design of new drainage systems will be informed by the Flood Risk Assessment and hydrological assessment to be undertaken in support of the DCO application (see **Section 5.9** for further details).

2.5.59 Infiltration drainage design will be in accordance with Building Research Establishment (BRE) Digest 365: Soakaway Design and Sewers for Adoption **[Ref. 2-5]**.

2.5.60 Drainage and sewage systems are likely to be required at the Substation and BESS compound. This will be determined following further design development.

Landscaping, habitat management and biodiversity enhancement

2.5.61 The Proposed Development would include landscaping, habitat management, biodiversity enhancement, and amenity improvements, which will be explored as the design progresses.

2.5.62 The Proposed Development will be sensitively designed to retain and enhance ecological and recreational connectivity. The location, extent, type of habitat creation, establishment timeframe, and maintenance requirements will be detailed within and secured by the Outline Landscape and Ecology Management Plan (Outline LEMP).

Construction phase

Construction programme

2.5.63 It is anticipated that the construction of the Proposed Development would be completed over distinct phases. Subject to obtaining development consent, construction is scheduled to last for approximately 18 to 36 months.

Construction activities

2.5.64 The ES will provide further details of the proposed construction activities, their assumed duration, along with an indicative programme of works. The types of construction activities that would be required include:

- Site preparation.
- Import of construction materials, plant and equipment to Site.
- Establishment of Site entrances, Site construction compounds, and welfare facilities.
- Upgrading existing tracks and construction of new access roads within the Site.
- Marking out the location of infrastructure.
- Erection of module mounting structures and mounting of modules.
- Installation of electric cabling, inverters, transformer cabins, and battery storage units.
- Construction of the Substation, BESS compound, Collector Compounds and installation of equipment.
- Cable installation.
- Installation of temporary construction compounds.
- Trenching in sections.
- Appropriate storage and capping of soil.
- Appropriate construction drainage.
- Sectionalised approach of duct installation.
- Excavation and installation of jointing pits.

- Cable pulling.
- Testing and commissioning.
- Site reinstatement (i.e., returning any land used during construction, for temporary purposes, back to its previous condition).
- Landscaping and biodiversity enhancements.

Cable installation

2.5.65 The following activities would be required to install the underground cables:

- Stripping and storing of topsoil in sections;
- Trenching/ducting and installation of electric cabling;
- Cable joint installation (including cable joint pits);
- Implementation of crossing methodologies for watercourses, roads and railway (e.g. HDD, cable bridging, etc.); and
- Reinstatement works, where necessary.

Construction site compound and access

2.5.66 Temporary compounds would be established before commencement of the main construction works for the storage of materials, plant and equipment. The compounds would also include staff welfare facilities, waste storage, and offices.

2.5.67 Washing facilities would be provided at the Site entrances where required to allow site vehicles to be cleaned prior to re-joining the public highway. Such facilities may include static wheel washes, towable jet wash units, and pressure washers.

2.5.68 The temporary compounds would include hardstanding areas, with haul road connections comprising stone laid on a geotextile membrane. The construction compounds may require temporary lighting to ensure safety and security, especially in the winter months.

2.5.69 Temporary access tracks would be provided to link the temporary compounds to the Site access points. Where required, temporary access tracks would be constructed of stone laid on a geotextile membrane.

2.5.70 Construction access to the Site is yet to be finalised. A number of indicative construction access points to the Site from the public highway have been identified in **Appendix M**.

2.5.71 The number of construction trips will be confirmed and assessed as part of the Outline Construction Traffic Management Plan (Outline CTMP), which will be developed and submitted in support of the DCO application

2.5.72 Further work will be undertaken to identify suitable locations and the land that is likely to be required for the temporary construction compounds (including laydown/storage areas), and access routes connecting to the Site from the local highway.

2.5.73 Street works may be required to the public highway outside of the Site in order to facilitate construction access. This will be determined following further work on the likely traffic impacts associated within the construction of the Proposed Development. This is expected to be confirmed for the DCO application and assessed in the ES.

Construction environmental management

2.5.74 An Outline Construction Environmental Management Plan (Outline CEMP) will be submitted in support of the DCO application and will set out the key measures to be employed during construction to control and minimise the impacts on the environment.

2.5.75 The details and implementation of this will be secured by a DCO requirement via a Detailed CEMP. The purpose of the Outline CEMP is:

- To ensure nuisance levels as a result of construction activities are kept to a minimum.
- To comply with relevant regulatory requirements and environmental commitments.
- To ensure procedures are put into place to minimise environmental effects during construction.

Soils management

2.5.76 An Outline Soils Management Plan (Outline SMP) will be prepared and submitted in support of the DCO application and a Detailed SMP will be secured by a DCO requirement. The Outline SMP will follow the principles of best practice to mitigate, manage and maintain the physical properties of the soil during the construction phase.

Construction traffic management

2.5.77 An Outline CTMP will be submitted in support of the DCO application and the Detailed CTMP will be secured by a DCO requirement. The Outline CTMP will propose measures to ensure road safety for all users during the construction phase and to effectively manage any disruption that may be caused during the construction phase.

Construction reinstatement and habitat creation

2.5.78 A programme of construction reinstatement and habitat creation will commence during the construction phase. This will be detailed in the Outline LEMP, with the Detailed LEMP secured by a DCO requirement.

Operation (including maintenance) phase

2.5.79 The design life of the Proposed Development is expected to be up to 40 years.

2.5.80 Minor maintenance works are expected to occur throughout the operating life of the Proposed Development. It is assumed that inspections will be carried out and access will use the previously built construction roads and/or access points. Maintenance activities are likely to include:

- Visual inspection of all infrastructure;
- Scheduled inspections and testing of equipment;
- Replacement of consumable items (e.g., inverter filters);
- Cleaning of Solar PV modules, if required;
- Repair or replacement of Solar PV modules or other components, if damaged;
- Delivery of spare parts, replacement equipment items and consumables;
- Water management (e.g., clearing of drainage ditches); and
- Habitat management (e.g., cut back of grass, hedges, trees).

2.5.81 Any equipment that needs to be replaced during the operation (including maintenance) phase would be managed in accordance with the waste hierarchy, with materials being reused or recycled wherever possible. Electrical waste would be disposed of as per the Waste Electrical and Electronic Equipment (Amendment, etc.) Regulations 2025 **[Ref. 2-6]**, minimising the environmental impact of replacing any elements of the Proposed Development.

2.5.82 **Table 2.1** provides the assumed equipment service life that is anticipated. Assets with a service life of 40 years would not require any replacement unless damaged or faulty.

Table 2.1: Assumed service life of the Proposed Development's components

Item	Service life (years)
Solar PV modules	40
Solar PV frames	40
Solar PV foundations	40

Item	Service life (years)
BESS	17.5
BESS unites/control containers	40
Switchgear	30
String Inverters	10
Inverter Transformer Stations	40
Transformers	40
BESS building	40
Collector Compounds	40
Cabling	40
Other infrastructure	40

Operational environmental management

2.5.83 An Outline Operational Environmental Management Plan (Outline OEMP) will be submitted in support of the DCO application and a Detailed OEMP will be secured by a DCO requirement. The Outline OEMP will set out the principles and key measures that will be employed during the operation of the Proposed Development to control and minimise the impacts on the environment. This includes replacement of electrical equipment.

2.5.84 In the event of the need to replace any of the Proposed Development's operational equipment, there may be a level of HGV activity required to complete these works. The extent of traffic generation is anticipated to be significantly less than that for peak construction activities.

Soil management

2.5.85 An Outline SMP will be prepared and submitted in support of the DCO application and a Detailed SMP will be secured by a DCO requirement. The Outline SMP will follow the principles of best practice to maintain the physical properties of the soil during the operation (including maintenance) phase, with the aim of restoring the land to its pre-construction condition at the end of the lifetime of the Proposed Development.

Landscape and ecology establishment

2.5.86 A programme of landscape and ecology establishment would be carried out. An Outline LEMP will be submitted in support of the DCO application and a Detailed LEMP will be secured by a DCO requirement. The Outline LEMP will set out the principles for how the land will be managed and monitored throughout the operation (including maintenance) phase, following the completion of construction.

Public rights of way

2.5.87 In accordance with Section 55 Acceptance of Applications Checklist (version October 2019), the DCO application will be supported by a plan identifying any new or altered means of access, stopping up of streets or roads or any diversions, extinguishments or creation of rights of way or public rights of navigation. An Outline Public Rights of Way and Access Strategy (Outline PRoWAS) will also be submitted in support of the DCO application and a Detailed PRoWAS will be secured by a DCO requirement.

2.5.88 The Outline PRoWAS will include a schedule of PRoW within the Site and outline the proposed measures to manage any requirements to temporarily 'stop up' public rights of way within the Site during construction with a suitable diversion in place.

Battery safety

2.5.89 A management plan for battery safety will be prepared and submitted in support of the DCO application in a document titled Outline Battery Safety Management Plan (Outline BSMP). A Detailed BSMP will be secured by a DCO requirement. The Outline BSMP will detail the regulatory guidance reviewed to ensure that all safety concerns around the BESS element of the Proposed Development are addressed insofar as is reasonably practicable

Decommissioning

Ground mounted solar PV generating station, Windsock Substation and BESS

2.5.90 For the purposes of the EIA, the decommissioning assessment will assume a 40-year operational life span for the ground mounted Solar PV generating stations, Collector Compound, Substation, BESS and related access tracks and ancillary infrastructure.

2.5.91 At the end of the operation (including maintenance) phase, any above ground infrastructure would be dismantled and removed in accordance with industry best practice at the time. It is assumed that all concrete, hardstanding areas, foundations for the infrastructure and any internal tracks and fencing would be removed. The use of decommissioned materials would follow the waste hierarchy such that they would be reused where possible before recycling and disposal were considered. Upon removal of all elements associated with the Proposed Development, any ground disturbances would be appropriately reinstated and, where practicable, enhanced relative to their pre-development condition.

2.5.92 At the time that decommissioning would take place, the regulatory framework, good industry practices and the future baseline could have altered. The Applicant would implement a Decommissioning Environmental

Management Plan (DEMP) taking account of good industry practice, its obligations to landowners under the relevant agreements and all relevant statutory requirements. An Outline Decommissioning Environmental Management Plan (Outline DEMP) will be submitted in support of the DCO application, and a Detailed DEMP will be secured by a DCO requirement.

2.5.93 The ES will outline the activities and works which would likely be required during the decommissioning of the Proposed Development, alongside any known proposals for the restoration of the Site.

2.6 References

Ref. 2-1: Department for Energy Security and Net Zero. (2026). *Overarching National Policy Statement for Energy (EN-1), 2025*. Online. Available at: Overarching National Policy Statement for Energy (EN-1) – December 2025

Ref. 2-2: Department for Energy Security and Net Zero. (2024). *Clean Power 2030 Action Plan*. Online, Available at: Clean Power 2030 Action Plan - GOV.UK

Ref. 2-3: Planning Inspectorate. (2026). *Nationally Significant Infrastructure Projects: Pre-Application Advice on Environmental Impact Assessmen*t. Online. Available at: Nationally Significant Infrastructure Projects: Pre-Application Advice on Environmental Impact Assessment - GOV.UK

Ref. 2-4: Planning Inspectorate. (2026). *Nationally Significant Infrastructure Projects: Advice on Good Design.* Online. Available at: Nationally Significant Infrastructure Projects: Advice on Good Design - GOV.UK

Ref. 2-5: Building Research Establishment (BRE). (2012). *Digest 365: Soakaway Design and Sewers for Adoption*. 7th Edition. Watford: BRE.

Ref. 2-6: UK Government. (2025). *The Waste Electrical and Electronic Equipment (Amendment, etc.) Regulations 2025*. Online. Available at: The Waste Electrical and Electronic Equipment (Amendment, etc.) Regulations 2025

3 REASONABLE ALTERNATIVES CONSIDERED

3.1 Introduction

3.1.1 Regulation 14(2)(d) of the EIA Regulations 2017 states that an ES should include:

"*a description of the reasonable alternatives studied by the applicant, 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*".

3.1.2 The Planning Inspectorates Pre-Application Advice on Environmental Impact Assessment **[Ref. 3-1]** states that "*the consideration of alternatives should explain how the mitigation hierarchy has been applied from the outset to evolve and refine the design of the proposed development to its description at submission. …[It] should include the decisions made relating to alternative locations or routes (where relevant); alternative design options such as layouts, technology, massing and capacity considerations; and alternative construction techniques or operational modes. The justification for the final choice and evolution of the proposed development should be clearly described, including how it has been informed by environmental matters and engagement and/or consultation*." The reasonable alternatives assessment will focus on the site selection process, design layouts/opportunities within the Site, the sizing and scale of infrastructure, alternative technologies.

3.1.3 Alternative technologies will only be considered from the perspective of alternative solar technologies. The ES will not consider alternative forms of renewable energy, such as wind, on the basis that the Applicant is proposing a solar development and therefore did not consider alternative technologies. The Sizewell C judgement (2023) **[Ref. 3-2]** reinforced the case that the Applicant does not need to compare different generating technologies such as solar vs. wind vs. nuclear. This is covered in paragraph 131 of the judgement with states the following:

"*The absurdity of the claimant's argument was well-demonstrated by Mr. Strachan KC and by Mr. Phillpot KC for the defendant and SZC respectively. The implication of ground 4 would be that a decision-maker dealing with a proposal for a solar farm or wind turbine array, obliged to comply with reg.64(1), would have to consider as alternative solutions nuclear power and, as the case may be, wind power or solar power options, But in my judgment there is nothing artificial or unlawfully limiting about a Government policy which identifies as core objectives the need to provide a mix of new electricity generation technologies, comprising solar, wind and nuclear power. Indeed, in para. 9.1.1 of the Habitats Regulations Assessment (HRA)*

the defendant noted a decision of the CJEU that the objective of ensuring security of supply may constitute IROPI."

3.1.4 A 'no development' alternative would not deliver the additional electricity generation capacity associated with the Proposed Development and therefore will not be considered further. However, the environmental conditions that would exist in the absence of the Proposed Development would be reflected within the 'future baseline' for each environmental factor chapter of the ES, and would be used as the basis against which the Proposed Development's likely significant environmental effects would be assessed.

3.1.5 The consideration of alternatives and design evolution will be undertaken with the aim of avoiding and/or reducing significant adverse environmental effects, maintaining operational efficiency and cost-effective design solutions, and with consideration of other relevant matters such as available land and planning policy. This will be aided by the implementation of project design principles which would help guide the design of the Proposed Development as per the Planning Inspectorate's advice on Good Design **[Ref. 3-3]**.

3.2 Approach to site selection

3.2.1 There is no standard methodology for the site selection for solar farms. The site selection methodology has therefore been informed by relevant planning policy. In particular, the following applicable National Policy Statements (NPS):

- Overarching National Policy Statement for Energy (EN-1), 2025 **[Ref. 3-4]** published in January 2026;
- National Policy Statement for Renewable Energy Infrastructure (EN-3), 2025 **[Ref. 3-5]** published in January 2026;
- National Policy Statement for Electricity Networks Infrastructure (EN-5), 2025 **[Ref. 3-6]** published in January 2026.

3.2.2 In identifying the Site, the Applicant focused on determining opportunities and constraints within an initial search area surrounding the initially assumed point of grid connection. The following fundamental attributes were applied to this search area to determine the most suitable location for the Proposed Development. These attributes are recognised in NPS EN-3 as important criteria affecting the site selection of large-scale solar developments:

- Existence of sufficient land, offered by willing landowners, to deliver the project and meet the scale of the Proposed Development's aims;
- Availability and capacity of a suitable Point of Connection to the National Electricity Transmission System (NETS); and

- Solar irradiation levels to support the Proposed Development's potential to produce an efficient and economic energy yield. Irradiance and site topography.

3.2.3 The environmental and spatial considerations set out in **Table 3.1** were also part of the site selection process.

Table 3.1: Alternatives studied to date and reasons for rejection

Consideration	Discussion
Agricultural Land Classification and land type	The Applicant sought to minimise the loss of best and most versatile (BMV) agricultural land (defined as Grades 1, 2 and 3a). In accordance with planning policy, preference was given to land of lower agricultural quality (Grades 3b, 4 or 5) as well as previously developed land, brownfield land, contaminated land or industrial land where possible.
Designated international and national ecological and geological sites	The Applicant considered the presence of designated ecological and geological sites within and surrounding the Site. There is only one SSSI located approximately 400m west of the Site. There are no Special Protection Areas (SPA), Special Areas of Conservation (SAC) or Ramsar sites within 10km of the Site.
Nationally designated landscape	The Applicant considered the presence of any designated landscapes including National Landscapes (formerly Areas of Outstanding Natural Beauty) and National Parks. Neither of these designations are located within the search area.
Scheduled Monuments	The Applicant considered the presence and proximity of Scheduled Monuments. There are eight Scheduled Monuments within 5km of the Site, of which one is located within 1km of the Site.
Proximity to sensitive human receptors	The Applicant considered the proximity of nearby sensitive human receptors, including residential dwellings, populated areas, villages and PRoWs, with the aim of identifying a site which would have a limited impact on local communities and recreational users.
Flooding	The Applicant considered the flood risk and the potential for surface water flooding. The Site is located wholly within Flood Zone 1; however, there are two small overland surface water runoff routes. Solar PV modules can continue to operate during flood events. It is therefore considered that potential flooding impacts can be appropriately mitigated through detailed design (e.g. by applying a sequential test within the footprint of the Site and locating any sensitive infrastructure away from the surface water flood path).

3.2.4 The above considerations for large scale solar development, alongside the key operational criteria, including topography and aspect, have all been considered and resulted in the Site being identified.

3.3 References

Ref. 3-1: Planning Inspectorate. (2026). *Nationally Significant Infrastructure Projects: Pre-Application Advice on Environmental Impact Assessment*. Online. Available at: Nationally Significant Infrastructure Projects: Pre-Application Advice on Environmental Impact Assessment - GOV.UK

Ref. 3-2: Royal Courts of Justice. (2023). *R (Together Against Sizewell C Limited) v Secretary of State for Energy Security and Net Zero, Case No: CO/3147/2022*. Online. Available at: https://www.judiciary.uk/wp-content/uploads/2023/06/R-Together-Against-Sizewell-C v-SS-BEIS-judgment-220623-2.pdf

Ref. 3-3: Planning Inspectorate. (2026). *Nationally Significant Infrastructure Projects: Advice on Good Design.* Online. Available at: Nationally Significant Infrastructure Projects: Advice on Good Design - GOV.UK

Ref. 3-4: Department for Energy Security and Net Zero. (2026). *Overarching National Policy Statement for Energy (EN-1), 2025*. Online. Available at: Overarching National Policy Statement for Energy (EN-1) – December 2025

Ref. 3-5: Department for Energy Security and Net Zero. (2026). *National Policy Statement for Renewable Energy Infrastructure (EN-3), 2025*. Online. Available at: National Policy Statement for Renewable Energy Infrastructure (EN-3)

Ref. 3-6: Department for Energy Security and Net Zero. (2026). *National Policy Statement for Electricity Networks Infrastructure (EN-5), 2025.* Online. Available at: National Policy Statement for Electricity Networks Infrastructure (EN-5) – December 2025

4 APPROACH TO EIA

4.1 Introduction

4.1.1 This chapter sets out the overall approach that will be taken to the EIA for the Proposed Development. The ES will contain the information specified in Schedule 4 of the EIA Regulations 2017. The approach to the assessment has been informed by current best practice guidance.

4.1.2 An overview of the guidance and methodology adopted for each environmental factor is provided within **Chapter 6**.

4.1.3 The environmental factors listed under Regulation 5(2) of the EIA Regulations 2017 are presented below.

- Population and human health;
- Biodiversity;
- Land (including groundwater);
- Soil;
- Water;
- Air;
- Climate;
- Material assets;
- Cultural heritage;
- Landscape; and
- The interaction between these factors.

4.1.4 It should be noted that although not listed as specific environmental 'factors' under Regulation 5(2) of the EIA Regulations 2017, the following are also considered within this EIA Scoping Report:

- Noise and vibration;
- Transport and access;
- Electric, magnetic, and electromagnetic fields;
- Glint and glare;
- Heat and radiation; and
- Major accidents and disasters.

4.1.5 The proposed structure of the ES is set out in **Appendix E**.

4.2 Consultation

4.2.1 Consultation alongside the EIA process is critical to the development of a comprehensive and proportionate ES. The views of statutory and non-

statutory consultees are important to ensure the EIA focuses on specific issues where significant environmental effects are likely, and where further investigation is required, from the outset.

4.2.2 Consultation, as an ongoing process, enables embedded and additional mitigation measures to be incorporated into the Proposed Development to limit adverse environmental effects and optimise environmental benefits important to the local area and communities.

4.2.3 Early and ongoing engagement with consultees is important to influence the design process of the Proposed Development. Feedback from consultees will be sought and considered in the evolving design.

4.2.4 Phase One Consultation is ongoing, commencing in October 2026, with the aim to:

- Outline the broad parameters of the Proposed Development;
- Gather feedback on the early design;
- Understand key community and stakeholder concerns, insights and proposed design enhancements.

4.2.5 Phase One Consultation has comprised the following activities:

- The Applicant has introduced the Proposed Development to a range of key stakeholders including the host and surrounding parish councils of Cranwell, Brauncewell and Byard's Leap;
- The Applicant has written to near neighbours of the Proposed Development (49 properties) to introduce the Proposed Development and provide a direct line of communication;
- The Applicant has met in-person with near neighbours at the Old School House, Cranwell on 16 and 17 September 2026;
- The Applicant invited 49 residents to an online webinar to introduce the Proposed Development;
- The Applicant has held two exhibition events at Cranwell Village Hall on 16 and 17 October 2026 respectively, an online exhibition on 19 October 2026 and a third exhibition event at The Hive, RAF Cranwell on 21 October 2026. These exhibition events are with the local community to introduce the Proposed Development.

4.2.6 A Phase Two Consultation is expected to be held in Spring 2027 with the aim to:

- Set out current proposals, demonstrating how the Phase One Consultation event feedback has been accounted for and considered within the Proposed Development design;
- Take formal feedback to ensure that regard has been had to the view of the local community and identify opportunities for further design enhancements; and

- Identify opportunities for further design refinements prior to submission of the DCO application.

4.2.7 As part of the EIA process, consultation will be undertaken with a range of consultees. It is anticipated at this stage that consultees will include (but is not limited to):

- Lincolnshire County Council;
- North Kesteven District Council;
- Historic England;
- Natural England;
- Environment Agency;
- Ministry of Defence;
- Lincolnshire Wildlife Trust;
- National Highways; and
- Lincolnshire Fire and Rescue Service.

4.2.8 The consultation undertaken to date, and the consultation planned, for each of the environmental factor assessments is provided in further detail in **Chapter 6**.

4.2.9 The Applicant will continue ongoing consultation with the Lincolnshire County Council and North Kesteven District Council, stakeholders listed above, and other relevant consultees throughout the development of the Proposed Development and preparation of the ES.

4.3 General difficulties and uncertainties

4.3.1 Factor specific difficulties and uncertainties are set out in the relevant sections of this EIA Scoping Report. The following key general difficulties and uncertainties apply to a number of factors:

- The design of the Proposed Development is being refined, and the environmental surveys and assessments required to support the planning and EIA process are being progressed. This EIA Scoping Report is provided based on the information available at the time of writing. Where relevant, the proposed scope will be reviewed and updated to reflect refinements in the Proposed Development design that may occur post-scoping and agreed with relevant statutory consultees. Any changes to the scope of the EIA would be reported as necessary in the ES.
- As the location and area of the components that the Proposed Development comprises are not yet defined or fixed, there is potential for uncertainty regarding the scope of assessment for each factor. However, the description of the Proposed Development presented in **Chapter 2** details the anticipated parameters of the Proposed Development components as they are currently known. Whatever location or footprint is decided and applied, the ES would assess the realistic 'worst case

scenario' to ensure that the maximum level of significant environmental effects is considered.

- Data from third parties relied upon for the baseline against which any effects would be assessed could potentially be out of date or inaccurate. However, any such data will be procured from reputational and industry standard sources and will be reviewed and used by competent and experienced professional experts. This should ensure that the data is suitable for its purpose and would therefore provide an appropriate evidence base on which the existing environmental baseline would be informed.

4.4 Defining the study area

4.4.1 Study areas have been defined individually for each environmental factor, taking into account the geographic scope of the potential impacts relevant to that factor and the information required to assess those impacts. The proposed study areas are described within each environmental factor assessment table (**Chapter 6**).

4.5 Establishing baseline conditions

4.5.1 Environmental effects of the Proposed Development will be described in the ES in relation to the extent of changes to the existing baseline environment as a result of the construction, operation (including maintenance) and decommissioning of the Proposed Development. The baseline environment will comprise the existing environmental characteristics and conditions, based upon desk-top studies and field surveys undertaken and information available at the time of the assessment.

4.5.2 Baseline conditions will be established by:

- Site visits and surveys;
- Desk based studies; and
- Modelling (if required).

4.5.3 The baseline conditions for each environmental factor will be set out within the respective assessment chapters. Currently known baseline conditions relevant to the individual environmental factor assessments are presented in **Chapter 6**.

4.5.4 As stated above in **Section 4.3**, there is potential that data obtained from third parties is not up to date. The origin of all third-party data used will be clearly identified, alongside any difficulties and uncertainties.

4.6 Establishing future baseline conditions

4.6.1 Schedule 4(3) of the EIA Regulations 2017 requires consideration of the likely evolution of the current state of the environment (baseline scenario) in the absence of the Proposed Development, as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge (the 'future baseline'). Whilst there are considerable limitations to the predictions that can be made about natural baseline conditions at a future point in time, reasonable effort will be made to characterise the future baseline in the absence of the Proposed Development in each factor assessment. In addition, some assessments require projections to account for future change, such as traffic growth within the assessment of likely significant effects associated with the Proposed Development.

4.7 Assessment scenarios

4.7.1 The assessment scenarios that are being considered for the purposes of the EIA are as follows:

- Existing baseline (without Proposed Development) – Reported at the time that the baseline data has been collected.
- Future baseline (without the Proposed Development) – For comparison with the construction phase, operation (including maintenance) phase and decommissioning phase.
- Construction of the Proposed Development – As presented in **Chapter 2**, construction is scheduled to last for approximately 18 to 36 months. The environmental factor assessment chapters will assess the relevant 'worst case' construction scenario and where necessary, the relevant period or 'peak' of activity within the construction programme.
- Operation (including maintenance) of the Proposed Development – The environmental factor assessment chapters will assess the relevant 'worst case' scenario where necessary. Consideration will need to be given to the phased approach to construction of the Proposed Development.
- Decommissioning of the Proposed Development.

4.8 Approach to mitigation

4.8.1 Mitigation can be relied on to reduce any potential significant effects from the Proposed Development. The sequential steps of the mitigation hierarchy are as follows, and have been discussed further in respect of each discipline in **Chapters 5** and **6**:

- **Avoidance** – take measures to avoid creating impacts from the outset;
- **Minimisation** – measures taken to reduce the duration, intensity and extent of the impact if they cannot be avoided;

- **Restoration** – measures taken to improve ecosystems following exposure to unavoidable impacts; and
- **Offset** – measures taken to compensate for any residual impacts.

4.8.2 The Institute of Environmental Management and Assessment (IEMA)[2] 'Environmental Impact Assessment Guide to Shaping Quality Development **[Ref. 4-1]** refers to three distinct forms of mitigation:

- **Primary** - an intrinsic part of the project design;
- **Secondary** - typically described within the factor chapters of the ES, but often are secured through planning conditions and/or management plans; and
- **Tertiary** - required regardless of any EIA, as it is imposed, for example, as a result of legislative requirements and/or standard sectoral practices.

4.8.3 For the purposes of this EIA Scoping Report and the ES, embedded 'primary' mitigation measures will form part of the Proposed Development for which development consent is sought. **Table 4.1** describes the currently known embedded (primary) environmental mitigation measures that are considered to be an inherent part of the Proposed Development, i.e. the project design principles adopted to avoid or prevent adverse environmental effects, based on the design of the Proposed Development to date. These measures are also detailed in the Commitments Register in **Appendix F**. It should be noted that these will likely evolve over the course of the design evolution, up to submission of the DCO application.

4.8.4 These embedded (primary) environmental mitigation measures should not be confused with additional (secondary and tertiary) mitigation measures proposed in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment, which are described under the 'Additional (Secondary and Tertiary) Mitigation Measures' section within each environmental factor assessment table (**Chapter 6**).

4.8.5 The EIA Scoping Commitments Register in **Appendix F** sets out the design commitments and mitigation measures that the Applicant is able to commit to at this stage. These will be included and built upon within the Outline Construction Environmental Management Plan (Outline CEMP), the Outline Operational Environmental Management Plan (Outline OEMP), the Outline Decommissioning Environmental Management Plan (Outline DEMP), the Outline Construction Traffic Management Plan (Outline CTMP), the Outline Site Waste Management Plan (Outline SWMP) (which will be appended to the Outline CEMP), the Outline Public Rights of Way and Access Strategy (Outline PRoWAS), the Outline Drainage Strategy, and the Commitments Register that will be submitted alongside the Environmental Statement in support of the DCO application.

[2] IEMA was rebranded to the Institute of Sustainability and Environmental Professionals (ISEP) in July 2025.

Table 4.1: Embedded (primary) environmental mitigation measures

Environmental factor to which the embedded (primary) environmental mitigation measure relates	Embedded (primary) environmental mitigation measure and associated function
Landscape and visual Noise Air quality Human health	The Proposed Development design would incorporate a minimum offset distance of 500m from all residential receptors to the location of the BESS and Substation.
Landscape and visual Noise Air quality	The Proposed Development design would incorporate a minimum offset distance of 100m from all residential receptors to the Solar PV development.
Aviation	The Proposed Development design would incorporate a minimum offset distance of 150m from the RAF antenna.
Biodiversity Landscape and visual	The Proposed Development design would incorporate a minimum offset distance of 10m from the edge of woodlands and centreline of hedgerows to the fenceline.
Biodiversity	Where possible, perimeter fencing surrounding the Solar PV development will be offset at least 30m from existing main badger setts.
Landscape and visual Noise Air quality Human health Population	The Proposed Development design would incorporate a minimum offset distance of 10m from all PRoW.
Biodiversity Landscape and visual	Where possible, existing hedgerows, woodland, ditches and field margins would be retained. Any breaks or crossings (associated new tracks, security fencing, and/or cable routes) would be designed to use existing agricultural tracks between fields and the width of any crossings would be kept to a minimum.
Water Land and groundwater	Where hardstanding is concentrated, e.g., Substation concrete bases, a formal drainage strategy would be included.
Soil	The Proposed Development design would minimise, where possible, the use of BMV agricultural land. Where possible, existing access

Environmental factor to which the embedded (primary) environmental mitigation measure relates	Embedded (primary) environmental mitigation measure and associated function
	tracks will be used, and new access tracks will avoid BMV land as far is practical.
Land and groundwater Soil Water	Construction storage areas and machinery will be designed and appropriately managed to prevent spillages or waste products coming into contact with soils, surface water and groundwater, in accordance with statutory environmental protection requirements.
Climate Water	Infrastructure design will take account of local drainage conditions and potential surface water flood risk where relevant, with sensitive electrical infrastructure located at the necessary minimum ground levels.
Land and groundwater Water	Areas of impermeable surfaces will be assessed in the Flood Risk Assessment and designed to ensure adequate groundwater infiltration is maintained during works. This will ensure that no significant changes occur to the existing surface water or groundwater regime.
Land and groundwater Water	The Outline Drainage Strategy will ensure that the surface water regime during construction will continue to mirror the existing surface water regime and will ensure that there is minimal effect on the existing groundwater conditions.
Transport Population Landscape and visual	All existing PRoW will be retained in their existing alignment, wherever practicable, and any diversions will take the shortest feasible route. Where it is not possible to avoid diversions or closures of existing PRoWs; any new permanent and diverted PRoW would be designed to either replicate or improve a PRoW route, quality, safety and accessibility. Any proposed changes to a PRoW will be agreed in consultation with Lincolnshire County Council and North Kesteven District Council, to ensure there are suitable diversions/replacements in place.
Biodiversity Landscape and visual	Proposed hedgerows will be planted using locally native species where possible, with a variety of fruiting and nut bearing species providing foraging opportunities.

Environmental factor to which the embedded (primary) environmental mitigation measure relates	Embedded (primary) environmental mitigation measure and associated function
Climate	Carbon reduction practices will be embedded as a core principle for the design team. Earlier engagement with carbon reduction allows for the greatest returns.

4.9 Assessment of likely significant effects

4.9.1 The ES will report on the likely significant environmental effects for the construction, operation (including maintenance) (i.e. once completed and open to use) and decommissioning phases of the Proposed Development.

4.9.2 The following criteria will be taken into account when determining significance:

- The receptors/resources (natural and human) which would be affected and the pathways for such effects;
- The geographic importance, sensitivity or value of receptors/resources;
- The duration (short-term, medium-term or long-term); permanence (permanent or temporary) and changes in significance (increase or decrease);
- Reversibility - e.g. is the change reversible or irreversible, permanent or temporary;
- Environmental and health standards (e.g. local air quality standards) being threatened; and
- Feasibility and mechanisms for delivering mitigating measures, e.g. is there evidence of the ability to legally deliver the environmental assumptions which are the basis for the assessment?

4.9.3 The method for assessing significance of effects varies between environmental factors but, in principle, will be based on the environmental sensitivity (or value/importance) of a receptor/resource and the magnitude of change from the baseline conditions. The approach to assessing the significance of effects for each individual factor is outlined within **Chapter 6** and **Appendix D**.

4.9.4 Summary of effect tables that summarise the likely significant effects associated with each of the environmental factors will be provided in the ES at the end of each factor assessment chapter. These tables will outline sensitive receptors, additional mitigation measures and residual effects. A distinction will be made between direct, indirect, secondary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects. Cumulative effects will be considered as a single

coordinated assessment in the ES and delivered as a standalone chapter. **Chapter 7** describes the proposed assessment methodology for cumulative effects.

4.10 Opportunities for enhancing the environment

4.10.1 Where possible, the Applicant will seek to identify opportunities for enhancement within the relevant environmental factor assessments, as set out by the National Planning Policy Framework, 2026 **[Ref. 4-2]**. Therefore, in accordance with IEMA[3] guidance on mitigation **[Ref. 4-3]**, only enhancement measures that are integral to the Proposed Development and written into the project description will be taken into account when determining the significance of effects. Other enhancement opportunities that are identified as the design or environmental assessments evolve will be reported in the ES, but they will not be taken into account when determining the significance of effects.

4.10.2 Enhancement measures will be assessed in accordance with steps set out in the NPS EN-1 **[Ref. 4-4]**.

4.11 Coordination of assessments

4.11.1 In addition to the production of an ES, a Water Framework Directive Waterbodies Stage 1 Screening Assessment and a Habitats Regulations Assessment: No Significant Effects Report will be produced in support of the DCO application.

4.12 References

Ref. 4-1: Institute of Environmental Management and Assessment (IEMA). (2015). *IEMA Environmental Impact Assessment Guide to Shaping Quality Development*. Institute of Environmental Management and Assessment (IEMA). Lincoln.

Ref. 4-2: Ministry of Housing, Communities and Local Government. (2026). *National Planning Policy Framework (NPPF)*. Online. Available at: National_Planning_Policy_Framework.pdf

Ref. 4-3: Institute of Environmental Management and Assessment (IEMA). (2024). *Impact Assessment Guidelines: Implementing the Mitigation Hierarchy from Concept to Construction August 2024*. Online. Available at: iema-mitigation-in-eia-guidance-final.pdf

Ref. 4-4: Department for Energy Security and Net Zero. (2026). *Overarching National Policy Statement for Energy (EN-1), 2025*. Online. Available at:

[3] IEMA was rebranded to the Institute of Sustainability and Environmental Professionals (ISEP) in 2025.

Overarching National Policy Statement for Energy (EN-1) – December 2025

5 ENVIRONMENTAL FACTORS PROPOSED TO BE SCOPED OUT OF FURTHER ASSESSMENT

5.1.1 As part of the EIA process and based on the information available to date, there are a number of environmental factors listed in **Section 4.1** for which likely significant environmental effects are not anticipated. This is largely due to the particular environmental aspect or matter not being relevant to the Proposed Development, or it is considered that any potential effects can be effectively controlled through the implementation of standard mitigation measures.

5.1.2 Where relevant, the proposed scoping out of an environmental factor has been undertaken in accordance with the Planning Inspectorate's Technical Advice Page for Scoping Solar Development **[Ref. 5-1]** and its 'Solar Scoping Table'. The environmental factors proposed to be scoped out of further assessment, together with justification for that approach, are presented below.

5.2 Electric, magnetic and electromagnetic fields

5.2.1 Electric fields are produced by voltage, which is a measure of the electrical potential difference between two points. Magnetic fields are produced by current, which is a measure of the flow of electricity.

5.2.2 Electrical fields can be blocked by fences, shrubs and buildings; and the intensity of the electric and magnetic fields decreases with distance from the source.

5.2.3 As referenced in NPS EN-5 **[Ref. 5-2]**, the 1998 guidelines published by International Commission on Non-Ionizing Radiation Protection (1998) **[Ref. 5-3]**, state that underground cables and overhead power lines at voltages up to, and including, 132kV are not capable of exceeding the International Commission on Non-Ionizing Radiation Protection exposure guidelines. The operation of the Proposed Development will use up to 400kV underground cables. As stated in **Chapter 1**, the grid connection will be subject to a separate planning application and therefore electric, magnetic and electro-magnetic fields will be considered within that planning application.

5.3 Glint and glare

5.3.1 Solar PV modules are specifically designed to absorb light rather than reflect it. Light reflecting from Solar PV modules results in the loss of energy output. Solar PV modules are dark in colour due to their anti-reflective coatings and are manufactured with low-iron, ultra-clear glass with specialised coatings

and textures to enable maximum absorption. The combination of these factors significantly increases electrical energy production of the panels and significantly reduces reflected rays at the same time.

5.3.2 It is understood from available studies that reflections produced from solar panels are of intensity similar to or less than those produced from still water and significantly less than reflections from glass and steel.

5.3.3 There are limited guidelines which set out a particular methodological approach to delivering a glint and glare assessment. National Policy Statement (NPS) for Renewable Energy Infrastructure (EN-3) **[Ref. 5-4]** in Sections 2.10.94 to 2.10.98 state that:

"*Solar PV panels are designed to absorb, not reflect, irradiation. However, solar panels may reflect the sun's rays at certain angles, causing glint and glare. Glint is defined as a momentary flash of light that may be produced as a direct reflection of the sun in the solar panel. Glare is a continuous source of excessive brightness experienced by a stationary observer located in the path of reflected sunlight from the face of the panel. The effect occurs when the solar panel is stationed between or at an angle of the sun and the receptor.*

Applicants should map receptors qualitatively to identify potential glint and glare issues and determine if a glint and glare assessment is necessary as part of the application.

When a quantitative glint and glare assessment is necessary, applicants are expected to consider the geometric possibility of glint and glare affecting nearby receptors, and provide an assessment of potential impact and impairment based on the angle and duration of incidence and the intensity of the reflection.

The extent of reflectivity analysis required to assess potential impacts will depend on the specific project site and design. This may need to account for 'tracking' panels if they are proposed as these may cause differential diurnal and/or seasonal impacts.

When a glint and glare assessment is undertaken, the potential for solar PV panels, frames and supports to have a combined reflective quality may need to be assessed, although the glint and glare of the frames and supports is likely to be significantly less than the panels."

5.3.4 NPS EN-3 Footnote 93 states that:

"*Most commercially available solar panels are designed with anti-reflective glass or are produced with anti-reflective coating and have a reflective capacity that is generally equal to or less hazardous than other objects*

typically found in the outdoor environment, such as bodies of water of glass buildings."

5.3.5 In accordance with the Planning Inspectorate's Technical Advice Page for Scoping Solar Development **[Ref. 5-1]**, it is proposed to exclude glint and glare as a stand-alone chapter within the ES and instead produce a stand-alone glint and glare assessment report, which will be appended to the ES submitted in support of the DCO application. However, a description of any relevant proposed mitigation measures and safety considerations of the Proposed Development will be included within the Proposed Development description chapter of the ES.

5.3.6 The detailed stand-alone glint and glare assessment will consider ground-based (e.g. roads, railway lines, buildings, bridleways and PRoW) and aviation (e.g. Air Traffic Control Towers, aircraft approach paths, and other relevant manoeuvring routes) receptors. Detailed technical analysis would be undertaken using a bespoke glint and glare model for all receptors potentially affected by the Proposed Development.

5.3.7 The outputs of the assessment would inform the design development and landscape mitigation strategy. If any potential likely significant glint and glare effects are identified (for example, on roads), these will be mitigated for and considered within the relevant individual environmental factor assessment chapter(s), such as landscape and visual or transport and access.

5.3.8 From a technical perspective, there is no maximum distance at which potential reflections are considered significant. The significance of a reflection, however, decreases with distance because the proportion of an observer's field of vision that is taken up by the reflecting area diminishes as the separation distance increases. Terrain and shielding by vegetation are also more likely to obstruct an observer's view at longer distances.

5.3.9 The above parameters and professional judgement, consistent with the approach taken in other solar DCOs, show that consideration of receptors within 1km of Solar PV areas is appropriate for glint and glare effects on ground-based receptors. On this basis, a sample of building receptors and key sections of national/regional roads (A388) identified within 1km of the proposed Solar PV areas is appropriate for glint and glare impacts on ground-based receptors. Therefore, a sample of building receptors (Cranwell village, Cranwell airbase and farms and cottages to the north of the Site) and regional roads (B1429) identified within 1km of the proposed Solar PV modules will be considered as sensitive receptors. Local roads are typically excluded from the assessment as their level of traffic is likely to be relatively low, and any solar reflections experienced by a driver would be considered of low significance in the worst case. PRoWs and bridleways will be considered at a high-level without technical modelling due to the sensitivity of the receptors (in terms of amenity and safety) being of low significance.

5.3.10 Current guidance on glint and glare effects to aviation receptors does not specify a maximum distance within which effects need to be considered. Small unlicensed airfields and airstrips are commonly considered within 10km from the proposed Solar PV modules. This distance is usually increased to 20km for medium-size licensed aerodromes. Four RAF military aerodromes (RAF Cranwell, RAF Barkston Heath, RAF Waddington and RAF Coningsby) are located within 20km of the proposed Solar PV areas, and four airstrips/airfields (Amwick Old Manor Farm, Cottage Farm Airstrip, Hanbeck Farm Airstrip, and Temple Breuer Griffin's Farm Airstrip) are located within 10km of the proposed Solar PV areas.

5.3.11 The assessment will consider the Air Traffic Control Towers at the RAF aerodromes, flying paths of approach for landing, as well as other relevant manoeuvring routes. The approach phase (arrival flight paths) will be assessed as this is deemed to be the most sensitive phase of a flight. Departing aircraft will have the nose pointing upwards and the visibility of objects (i.e. reflective Solar PV modules) located on the ground will be significantly reduced due to vertical field of view restrictions and cockpit obstruction. Therefore, departure paths will not be assessed. Flying paths to RAF aerodromes may differ from published flying charts. Detailed information may be available through consultation with the relevant aerodrome.

5.3.12 Potential cumulative effects with the existing Ermine Street Farm Solar Park, 2.5km to the south of the Site, and with the consented Springwell Solar Farm will be considered in the assessment. Technical details for nearby solar farms may be difficult to obtain (e.g. tilt angles or material finishes). Tilt values can be assumed within typical ranges for the latitude (10-30 degrees). To overcome any uncertainty in the results, both extremes can be tested, therefore assessing the worst case scenario. Typical material finishes can also be assumed with little influence in the results.

5.3.13 Formal guidance within the UK for quantifying glint and glare impacts is sparse. The two main documents of reference are:

- US Federal Aviation Administration (FAA) 'Interim Policy, FAA Review of Solar Energy System Projects on Federally Obligated Airports' (2013) **[Ref. 5-5]**. This policy sets the methodology for the Solar Glare Ocular Hazard Plot (SGOHP) used to evaluate impacts on aviation receptors. Although this policy was superseded in 2021, it remains the sole document detailing the SGHOP methodology.
- 'Solar Photovoltaic and Building Development Glint and Glare Guidance' fourth edition (2022) **[Ref. 5-6]**. This document is based on industry best practice, and it includes guidance for aviation and railway operations, road users, and dwellings.

5.3.14 The industry standard is to evaluate the effects depending on the type of receptor. Aviation receptors are evaluated based on the potential for ocular

hazard (temporary after-image using the SGOHP), the operational sensitivity and mitigation factors. Impacts on roads and railway receptors depend on the level of traffic, the presence of effective mitigation measures, and the glare angle between the line of sight and the solar reflection. Impacts on buildings are evaluated based on the annual and daily frequency of visible reflections, and the presence of effective mitigation. There is usually no specific guidance for other types of receptors. Where the guidance is not conclusive or does not cover a particular situation, professional judgement is applied.

5.3.15 Any “significant” impacts identified within the impact assessment will be adequately mitigated such that any impacts cannot be considered “significant”. In practice, this means quantifying whether potential effects are possible and, if so, demonstrating that any effects are of an acceptable nature.

5.3.16 Predicted impacts towards ground-based receptors can likely be solved with relatively simple mitigation strategies – the most common being the provision of screening (e.g. vegetation planting) at the Site boundary perimeter to obstruct views of potentially reflecting panels. Where views of reflecting panels are obstructed, no effects can be experienced. Other solutions, such as layout or tilt/orientation modification, are usually reserved for impacts on aviation receptors.

5.3.17 Predicted impacts on aviation receptors should be considered holistically with the operational needs of the related aerodrome. However, these needs are not universally considered a hard constraint, and many airports nowadays feature airside solar farms without causing significant disturbances to their daily operations. A description of any relevant proposed mitigation measures and safety considerations of the Proposed Development will be included within the Proposed Development description chapter of the ES, and it will be considered in the landscape mitigation strategy, as well as the relevant assessments in the ES, particularly that relative to landscape and visual.

5.4 Heat and radiation

5.4.1 Due to the scale and nature of the Proposed Development, it is not anticipated that there would be any significant sources of heat or radiation during construction, operation (including maintenance) or decommissioning. As there are no significant sources of heat or radiation during either construction, operation (including maintenance) or decommissioning, there are no predicted significant effects. No mitigation is proposed given that no significant sources of heat or radiation will be present during any phase of the Proposed Development. It is therefore proposed to exclude heat and radiation from the scope of the EIA.

5.5 Human health

5.5.1 Human health as an EIA factor concerns the likely effects of proposed projects, both positive and negative, on the health and wellbeing of the population.

5.5.2 Within this EIA Scoping Report and subsequent stages of the EIA process, other assessments being undertaken will consider the potential for effects and their significance in their respective EIA factors on receptors including human health.

5.5.3 **Table 5.1** below shows which environmental factors may identify potential effects to human health, what aspect of people's health may be affected and during which phase of the Proposed Development. Note; this information is based on the information provided in each relevant section of this EIA Scoping Report.

Table 5.1: Environmental factors and links to effects on human health

Environmental Factor	Aspect of health scoped in for assessment	
	Construction and decommissioning	Operation (including maintenance)
Section 6.1: Air quality	Impacts to levels of air quality arising from construction and decommissioning activities may lead to an increase in the number of, or severity of, any pre-existing respiratory problems for construction staff, residents or people visiting the area.	Operational effects are proposed to be scoped out of further assessment.
Section 6.5: Land and groundwater **Section 6.9: Soil**	Construction and decommissioning activities have the potential to lead to spill events which could directly impact the groundwater quality or quantity which in turn may lead to physical health effects through contaminated drinking water.	Operational effects are proposed to be scoped out of further assessment.

Environmental Factor	Aspect of health scoped in for assessment	
	Construction and decommissioning	Operation (including maintenance)
Section 6.6: Landscape and visual	The introduction of plant and machinery during the construction and decommissioning of the Proposed Development will prompt a visual change and therefore a change of the characteristics of the Landscape Character Areas (LCAs) (see **Section 6.6** for details of which LCAs are potentially affected). In addition, **Section 6.6** identifies that views will change for residents and visitors in some nearby communities, users of some nearby roads and PRoW. Visual amenity changes such as these may lead to mental health effects for any affected persons, which may then lead to subsequent physical effects.	The introduction of infrastructure related to the Proposed Development will prompt a visual change and therefore a change of the characteristics of the LCAs. Additionally, views will change for residents and visitors in some nearby communities, as well as users of some nearby roads and PRoW. Visual amenity changes such as these may lead to mental health effects for any affected persons, which may then lead to subsequent physical effects.
Section 6.7: Noise and vibration	Increased level of noise and vibration emissions from construction and decommissioning plant and activities and road traffic may lead to mental and physical health effects for local residents or visitors through stress responses or disruption to sleep.	Increased level of noise emissions from the Proposed Development may lead to mental and physical health effects for local residents or visitors through stress responses or disruption to sleep.
Section 6.8: Population	Visual effects arising from the construction, operation (including maintenance), and decommissioning of the Proposed Development may lead to impacts on local businesses, which in turn may lead to mental and physical health effects for staff or business owners.	Visual effects from the introduction of the Solar development may lead to impacts on local businesses, which in turn may lead to mental and physical health effects for staff or business owners.

Environmental Factor	Aspect of health scoped in for assessment	
	Construction and decommissioning	Operation (including maintenance)
Section 6.10: Transport and access	Increased levels of construction and decommissioning vehicle movements may lead to physical effects, such as increased potential for road and pedestrian collisions for local residents, visitors to the area and/or construction staff. The increased level of exhaust emissions from haulage/construction vehicles may lead to an increase in the number of, or severity of, any pre-existing respiratory problems for local residents, visitors to the area and/or construction staff.	Operational effects are proposed to be scoped out of further assessment.

5.5.4 Each of these respective assessments will consider the potential for effects to human health during the relevant stages of the Proposed Development. Any identified significant health-related effects will be reported within the technical chapters for those factors in the ES that will accompany the DCO application.

5.5.5 As these matters are to be assessed elsewhere in the ES, it is not proposed to assess these again in a stand-alone human health chapter.

5.5.6 A Health and Wellbeing Summary Statement will be presented as an appendix to the ES. This Statement will summarise how health and wellbeing has been considered in the design of the Proposed Development and will bring all the health and wellbeing aspects of the relevant environmental assessments together in one document to aid the reader.

5.5.7 A stand-alone glint and glare assessment will be undertaken (see **Section 5.3**), which will consider the potential for human health effects from glint and glare. Any conclusions that impact human health will inform the EIA where appropriate.

5.5.8 There are a number of PRoW present within or around the Site which may be used for recreational purposes. One crosses the Site whilst the rest follow some parts of the boundary. Any temporary diversions will be detailed in the

Outline Public Rights of Way and Access Strategy (Outline PRoWAS), which will be submitted in support of the DCO application.

5.5.9 Any changes to PRoW will be agreed in consultation with North Kesteven District Council and Lincolnshire County Council in order to ensure there are suitable diversions or replacements in place. Impacts to users of PRoW are therefore expected to be minimised and where they do occur, they will be short term and temporary.

Wider determinants of health

5.5.10 The 2022 IEMA (now ISEP) EIA guide on 'Effective Scoping of Human Health in Environmental Impact Assessment' **[Ref. 5-7]** includes a list of the wider determinants of health i.e. a range of factors that influence health.

5.5.11 The list of determinants is split into five categories with 'wider determinants of health' listed within these categories. Two of these categories, the 'economic environment' and the 'bio-physical environment' contain categories that solely relate to aspects included within other technical assessments as discussed in **Table 5.1** above and therefore will not be considered further. Potential impacts within the other three categories have been considered further. These are:

- Health related behaviours;
- Social environment; and
- Institutional and built environment.

Health related behaviours; physical activity, risk taking behaviour and diet and nutrition

5.5.12 Within this category, risk taking behaviours, and diet and nutrition are not relevant to the nature of the Proposed Development. The Site of the Proposed Development is currently agricultural land with some PRoW present for people to cross through the Site. Any impacts on PRoW will be considered within other parts of the EIA and therefore it is not proposed to undertake a duplicate assessment in a dedicated human health ES chapter.

Social environment; housing, relocation, open space, leisure and play, transport modes, access and connections, community safety, community identity, culture, resilience and influence, social participation, interaction and support

5.5.13 Within this category, housing, relocation, and community safety are not relevant to the nature of the Proposed Development.

5.5.14 Additionally, open space, leisure and play and transport modes will be considered in other technical assessments, as outlined in **Table 5.1** above.

5.5.15 The Site boundary is enclosed within fields that are currently used for agricultural purposes and are not therefore used by the public other than for movement across the PRoW network. The nature of the Proposed Development and the existing limited public access will mean that it is unlikely there will be significant effects to access and connections, community identity, culture, resilience and influence, social participation, interaction and support. As such, it is not proposed to undertake a duplicate assessment in a dedicated human health ES chapter.

Institutional and built environment; health and social care services, built environment, wider societal infrastructure and resources

5.5.16 The potential for an increased demand on health and social care services is considered in the Population chapter (**Section 6.8**) and therefore will not be considered further within this Section. It is not expected that there will be significant effects to human health as a result of the changes in the built environment or changes in the demand of wider societal infrastructure and resources.

Conclusion

5.5.17 As per **Table 5.1**, some potential effects on human health will be assessed through other technical assessments in the EIA.

5.5.18 For other potential health effects not covered under these technical assessments i.e. other wider determinants of health, no significant effects on human health have been identified.

5.5.19 Therefore, a dedicated human health ES chapter is not considered necessary, as it would result in a duplication of the aforementioned assessments.

5.6 Major accidents and disasters

5.6.1 Guidance on the consideration of major accidents and disasters is provided by 'Major Accidents and Disasters in EIA: An IEMA Primer' **[Ref. 5-8]**. This focuses on the consideration of low likelihood/high consequence events which would result in serious harm or damage to environmental receptors, and which could encompass risks exacerbated by climate change. This includes accidents or disasters originating from a project, as well as external events (man-made or natural).

5.6.2 In considering the potential for significant effects from the vulnerability of the Proposed Development to risks of accidents and disasters, it is important to note that the UK already has a structured framework of risk management legislation in place. Vulnerability to major accidents and/or disasters for infrastructure and other built environment developments is covered by a

wide range of other safety and non-safety-related legislation, as detailed below:

- Health and Safety at Work Act 1974 **[Ref. 5-9]**;
- Construction (Design and Management) Regulations 2015 **[Ref. 5-10]**;
- The Construction (Health, Safety and Welfare) Regulations 1996 **[Ref. 5-11]**; and
- Electricity Safety, Quality and Continuity Regulations 2002 **[Ref. 5-12]**.

5.6.3 The risk of major accidents and disasters will be considered throughout the design process of the Proposed Development. This will include identifying any potential sensitive receptors and siting the potentially hazardous equipment, such as the grid infrastructure, at a suitable distance from them.

5.6.4 The construction, operation (including maintenance) and decommissioning phases of the Proposed Development have the potential for limited interactions which may give rise to major accidents and/or disasters. **Table 5.2** presents a risk identification screening exercise of potential major accidents and disasters that would require consideration.

Table 5.2: Potential major accidents and disasters

Major accident and/or disaster	Potential receptor	Comments
Flooding	Properties Local residents	The Site is located wholly within Flood Zone 1. There are small sections of the Site in Fields 3, 4 and 8 that are susceptible to surface water flooding. The vulnerability of the Proposed Development to flooding and its potential to exacerbate flood will be covered in the Flood Risk Assessment (FRA) to be submitted in support of the DCO application as an appendix to the ES. Further detail can be found in **Section 5.9**.
Aircraft disasters	Pilots	The potential for glint and glare to affect aircraft will be considered within the glint and glare assessment, which forms a technical appendix to the ES (see **Section 5.3** above).
Fire	Properties Local residents Local habitats and species	There is potential fire risk associated with the BESS. This will be managed by a cooling system which will form part of the BESS and is designed to regulate

Major accident and/or disaster	Potential receptor	Comments
		temperatures to safe conditions to minimise the risk of fire. The BESS and associated infrastructure will be sited a suitable distance from sensitive receptors in accordance with BESS standards (UL9540) **[Ref. 5-13]**. Most BESS enclosures from Large Scale Fire Testing (during 2024 to 2026) have demonstrated fire propagation does not occur to other BESS enclosures, at distances ranging from 15cm-100m to adjacent, or back-to-back BESS enclosures with spacing of 3-3.5m across from the next row of BESS enclosures. The purpose of this testing is expressly to validate minimum equipment spacing, and to demonstrate that cascading or multi-BESS enclosure ignition does not occur where tested layouts and mitigation measures are implemented. These tests therefore explicitly address the type of multi-BESS fire propagation risks, including scenarios observed in real world incidents, by requiring evidence that propagation risk is controlled through design, rather than reliance on emergency intervention. Current BESS systems safely burn out without internal fire suppression systems, which removes the risk of stranded energy in the battery system. Real world, worst-case scenario BESS fires have involved fires that have generally consumed two BESS enclosures i.e. fire has propagated from one BESS to another BESS unit. The worst-case propagation of four BESS enclosures occurred in Lyme, New York which involved battery systems integrating Nickel Manganese Colbolt pouch cells in air cooled modules. These incidents have involved legacy BESS systems which had not undertaken Large Scale Fire Testing.

Major accident and/or disaster	Potential receptor	Comments
		Lincolnshire Fire and Rescue Service will be consulted as part of the DCO process. An Outline Battery Safety Management Plan (Outline BSMP) will be produced and submitted in support of the DCO application to account for the potential safety risks and the relevant mitigation and management procedures.
Plant disease	Habitats and species	New planting may be susceptible to biosecurity issues, such as increased prevalence of pests and disease, due to source of provenance and climate change, and can potentially be spread through transport and deliveries to and from the Site. The planting design and Outline Landscape and Ecological Management Plan (Outline LEMP) will take account of and manage biosecurity risks.

5.6.5 For the selected site location and the Proposed Development, the industry standard mitigation that is typically adopted is considered to be sufficient to manage vulnerabilities to major accidents and/or disasters without the need for additional mitigation in most circumstances. It is not expected that inclusion of major accidents and disasters in the EIA scope would add any greater level of safety performance to that already established through the implementation of recognised and approved safety legislation and regulation processes. Therefore, no significant effects in relation to major accidents and disasters are anticipated during the construction, operation (including maintenance) or decommissioning phases.

5.6.6 Furthermore, mitigation measures required to manage any risks that are identified as the design of the Proposed Development progresses will be included in the appropriate plans, for example the Outline Drainage Strategy and the Outline Emergency Response Plan that will be included within the Outline Construction Environmental Management Plan (Outline CEMP).

5.6.7 It is therefore proposed to exclude major accidents and disasters from the scope of the EIA. This approach is in accordance with the evidence and assumptions required in Table 2 of the Planning Inspectorate's Technical Advice Page for Scoping Solar Development **[Ref. 5-1]**.

5.7 Material assets and waste

5.7.1 Material assets can be defined as *"substances used in each lifecycle stage of a development, with particular focus on the construction, operation and decommissioning or 'end of first life' (deconstruction, demounting, demolition and disposal) phases"* **[Ref.5-14]**. Material assets can include 'material' (i.e. physical resources that are used across the lifecycle of a development) and 'excavated arisings' (i.e. soil, rock, or similar resource generated by excavations).

5.7.2 Waste is defined as *"any substance or object which the holder discards or intends or is required to discard"* **[Ref. 5-14]**. The Waste Framework Directive **[5-15]** definition includes any substance or object that is discarded for disposal or that has not been subject to acceptable recovery (including reuse and recycling).

5.7.3 The main impacts (changes) and effects (consequences) of materials consumption and waste disposal are presented in **Table 5.3**.

Table 5.3: Material assets (from IEMA guide **[5-14]**)

Matter	Direct impacts	Adverse effect	Applicable development phase
Materials	Consumption of resources	Depletion of resources, resulting in the temporary or permanent degradation of the natural environment.	Construction, operation (including maintenance), decommissioning
Waste	Generation and disposal of waste (including soil/topsoil)	Reduction in landfill capacity. Unsustainable use or loss of resources to landfill resulting in the temporary or permanent degradation of the natural environment.	Construction, operation (including maintenance), decommissioning

5.7.4 The indirect impacts associated with anticipated material consumption and waste disposal (e.g. release of greenhouse gas emissions, water consumption, amenity impacts, ecological impacts, etc.) will be assessed elsewhere within the EIA. Similarly, the indirect impacts of any off-site waste management facilities and material production facilities are expected to be assessed (and where necessary, mitigated) under the planning and permitting regime for those sites and thus do not form part of an EIA for a

development that uses such facilities for material supply or waste management.

5.7.5 For the purposes of this EIA Scoping Report, the principal receptors relevant to material assets and waste are considered to include the availability of construction materials, the capacity of regional waste management infrastructure, local landfill void capacity, and any mineral or waste safeguarding interests that could be affected by the Proposed Development. These receptors will be considered proportionately through the ES description of construction activities, the Outline Site Waste Management Plan (Outline SWMP) and the Outline CEMP, rather than through a standalone assessment chapter where no likely significant effects are anticipated.

5.7.6 A pre-construction ground investigation will be undertaken by the Applicant in order to help determine the need (or otherwise) to remove some soils for treatment or disposal if found to be contaminated and not practical to treat on-site. Where there is found to be a need, measures to address this will be detailed within and secured by the Outline SWMP and Outline CEMP, which will be submitted in support of the DCO application.

5.7.7 A description of the potential streams and volumes of construction materials and waste disposal will be described within the ES, with estimates refined as the design develops and as further information becomes available from construction methodology and earthworks strategy. In addition, the Outline CEMP, which will be submitted in support of the DCO application, will detail how construction materials and waste will be managed on-site, and opportunities to prevent, reduce, reuse and recycle waste will be explored.

5.7.8 Where possible, development-specific commitments for sustainable resource management will be presented within the 'Description of the Proposed Development' chapter of the ES. As part of the Detailed CEMP (which will be secured by a DCO requirement), prepared by the Contractor, there will be a requirement to develop and implement a Detailed SWMP in advance of the construction works. Where excavated arisings are proposed to be reused on-site, a Materials Management Plan would be prepared and implemented under the CL:AIRE Definition of Waste: Development Industry Code of Practice **[Ref. 5-16]** where applicable. This would set out controls for suitability assessment, tracking, placement and verification of materials.

5.7.9 The waste hierarchy will be followed during construction, operation (including maintenance) and decommissioning of the Proposed Development. It is not expected that the Proposed Development would result in significant amounts of waste being sent to local landfill sites. However, local landfill capacities will be considered and discussed in the Outline SWMP, which will be submitted in support of the DCO application.

5.7.10 It is not intended that borrow pits will be used during construction of the Proposed Development.

5.7.11 As stated above, the anticipated quantities of waste are currently unknown and will be refined through the ES, Outline SWMP and detailed construction methodology as the design progresses. However, the Applicant does not intend to remove significant quantities of excavated arisings from the Site during construction, and there are currently no demolition works proposed. There may, however, be a need to remove some soils from the Site for treatment or disposal if found to be contaminated and it is not practical to treat this on-site. Where possible, material would be balanced through a cut-and-fill exercise to retain required volumes of suitable materials on-site and reduce off-site disposal requirements. Mitigation measures detailed within the Outline CEMP and Outline SWMP, both of which will be submitted in support of the DCO application, will be sufficient to demonstrate how a cut-and-fill balance shall be achieved and how any unsuitable or surplus material would be managed. In addition, the Applicant will commit to ensuring that best practice guidance is adhered to in relation to pollution prevention measures, which will support the management of waste and materials throughout the construction phase (see **Appendix F**).

5.7.12 For the operation (including maintenance) phase, the potential streams and volumes of materials and waste disposal will be described within the 'Description of the Proposed Development' chapter of the ES. Details of operational waste management measures for the Proposed Development will be set out within the Outline SWMP, which will be submitted in support of the DCO application. Additional operational management measures may also be captured within an Outline Operational Environmental Management Plan (Outline OEMP), should this be required as the detailed design and consenting process progresses. These measures would ensure there is relatively little waste produced during the operation (including maintenance) phase and the requirement for material assets would be limited to maintenance and replacement parts, as required.

5.7.13 During decommissioning, any removed material assets and waste would be recycled or disposed of in accordance with good practice and market conditions at that time. If items can be reused or recycled, this would be the first-choice option in accordance with the Waste Hierarchy. Where practicable, materials such as Solar PV modules, electrical equipment, steel and cabling would be directed to appropriate reuse, recovery or recycling facilities available at the time of decommissioning. The impacts of waste during the decommissioning phase would be managed and mitigated through measures detailed within the Outline SWMP, which will be submitted in support of the DCO application, alongside any additional decommissioning management documentation that may be required at that stage, such as the Outline Decommissioning Environmental Management Plan (Outline DEMP). The Detailed DEMP would be developed in accordance with the regulatory requirements and good practice guidance applicable at the time of

decommissioning. This would include consideration of the regulatory framework in place at that time, the availability of recycling and recovery infrastructure, and any relevant producer responsibility obligations applicable to end-of-life equipment.

5.7.14 Taking the above into account, no likely significant effects are anticipated in respect of material assets and waste. It is therefore proposed to exclude material assets and waste from the scope of the EIA.

5.8 Transboundary effects

5.8.1 Regulation 32 of the EIA Regulations requires the consideration of any likely significant effects on the environment of another European Economic Association State. The consideration of transboundary effects is also detailed within the Planning Inspectorate's Technical Advice on Transboundary Impacts and Processes **[Ref. 5-17]**, and the Planning Inspectorate's Pre-Application Advice on Environmental Impact Assessment **[Ref. 5-18]**.

5.8.2 Due to the nature and location of Proposed Development, it is not anticipated that the Proposed Development would lead to potential for any likely significant effects on the environment of another European Economic Association State. Therefore, a transboundary screening matrix has not been included within this EIA Scoping Report.

5.9 Water

Baseline conditions

Study area

5.9.1 The study area for the assessment (during the construction, operation (including maintenance) and decommissioning phases) has been generally defined as the Site plus the area within a 1km buffer from the Site boundary. This study area is based on professional judgement and is deemed sufficient given the nature and scale of the Proposed Development for assessing the potential effects on the water environment based on the likely zone of influence for hydrological receptors.

5.9.2 For surface waterbodies specifically, the Water Framework Directive (WFD) catchment areas have been used as the study area for assessing the potential effects on these receptors.

Groundwater

5.9.3 Groundwater (including groundwater quantity/quality, groundwater-fed habitats and groundwater resources) has been considered as a receptor for

land and groundwater in **Section 6.5** and has therefore been omitted from this water section, which covers surface water only. However, groundwater flood risk is considered within this water section due to its relevance in informing the overall flood risk to the Proposed Development.

Surface water quality

5.9.4 The Site is located within the Anglian River Basin District, Witham Management Catchment and Witham Lower Operational Catchment **[Ref. 5-19]**.

5.9.5 The entire Site is situated within the WFD surface catchment area of the Ruskington Beck waterbody (ID: GB105030056700) which has a 'Moderate' ecological status as of 2025. The Reasons for Not Achieving Good are attributed to point source pollution associated with sewage discharge and physical modifications associated with land drainage and flood protection.

Hydromorphology

5.9.6 There are no Environment Agency Main Rivers or Ordinary Watercourses within the Site boundary. The nearest Main River is Leasingham Beck which flows approximately 3.5km south-east of the Site and the nearest Ordinary Watercourse is an artificial drain which flows approximately 40m north-east of the Site. There is an existing pond feature to the south-east of the Site.

5.9.7 The Beck (Environment Agency Main River) flows approximately 4.2km east of the Site. Leasingham Beck and The Beck eventually outfall into the River Slea approximately 8km east of the Site.

5.9.8 The presence of any unmapped field ditches will be confirmed during the site walkover which will be undertaken in conjunction with the standalone Flood Risk Assessment, Outline Drainage Strategy and WFD Stage 1 Screening Assessment **[Ref. 5-20]**.

Surface water resources

5.9.9 The Site and study area are not located within a surface water Drinking Water Protected Area or Drinking Water Safeguard Zone **[Ref. 5-21]**.

5.9.10 There are no Environment Agency licenced abstractions within the Site or study area **[Ref. 5-22]**.

Flood risk

5.9.11 The entire Site lies within Flood Zone 1, representing land with a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%) **[Ref. 5-23]**. The nearest area of Flood Zone 2 and 3 is located approximately 2.2km east of

the Site and is associated with The Beck. No flood defences are indicated within the vicinity of the Site.

5.9.12 The Site is not considered to be at risk from tidal flooding due to its inland location away from tidally influenced watercourses.

5.9.13 The majority of the Site is at a very low risk of surface water flooding, although there are areas of low to high surface water flood risk. These consist of localised areas of surface water ponding and overland flow pathways. There are two overland flow pathways originating off-site which flow from west to east through Fields 1, 2, 3, 4 and 8.

5.9.14 The Environment Agency's surface water flood depth mapping for the 1 in 100 year (medium risk) event including climate change to the year 2125 shows that depths are generally between 150mm and 300mm within the overland flow pathway through Fields 1, 2, 3 and 4. The surface water overland flow pathway through Field 8 appears during the 1 in 100 year plus climate change event, with depths of up to 150mm. The area of ponding within Field 8 reaches a maximum depth of 1200mm and is associated with a minor topographic depression ('low point').

5.9.15 Available geological mapping indicates that the majority of the Site is not underlain by superficial deposits, with minor areas of head deposits along topographically incised valleys within the Site **[Ref. 5-24]**. The Site is underlain by bedrock consisting of predominately limestone, with minor areas of interbedded mudstone and limestone, and lime-mudstone.

5.9.16 The nearest non-restricted borehole log located approximately 100m south-east of the Site directly adjacent to Cranwell indicates that groundwater was not encountered to the full-bore depth of 2.2m Below Ground Level (BGL). There is no ground investigation data available for the Site to confirm the geology and groundwater levels on the Site.

5.9.17 Given the greenfield nature of the rural, agricultural land within the Site, the presence of existing sewer networks or other Anglian Water assets is considered unlikely.

5.9.18 The Environment Agency's reservoir flood map shows the potential maximum extent of flooding for two scenarios - a "dry day scenario" in which river levels are "normal", and a "wet day scenario" where the flooding from the reservoir coincides with flooding from rivers **[Ref. 5-25]**. The map shows that the Site is not in a location at risk of reservoir flooding during either scenario.

5.9.19 There are no canals within the vicinity of the Site and no other artificial features with the potential to result in a flood risk to the Site have been identified **[Ref. 5-26]**.

Additional (secondary and tertiary) mitigation

Construction

5.9.20 An Outline CEMP will be submitted in support of the DCO application to detail best practice guidance in line with appropriate standards. The Outline CEMP will be implemented with the objective of:

- Ensuring compliance with relevant environmental legislation and planning policy;
- Reducing environmental risk and negative impacts;
- Providing a framework for monitoring and managing environmental performance;
- Defining the roles and responsibilities for environmental protection; and
- Guiding contractors and subcontractors in applying best environmental practices.

5.9.21 Appropriate standards of relevance to the construction phase of the Proposed Development include the following CIRIA documents:

- Control of water pollution from construction sites: Guidance for consultants and contractors (C532) **[Ref. 5-27]**; and
- Environmental good practice on site guide (fifth edition) (C811) **[Ref. 5-28]**.

5.9.22 Mitigation will consist of the use of appropriate measures, as summarised in the Pollution Prevention Guidelines (PPG) **[Ref. 5-29]**. The PPGs include information relating to:

- Silt and sediment control;
- The handling of fuels and chemicals;
- Site drainage and water management;
- Stockpile management and earthworks; and
- Working in or near water.

5.9.23 The PPGs were withdrawn in 2015; however, they still provide a useful guide on good working practices and principles.

5.9.24 The pollution prevention for businesses guidance **[Ref. 5-30]** outlines how businesses can avoid causing pollution from oil and chemical storage, construction and other activities. The guidance provides information on suitable site drainage, stockpiling practices and working near surface waterbodies.

Operation (including maintenance)

5.9.25 An Outline OEMP will be submitted in support of the DCO application to outline how potential environmental impacts will be minimised or mitigated during the operation (including maintenance) phase.

Decommissioning

5.9.26 The additional mitigation measures for the decommissioning phase will reflect those of the construction phase and will be detailed within and secured by the Outline DEMP, which will be submitted in support of the DCO application.

Description of likely significant effects

Construction

5.9.27 During the construction phase of the Proposed Development, potential effects on the water environment consist of changes to surface water quality due to pollution, hydromorphological changes to watercourses due to sediment deposition, and impacts on surface water resources associated with the creation of new and modification of existing overland flow pathways due to changes to ground levels and an increased demand for surface water. There is also the potential for increased flood risk due to increased runoff.

Surface water quality

5.9.28 to the Outline CEMP will detail best practice guidance in relation to pollution prevention measures (see **Appendix F**). This will be supported by adherence to the CIRIA guidance and PPGs to ensure that polluted water from the construction phase is treated prior to its release.

5.9.29 A WFD Stage 1 Screening Assessment will be submitted in support of the DCO application to determine the potential effects of the Proposed Development with specific reference to impacts on WFD surface waterbodies in the context of the WFD. It will consider how the Proposed Development could result in both detriment and benefit to the achievement of WFD objectives.

5.9.30 The Outline CEMP and pollution prevention measures will be sufficient to mitigate any potential adverse effects such that they are unlikely to be significant.

Hydromorphology

5.9.31 to the Outline CEMP will detail best practice guidance in relation to working in proximity to watercourses. This will be supported by adherence to the

CIRIA guidance and PPGs to ensure no significant changes in channel morphology or sediment deposition.

5.9.32 The Outline CEMP and pollution prevention measures will be sufficient to mitigate any potential adverse effects such that they are unlikely to be significant.

Surface water resources

5.9.33 The Proposed Development has avoided the siting of hardstanding infrastructure (i.e., construction compounds) within the path of the major surface water flood risk overland flow pathway through Fields 1, 2, 3 and 4 which will ensure that this feature is retained during the construction phase of the Proposed Development **[Ref. 5-31]**.

5.9.34 to the Outline CEMP will detail best practice guidance in relation to the management of surface runoff. This will be supported by adherence to the CIRIA guidance and PPGs to ensure no significant changes in surface flows.

5.9.35 It is important to note that the existing overland flow pathway through Fields 1, 2, 3 and 4 is routed through Brauncewell Quarry located approximately 300m north-east and downslope of the Site. It has therefore been heavily modified, with onward flow routing directly influenced by quarrying activities.

5.9.36 Increased water usage is anticipated to be associated with welfare facilities, dust suppression, wheel washing and other construction related activities. However, this increase will be temporary and would be limited in scale and therefore unlikely to result in significant adverse effects on surface water resources. The Outline CEMP will detail measures to reduce and manage water consumption during the construction phase.

5.9.37 The Outline CEMP and pollution prevention measures will be sufficient to mitigate any potential adverse effects such that they are unlikely to be significant.

Flood risk

5.9.38 The Outline CEMP will detail best practice guidance in relation to the management of surface runoff (see **Appendix F**). This will be supported by adherence to the CIRIA guidance and PPGs to ensure that there is no increase in runoff or flood risk downstream.

5.9.39 The Outline CEMP and pollution prevention measures will be sufficient to mitigate any potential adverse effects such that they are unlikely to be significant.

Operation (including maintenance)

5.9.40 During the operation (including maintenance) phase, potential effects on the water environment consist of changes to surface water quality due to pollution, hydromorphological changes to watercourses due to sediment deposition, and impacts on surface water resources associated the modification of existing overland flow pathways due to new obstructions to flow and an increased demand for surface water. There is also the potential for increased flood risk due to increased runoff.

Surface water quality

5.9.41 An Outline Drainage Strategy for the management of surface runoff incorporating the use of SuDS will ensure the removal of pollutants from surface water prior to its release. The Outline Drainage Strategy for the BESS will also include provision for the automatic retention of any contaminated fire-fighting runoff in the event of a fire.

5.9.42 A WFD Stage 1 Screening Assessment will be submitted in support of the DCO application to determine the potential effects of the Proposed Development with specific reference to impacts on WFD surface waterbodies in the context of the WFD. It will consider how the Proposed Development could result in both detriment and benefit to the achievement of WFD objectives.

5.9.43 The Outline Drainage Strategy will be sufficient to mitigate any potential adverse effects such that they are unlikely to be significant.

Hydromorphology

5.9.44 The inclusion of development-free easements embedded within the design of the Proposed Development is not considered necessary to prevent altering the channel morphology and to limit the mobilisation of sediment to watercourses due to the absence of surface watercourses within the Site.

5.9.45 Due to the absence of surface watercourses within the immediate vicinity of the Site, the potential effects on hydromorphology are unlikely to be significant.

Surface water resources

5.9.46 The Proposed Development has avoided the siting of hardstanding infrastructure (i.e., BESS, Substation) within the path of the major surface water flood risk overland flow pathway through Fields 1, 2, 3 and 4 which will ensure that this feature is retained during the operation (including maintenance) phase of the Proposed Development. The Solar PV modules will be raised above the ground surface and therefore largely enable the retention of existing overland flow pathways.

5.9.47 An Outline Drainage Strategy will be submitted in support of the DCO application and will ensure no significant changes in surface flows through the management of surface runoff via the use of SuDS.

5.9.48 It is important to note that the existing overland flow pathway through Fields 1, 2, 3 and 4 is routed through Brauncewell Quarry located approximately 300m north-east and downslope of the Site and has therefore been heavily modified, with onward flow routing directly influenced by quarrying activities.

5.9.49 Increased water usage is anticipated to be associated with occasional welfare requirements for site personnel, periodic cleaning and maintenance activities. However, this increase is limited, as the Solar PV modules and BESS would not require a continuous water supply during normal operation and are therefore unlikely to result in significant adverse effects on surface water resources.

5.9.50 An Outline Drainage Strategy will be submitted in support of the DCO application and will consider the potential for water reuse/rainwater harvesting as part of the SuDS discharge hierarchy stipulated in the National Standards for SuDS guidance **[Ref. 5-31]**.

5.9.51 The Outline Drainage Strategy and development design (i.e., infrastructure siting and runoff destinations) will be sufficient to mitigate any potential adverse effects such that they are unlikely to be significant.

Flood risk

5.9.52 A Flood Risk Assessment and Outline Drainage Strategy with proposed mitigation measures to alleviate flood risk, where required, will be submitted in support of the DCO application and will ensure no increase in flood risk through the management of surface runoff via the use of SuDS. A sequential approach will be adopted to ensure that the most vulnerable elements of the Proposed Development are located in the areas of lowest flood risk. A rainwater gap will also be embedded within the design of the Proposed Development to allow rainwater to drain into the spaces between rows of Solar PV modules. This will ensure that runoff from the Site will not increase as a result of the Solar PV modules.

5.9.53 The Flood Risk Assessment and Outline Drainage Strategy will consider climate change and the potential impact on flood risk for the lifetime of the Proposed Development.

5.9.54 Given the nature of the Proposed Development, there will be a minimal increase in impermeable area post-development as the Solar PV modules will be raised above the ground surface, with hardstanding limited to specific components (i.e., BESS, Substation). Consultation will be undertaken with the Environment Agency, Lincolnshire County Council and North Kesteven

District Council to inform and refine the design of the Proposed Development in relation to flood risk.

5.9.55 The Flood Risk Assessment, Outline Drainage Strategy and development design (i.e., sequential approach and rainwater gap) will be sufficient to mitigate any potential adverse effects such that they are unlikely to be significant.

Decommissioning

5.9.56 The potential effects of the decommissioning phase of the Proposed Development on the water environment will reflect those of the construction phase.

Summary

5.9.57 Taking the above into account, it is therefore proposed to exclude water from the scope of the EIA.

5.9.58 Notwithstanding the above, a standalone Flood Risk Assessment, Outline Drainage Strategy and WFD Stage 1 Screening Assessment will be produced in consultation with the Environment Agency, Lincolnshire County Council (as the Lead Local Flood Authority) and Anglian Water (as the Water Authority) and submitted in support of the DCO application. They will be informed by a site walkover survey to review the baseline hydrological conditions and validate/ground-truth the findings from the desk-based assessment. The site walkover will include, but not be limited to, a review of:

- Naturalised overland flow pathways;
- Minor topographic depressions ('low points');
- Evidence of surface ponding/saturated ground conditions;
- Any unmapped field ditches; and
- Existing hydraulic structures (i.e., culverts/bridges).

5.9.59 This will provide a better understanding of surface water flooding hotspots and the potential for flooding associated with blocked or undersized hydraulic structures.

5.9.60 Whist the Site is not located within an Internal Drainage Board area, the Site is located upslope and within the surface water catchment of the Witham First District Internal Drainage Board area and therefore the Internal Drainage Board will be consulted once the design of the Proposed Development has matured.

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6 ENVIRONMENTAL FACTORS PROPOSED TO BE SCOPED INTO FURTHER ASSESSMENT

6.1 Air quality

6.1.1 Consultation

No consultation to inform the air quality assessment has been undertaken to date. Consultation with North Kesteven District Council Environmental Health Officer will be carried out to agree:

- The appropriate data for baseline characterisation; and
- Receptor locations to be assessed (such as human receptors and ecologically sensitives sites);

6.1.2 Study area

Construction and decommissioning

Based on the Institute of Air Quality Management (IAQM) 'Guidance on the assessment of dust from demolition and construction v2.2' (2024), the study area for sensitive human receptors for earthworks and general construction activities will be up to 250m from the Site boundary. The study area for sensitive ecological receptors for earthworks and general construction activities will be up to 50m from the Site boundary. For trackout activities, the study area for both sensitive human and ecological receptors will be up to 50m from the edge of the roads likely to be affected by trackout[4], as per the IAQM guidance (2024).

In terms of impacts associated with road traffic exhaust emissions, human and ecological receptors within 200m of roads predicted by the transport assessment as likely to experience a significant change in traffic flows (e.g. affected road links), would be considered in the air quality assessment, as per IAQM's 'A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites' (2020) and Natural England's 'Air Pollution and Development: Advice for Local Authorities' (2025). The Proposed Development design will continue to evolve, meaning, at this stage, there is uncertainty as to which roads within the study area may require assessment.

Operation (including maintenance)

An assessment of operation (including maintenance) phase impacts is proposed to be scoped out of further assessment (see **Section 6.1.9** below) as there will be no site activities resulting in significant air pollutant (including dust) emissions to air. The limited vehicle movements to the Site for operation and maintenance purposes will be well below the respective Environmental Protection UK (EPUK) and IAQM 'Land-Use

[4] Trackout is defined as the transport of dust and dirt from the construction/demolition sites onto public road network, where it may be deposited and then re-suspended by vehicles using the network.

Planning & Development Control: Planning for Air Quality' (2017) assessment screening criteria.

6.1.3 Data sources to inform the EIA baseline characterisation

A desk-based baseline air quality review will be carried out to establish existing air quality conditions within the study area. Information on air quality will be gathered from the monitoring stations that form a part of the national and/or local networks and from the estimated background air quality maps published by the Department for Environment, Food and Rural Affairs (Defra).

6.1.4 Surveys to inform the EIA baseline characterisation

Air quality is good in the local area (see **Section 6.1.5**); therefore, there is no requirement for on-site air quality monitoring to be undertaken to inform the assessment.

6.1.5 Baseline conditions

The Proposed Development is located within the administrative area of North Kesteven District Council. There are currently no Air Quality Management Areas declared within the district. Overall, air quality is considered to be good in the local area.

According to the North Kesteven District Council 2024 Air Quality Annual Status Report (latest Air Quality Annual Status Report available online), North Kesteven District Council undertook non-automatic nitrogen dioxide (NO_2) diffusion tube monitoring at 22 No. locations during 2023. There was no automatic air quality monitoring station within North Kesteven District Council area in 2023.

The nearest monitoring location is a roadside NO_2 diffusion tube location at Walnut Cottage (North Kesteven District Council reference: Holdingham 1), situated approximately 6.2km to the south-east of the Proposed Development. The measured annual average NO_2 concentration at this diffusion tube site was 12.4 micrograms per cubic metre ($\mu g/m^3$) in 2023, which is well below the annual mean NO_2 air quality standard of $40\mu g/m^3$. The air quality standards (AQSs) in the United Kingdom are derived from European Commission (EC) directives and are adopted into English law via the Air Quality (England) Regulations 2000 and the Air Quality (England) Amendment Regulations 2002.

Estimated background air quality data are available from the UK-AIR website, published by Defra. The website provides estimated annual average background concentrations of NO_2 and Particulate Matter (PM_{10} includes particles less than 10 µm in diameter and $PM_{2.5}$ those less than 2.5 µm) on a $1km^2$ grid basis from Local Air Quality Management background maps. The predicted 2026 (current year) annual average background NO_2, PM_{10} and $PM_{2.5}$ concentrations at the Site are $5.3\mu g/m^3$, $13.5\mu g/m^3$ and $5.9\mu g/m^3$ respectively, which are well below the relevant UK air quality objectives and $PM_{2.5}$ 2040 statutory target (NO_2 – $40\mu g/m^3$; PM_{10} – $40\mu g/m^3$; $PM_{2.5}$ – $20\mu g/m^3$, $PM_{2.5}$ 2040 statutory target – $10\mu g/m^3$).

Human receptors (residential properties) have been identified within 250m of the Site. There are no statutory designated sites located within 50m of the Site. There is one non-statutory designated site located within 50m of the Site; Cranwell Grassland Local Wildlife Site (LWS) (located adjacent to the Site boundary).

6.1.6 Additional (secondary and tertiary) mitigation

Construction and decommissioning

Construction phase site-specific dust mitigation measures, in addition to the embedded (primary) mitigation measures, will be proposed based on the results of the pre-mitigation dust impacts assessment, which will also be applied to the decommissioning phase, where relevant. Construction and decommissioning phase mitigation measures will be outlined within and secured by the Outline Construction Environmental Management Plan (Outline CEMP) and the Outline Decommissioning Environmental Management Plan (Outline DEMP), which will be submitted in support of the DCO application.

Operation (including maintenance)

An Outline Battery Safety Management Plan (Outline BSMP) will be prepared and submitted in support of the DCO application, to outline how safety risks associated with BESS will be managed. The implementation of the Outline BSMP will minimise the risk of a thermal runaway or fire incident escalating and will ensure that any such event can be managed safely and effectively.

6.1.7 Description of likely significant effects

Construction and decommissioning

Construction and decommissioning works have the potential to release dust, including fine particulate matter (PM_{10}, $PM_{2.5}$), which can impact nearby sensitive human and ecological receptors. Dust control measures, commensurate to the assessed risk of impacts, are highly effective for controlling emissions from potentially dust generating activities, thus adverse effects can be greatly reduced or eliminated. With suitable dust mitigation measures in place, the effect of dust and particulate matter emissions during construction is likely to be not significant.

Construction and decommissioning traffic would comprise haulage/construction vehicles and vehicles used for workers' trips to and from the Site. The greatest potential impact on air quality due to emissions from construction phase vehicles would be in areas adjacent to the Site access and nearby road network. Based on the temporary nature of the construction and decommissioning activities, it is unlikely that there would be a significant local air quality impact associated with vehicle emissions from construction/decommissioning vehicle movements. Therefore, the effect on local air quality is likely to be not significant.

6.1.8 Receptors/matters to be scoped into further assessment		
Receptor/matter	**Phase**	**Justification**
Dust and particulate matter emissions resulting from Site activities (demolition (during decommissioning phase only), earthworks, construction and trackout), including the operation of the plant and equipment	Construction and decommissioning	Sensitive human receptors are located within 250m of the Site and one non-statutory designated ecological site (i.e. Cranwell Grassland LWS) is identified within 50m of the Site. A qualitative, desk-based assessment of site activities is proposed to identify appropriate mitigation measures required. The operation of site equipment and machinery during construction and decommissioning would also result in emissions to the atmosphere of exhaust gases. A qualitative, desk-based assessment is proposed to identify appropriate mitigation measures.
Road traffic exhaust emissions from haulage/construction vehicles and vehicles used for workers' trips to and from the Site	Construction and decommissioning	A screening level qualitative assessment is proposed. Road traffic data is required to undertake the qualitative assessment, which is not yet available. However, based on the temporary nature of the construction and decommissioning activities, construction and decommissioning vehicle movements are not expected to have a significant effect on local air quality. This will be confirmed by the qualitative assessment and in consultation with the North Kesteven District Council Environmental Health Officer.
6.1.9 Receptors/matters to be scoped out of further assessment		
Receptor/matter	**Phase**	**Justification**
Dust and particulate matter emissions resulting from demolition works	Construction	There are no demolition works proposed during the construction phase.
Dust and particulate matter emissions resulting from Site	Operation (including maintenance)	Given the nature of the Proposed Development, there are unlikely to be any site activities resulting in significant air

activities during the operation phase, in addition to exhaust emissions from operational and maintenance vehicle movements		pollutant (including dust) emissions to air during operation. There will only be limited movement of vehicles to the Site for maintenance purposes. Therefore, there will be no likely significant effects associated with operation (including maintenance) phase activities.
Potential air quality impacts of a fire incident at the BESS Compound forming part of the Proposed Development	Operation (including maintenance)	An offset of at least 500m from the BESS and Substation to the nearest residential properties will be embedded into the design of the Proposed Development. In the unlikely event of a fire at the BESS area, there is unlikely to be any significant effects on sensitive receptors. An Outline BSMP will be prepared and submitted in support of the DCO application, to outline how safety risks associated with BESS will be managed. The implementation of the Outline BSMP will minimise the risk of a thermal runaway or fire incident escalating and will ensure that any such event can be managed safely and effectively.

6.1.10 Opportunities for enhancing the environment

The Proposed Development will generate solar energy, which is a clean and sustainable source of electricity. By contributing to the transition to low-carbon energy generation, it will help reduce reliance on fossil fuel-based electricity production and support wider reductions in combustion-related emissions of air pollutants, including nitrogen dioxide, sulphur dioxide and particulate matter.

6.1.11 Proposed assessment methodology

Planning policy and guidance relevant to this assessment is listed below:

National planning policy

- Overarching National Policy Statement for Energy (EN-1) (2026);
- National Policy Statement for Renewable Energy Infrastructure (EN-3) (2026); and
- National Planning Policy Framework (2026).

Local planning policy

- North Kesteven District Council Central Lincolnshire Local Plan (adopted April 2023).

Guidance

- Defra. The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volume 2) (2007);

- The Air Quality Strategy for England (2023);
- The Clean Air Strategy 2019;
- Defra. Interim Planning Guidance on the consideration of the Environment Act $PM_{2.5}$ targets in planning decisions (2024);
- IAQM. Guidance of the Assessment of Dust from Demolition and Construction (Version 2.2) (2024);
- Greater London Authority Non-Road Mobile Machinery Practical Guide V.6 (2024);
- EPUK and IAQM. Land-Use Planning and Development Control: Planning for Air Quality (2017);
- Defra. Local Air Quality Management Technical Guidance (TG22) (2022);
- IAQM. A guide to the assessment of air quality impacts on designated nature conservation sites (2020);
- National Highways. Design Manual for Roads and Bridges: LA 105 Air Quality (2024);
- Natural England. Air Pollution and Development: Advice for Local Authorities (2025); and
- Joint Nature Conservation Committee (JNCC). Guidance on Decision-making Thresholds for Air Pollution (2021).

Construction and decommissioning

Dust and particulate matter emissions

An assessment of the likely significant effects of construction phase dust and particulate matter at sensitive receptors will be undertaken following the IAQM guidance (2024), using the available information from the project team and professional judgement.

The assessment will consider the risk of potential dust and particulate matter effects from the following four sources: demolition (during decommissioning phase only), earthworks, construction and trackout. It will consider the nature and scale of the activities undertaken for each source and the sensitivity of the area to increases in dust and particulate matter levels to assign a level of risk. Dust risks will be described in terms of negligible, low, medium or high. Once the level of risk has been ascertained, site-specific mitigation proportionate to the level of risk will be identified, and the significance of residual effects will be determined.

Further detail on the significant criteria is in **Appendix D**.

Road traffic exhaust emissions

A screening level qualitative assessment will be undertaken with reference to Environmental Protection UK and IAQM guidance (2017), Natural England guidance (2025) and JNCC 'Guidance on Decision-making Thresholds for Air Pollution' (2021), using professional judgement, and by considering the following information, where available:

- The number and type of road traffic and site equipment likely to be generated;
- The number and proximity of sensitive receptors to the Site and along the likely routes to be used by construction vehicles; and

- The likely duration and the nature of the construction/decommissioning activities undertaken.

Further detail on the significant criteria is in **Appendix D**.

6.1.12 Difficulties and uncertainties

To ensure transparency within the EIA process, the following uncertainties have been identified at this stage:

- Development traffic flows during construction and decommissioning phases are anticipated to be below the Environmental Protection UK and IAQM 'Land-Use Planning & Development Control: Planning for Air Quality' screening criteria as construction and decommissioning activities will be phased, thereby distributing traffic movements over time. Therefore, a detailed modelling assessment of traffic emissions will not be required. This will be confirmed following a review of the relevant traffic data at a later stage of the EIA process.

6.1.13 References

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6.2 Biodiversity

6.2.1 Consultation

An initial introduction meeting with Lincolnshire Wildlife Trust was held on 7 September 2026.

Consultation will be undertaken with the following parties to agree the assessment methods and the biodiversity assets of sufficient importance to be considered in the assessment:

- North Kesteven District Council (for Biodiversity Net Gain (BNG));
- Lincolnshire County Council (for all ecology other than BNG); and
- Natural England.

6.2.2 Study area

The study areas vary per receptor as discussed below and have been chosen based on best practice survey guidance (Chartered Institute of Ecology and Environmental Management (CIEEM), 2024):

- The study area for background data searches for statutory and non-statutory designated sites and protected species records and non-statutory sites focus on the entire Site and a 2km buffer, extended to 10km for SPAs, SACs, Ramsar sites, and Sites of Special Scientific Interest (SSSIs). Therefore, the primary zone of influence is considered to comprise the Site and a 2km radius, extending to a 10km radius when considering effects on European Sites;
- The study area for preliminary ecological appraisal (PEA) involving habitat classification and assessment for notable species is the entire Site;
- The study area for notable arable plant species surveys is the entire Site;
- The study area for great crested newt (GCN) (*Triturus cristatus*) surveys is the entire Site and a 500m buffer from the Site boundary;
- The study area for reptile habitat suitability is the entire Site;
- The study area for breeding bird surveys is the entire Site;
- The study area for wintering bird surveys is the entire Site;
- The study area for bat activity surveys is the entire Site; and
- The study area for badger (*Meles meles*) surveys is the entire Site and a 30m buffer from the Site boundary.
- The study area for Hedgerow Regulations assessments will be any directly affected hedgerows.
- The study area for ground level tree assessments will be all directly affected trees.
- The arboricultural study area will be defined having regard to the potential for the Proposed Development to affect trees, woodland and other arboricultural features within the Site boundary.

- The study area for ancient woodland, ancient and veteran trees, woodland and other arboricultural features of elevated sensitivity is the entire Site.

6.2.3 Data sources to inform the EIA baseline characterisation

A 2025 baseline data search from Greater Lincolnshire Nature Partnership, which included a search for non-statutory designated sites, protected species records and statutory designations (SSSI, Local Nature Reserve (LNR) etc.) within 2km of the Site boundary, and 10km for internationally important sites (SPAs, SACs and Ramsar sites).

The arboricultural baseline has been established through review of the following sources:

- MAGIC (the Multi-Agency Geographic Information website)/Natural England datasets;
- Ancient Woodland Inventory;
- National Forest Inventory;
- Local authority Tree Protection Order (TPO) and Conservation Area information;
- Historic mapping where appropriate; and
- Available veteran/ancient tree datasets.

6.2.4 Surveys to inform the EIA baseline characterisation

The following surveys have been undertaken to date and full reports can be found in **Appendix G**:

- Preliminary Ecological Appraisal (PEA) (2025);
- Arable weed surveys (2025);
- GCN habitat suitability index (HSI) and environmental DNA (eDNA) surveys (2025);
- Breeding bird surveys (2025);
- Bat static and night-time bat walkover surveys (2025);
- Badger walkover surveys (2025); and
- Wintering bird surveys (2025-2026).

The following surveys will be undertaken to inform the ES and the DCO application, if required:

- Hedgerow Regulations assessments;
- Ground level tree assessments;
- Further bat static deployments; and
- An arboricultural survey will be undertaken to establish the baseline condition and value of trees, groups, woodland and other relevant arboricultural features within the study area.

6.2.5 Baseline conditions

The Site is located south of Long Lane, Brauncewell and comprises predominantly arable farmland. The Site supports a network of boundary habitats including hedgerows, woodland parcels, grassland margins, scrub and a single pond. The surrounding landscape is characterised by intensive agricultural land, with woodland blocks and hedgerows. RAF Cranwell is located immediately to the south, and Brauncewell Quarry to the north-east.

Statutory designated sites

There are no SPA, SAC or Ramsar sites within 10km of the Site. High Dyke SSSI lies approximately 400m west of the Site and is designated for calcareous grassland and notable plant species. There are no additional SSSIs within 2km of the Site (see **Appendix G: Preliminary Ecological Appraisal**).

Non-statutory designated sites

Cranwell Grassland Local Wildlife Site (LWS) is immediately adjacent to the south-western Site boundary and is designated for unimproved calcareous grassland and woodland habitats. There are seven other LWSs and three Roadside Nature Reserves within 2km of the Site, the closest being Brauncewell Quarry LWS approximately 280m to the north-east (see **Appendix G: Preliminary Ecological Appraisal**).

Habitats

The Site is dominated by arable farmland, comprising both cereal and non-cereal crops. Semi-natural habitats are mainly confined to field boundaries and include native and species-rich hedgerows, broad-leaved woodland, neutral grassland, scrub, individual rural trees and a single pond. There are two priority habitats[5] within or adjacent to the Site including native hedgerows and broad-leaved woodland parcels (see **Appendix G: Preliminary Ecological Appraisal**).

Plants

No records related to Important Arable Plant Areas (IAPA) species were returned within the study area. Arable plant surveys recorded seven notable IAPA indicator species within the Site, including field gromwell (*Buglossoides arvensis)* (UK status critical) and dwarf spurge (*Euphorbia exigua*) (Vulnerable) (see **Appendix G: Arable Plants Report**).

One record of an invasive non-native species was identified within the study area; Variegated Yellow Archangel *Lamiastrum galeobdolon* subsp. *argentatum* (see **Appendix G: Preliminary Ecological Appraisal**).

Amphibians

There were no records of GCN within the study area. One pond is present within the Site boundary; however, this pond tested negative for GCN during the eDNA survey. There are no other ponds within 500m of the Site boundary (see **Appendix G: GCN Survey Report**).

[5] UK Biodiversity Action Plan priority habitats are the most threatened habitats requiring conservation action, they are listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

Reptiles

Records of common lizard (*Zootoca vivipara*), grass snake (*Natrix helvetica*), slow worm (*Anguis fragilis*) and adder (*Vipera berus*) were obtained within 2km of the Site. Suitable reptile habitat is present within grassland margins, scrub and woodland edges (see **Appendix G: Preliminary Ecological Appraisal**).

Birds

There were 128 records of 21 different bird species within the study area. The Site supports habitats suitable for breeding, wintering and foraging birds, including arable fields, grassland margins, hedgerows, scrub and woodland. The Site supports a notable farmland bird assemblage, with breeding and wintering populations of skylark (*Alauda arvensis*), corn bunting (*Emberiza calandra*) and linnet (*Linaria cannabina.)*. Yellow wagtail (*Motacilla flava*) were also recorded as having a probable breeding status during the breeding bird surveys. Red kite (*Milvus milvus*) were the only species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) recorded during the breeding bird surveys which could feasibly breed on Site (see **Appendix G: Breeding Bird Report (Confidential)** and **Non-breeding Bird Report**).

Bats

There were 43 records of bats within the study area, including records of common pipistrelle (*Pipistrellus pipistrellus*), brown long-eared bat (*Plecotus auritus*), and whiskered bat (*Myotis mystacinus*). Bat surveys recorded four bat species and three species groups within the Site, with activity concentrated along hedgerows and woodland edges. Common pipistrelle was the predominant species recorded, with barbastelle (*Barbastella barbastellus*) making up 1.41% of bat passes during the static deployment. Barbastelle were the only bat species recorded on Site listed on the Annex II of the Habitats Directive 1992 (as amended). Trees with bat roosting potential were recorded within the parcels of woodland on site and also just outside the Site boundary (see **Appendix G: Bat Report**).

Badger

There were 41 records of badger within the study area. Evidence of badger activity was recorded within the study area during the walkover surveys, with further detail presented in the confidential **Appendix G: Badger Report (Confidential)**.

Other species of principal importance

Brown hare (*Lepus europaeus*) and hedgehog (*Erinaceus europaeus*) records occur within the study area, and suitable habitat is present for both species on the Site. Brown hare were observed during field surveys (see **Appendix G: Preliminary Ecological Appraisal**).

6.2.6 Additional (secondary and tertiary) mitigation

Construction

- The Outline Landscape and Ecological Management Plan (Outline LEMP) will include measures to offset significant effects on legally protected species whilst also delivering a significant gain in biodiversity (informed by the results of ongoing surveys);

- The Outline CEMP will include measures to safeguard ecological receptors during construction (and will be informed by the results of ongoing surveys);
- Pre-construction surveys will be carried out for species where the baseline may have changed (e.g. badger and bats) as part of any necessary precautionary working methods;
- Natural England Licence(s) will be sought for any impacts to bats, badgers and Schedule 1 birds as required. The licencing process requires mitigation measures and specific methods to be provided during the application process and provides a legal framework to ensure implementation; and
- Measures to protect retained trees and their Root Protection Areas from construction activities will be identified and secured through the Outline CEMP and, where required, Arboricultural Method Statements.

Operation (including maintenance)

- The Outline LEMP and Outline Operational Environmental Management Plan (Outline OEMP) will include avoidance and mitigation measures identified as necessary from the results of ongoing surveys;
- Long-term management and monitoring of ecological features will be detailed in the Outline LEMP and Outline OEMP;
- Retained trees will be protected from operational activities and appropriately managed where required; and
- Any future works to retained trees will be undertaken in accordance with relevant arboricultural standards and subject to appropriate controls.

Decommissioning

- Measures to safeguard ecological receptors during decommissioning (removal of Solar PV modules and cables if required) will be included in an Outline DEMP, based on the results of ongoing surveys;
- Pre-work surveys for species where the baseline may have changed (*e.g.* badger and bats) will be undertaken as part of any precautionary working methods; and
- The approach to tree retention and protection during decommissioning will follow principles established for the construction phase.

6.2.7 Description of likely significant effects

The assessment will examine potential effects on areas directly impacted by the Proposed Development, as well as adjacent habitats where relevant. Evaluating ecological impacts will require input from other technical disciplines, including noise, air quality, water resources, and flood risk assessments, which will provide essential context for determining effects on biodiversity. Examples of potential effects, both adverse and beneficial, are included below.

Construction

- Creation of new habitats or introduction of species through mitigation works and landscaping;
- Permanent or temporary loss of habitat or species due to land take;

- Disturbance or displacement of species resulting from construction activities;
- Indirect impacts on adjacent habitats and associated species, such as those caused by vehicle and personnel movements, lighting, noise, water discharges; and
- Fragmentation of habitats or ecological corridors.

Operation (including maintenance)

- Disturbance or displacement of species resulting from operational activities; and
- Indirect impacts on adjacent habitats and associated species, such as those caused by vehicle and personnel movements, lighting, noise, water discharges.

Decommissioning

- Disturbance or displacement of species resulting from decommissioning activities;
- Indirect impacts on adjacent habitats and associated species, such as those caused by vehicle and personnel movements, lighting, noise, water discharges; and
- Fragmentation of habitats or ecological corridors.

6.2.8 Receptors/matters to be scoped into further assessment

Receptor/matter	Phase	Justification
Non-statutory designated sites - Cranwell Grassland LWS	Construction and decommissioning	Cranwell Grassland LWS is designated for its unimproved calcareous grassland and woodland habitats and is immediately adjacent to the south-west Site boundary. It is assumed that the LWS will be protected by appropriate buffers during construction and decommissioning. Further design details will be needed to determine whether there will be any impacts. Notwithstanding the above, the Applicant considers it possible that Cranwell Grassland LWS can be scoped out of further assessment following further design details and consultation with Lincolnshire County Council and/or North Kesteven District Council.
Habitats of principal importance – hedgerows	Construction	It is assumed that hedgerows will be retained wherever possible and protected during construction with an appropriate buffer. However, some sections of hedgerows may need to be removed. Further design details are required to inform assessment of effects on hedges.

		Notwithstanding the above, the Applicant considers it possible that hedgerows could be scoped out of further assessment following further design details and consultation with Lincolnshire County Council and/or North Kesteven District Council.
Ground nesting birds	Construction and operation (including maintenance)	Ground nesting birds use the area. Different species assemblages are likely to use arable land and established grassland for nesting. Therefore, construction and operation (including maintenance) may cause loss of habitat (for different species assemblages). Further design details are required to inform the assessment of effects and determine appropriate levels of mitigation.
Foraging and commuting bats	Construction, operation (including maintenance) and decommissioning	The landscape is suitable for foraging and commuting bats. Construction and decommissioning would modify habitat and during the operation (including maintenance) phase, the presence of solar PV modules and noise from the BESS and Substation may displace some foraging bat species. Further design details are required to inform the assessment of effects and determine appropriate levels of mitigation.
Roosting bats	Construction, operation (including maintenance) and decommissioning	Further design details are required to inform the assessment and determine mitigation. If no bat roosts are identified, or if all bat roosts can be avoided, the Applicant will seek to scope roosting bats out of further assessment. This would be discussed and agreed with Natural England.
Badgers	Construction	Badgers have been identified as using the Site. It is assumed that setts will be retained with an appropriate buffer where possible. If setts need to be closed, then this would be carried out under a licence from Natural England. Precautionary measures to protect setts and avoid harming badgers will be detailed in an Outline CEMP. Once design and licensing requirements are confirmed, the Applicant considers it possible that

		badgers could be scoped out of further assessment; this would be discussed and agreed with Natural England.
Trees, groups of trees and woodlands	Construction, operation (including maintenance) and decommissioning	There is potential for direct and indirect effects from tree removal, excavation, ground compaction and construction activities associated with the Solar PV development and associated infrastructure. There is also the potential for longer-term effects associated with operational access, maintenance and management of the Proposed Development. There is also the potential for effects associated with removal of infrastructure, access and reinstatement activities during decommissioning.

6.2.9 Receptors/matters to be scoped out of further assessment

Receptor/matter	Phase	Justification
Statutory designated sites	Construction, operation (including maintenance) and decommissioning	There are no SPAs, SACs or Ramsar sites within 10km of the Site. The closest SSSI, High Dyke SSSI, is approximately 400m west of the Site. There are no other SSSIs within 2km. No significant effects are anticipated. There will be no direct or indirect mechanisms for disturbance, habitat loss, or hydrological change, and therefore the site and its qualifying features will not be affected.
Non-statutory designated sites - Cranwell Grassland LWS	Operation (including maintenance)	Cranwell Grassland LWS is designated for its calcareous grassland and is immediately adjacent to the south-west Site boundary. Protections during the operation (including maintenance) phase will be detailed within and secured by the Outline LEMP and Outline OEMP.
Non-statutory designated sites - All other non-statutory designated sites within 2km of the Site	Construction, operation (including maintenance) and decommissioning	These sites do not lie within the Site boundary and are a sufficient distance from the Site that there will be no direct or indirect mechanisms for disturbance, habitat loss, or hydrological change, and therefore the sites and their qualifying features will not be affected.

Habitats of principal importance - woodland	Construction, operation (including maintenance) and decommissioning	It is assumed that woodland on site will be retained with appropriate buffers and protected during construction. Woodland on the Site boundary will also be buffered and protected during construction. Measures to protect woodlands will be detailed within and secured by the Outline CEMP. No significant effects are anticipated during operation (including maintenance) or decommissioning as retained habitats will be protected through the lifecycle of the Proposed Development. Long-term management under the Outline LEMP and BNG will maintain or enhance habitat condition.
Habitats of principal importance – hedgerows	Operation (including maintenance) and decommissioning	No significant effects are anticipated during operation (including maintenance) or decommissioning; details of management and monitoring of retained habitats will be detailed within and secured by the Outline LEMP and through a detailed biodiversity net gain strategy which will outline how net gain in biodiversity will be achieved.
Habitats not of principal importance – ponds	Construction, operation (including maintenance) and decommissioning	It is assumed that the single pond within the Site will be retained with appropriate buffers and protected during construction. Measures to protect the pond will be detailed within and secured by the Outline CEMP. No significant effects are anticipated during operation (including maintenance) or decommissioning as retained habitats will be protected through the lifecycle of the Proposed Development. Long-term management under the Outline LEMP and BNG will maintain or enhance habitat condition.
Habitats not of principal importance - other	Construction, operation (including maintenance) and decommissioning	Mitigation for any habitat loss will be detailed within and secured by the Outline LEMP and through a detailed biodiversity design which will outline how a net gain in biodiversity will be achieved. There are no groundwater dependant terrestrial ecosystems on Site; see **Section 6.5.9** for further details.

Arable plants	Construction, operation (including maintenance) and decommissioning	Notable arable plants have been recorded during arable plant surveys. Appropriate mitigation and ongoing management will be detailed within and secured by the Outline LEMP, Outline CEMP, Outline OEMP and Outline DEMP.
Invasive species	Construction, operation (including maintenance) and decommissioning	If required, invasive species management will be detailed in the invasive non-native species management plan, Outline LEMP, Outline CEMP, Outline OEMP and Outline DEMP including actions to take if invasive non-native species are discovered, buffer zones and further management.
Terrestrial invertebrates	Construction, operation (including maintenance) and decommissioning	The boundary features will be mostly retained in their entirety and are the features of importance for those notable invertebrate species recorded within the background data search. Although limited small-scale habitat loss could be required to facilitate access, there is not expected to be sufficient habitat loss to affect these receptors because the network of boundary features will be enhanced and other habitat creation and enhancement works secured through the Outline LEMP and through a detailed biodiversity design which will outline how net gain in biodiversity will be achieved, which is likely to benefit invertebrate species.
Great crested newts	Construction, operation (including maintenance) and decommissioning	As a result of the limited terrestrial and aquatic habitat suitability and connectivity, the lack of species records and a negative result for GCN eDNA (see **Appendix G: GCN Survey Report**), GCN are likely absent from the Site.
Reptiles	Construction, operation (including maintenance) and decommissioning	Most of the Site is arable, which is largely unsuitable for reptiles. The boundary features will be mostly retained in their entirety and are the features of importance for reptiles. Although limited small-scale habitat loss could be required to facilitate access, there is not expected to be sufficient habitat loss to cause a significant effect. Furthermore, precautionary

		measures detailed in the Outline LEMP, Outline CEMP, Outline OEMP and Outline DEMP will safeguard low numbers of reptiles that may be present in the more suitable areas.
Non-ground nesting breeding birds	Construction, operation (including maintenance) and decommissioning	Retention of boundary hedgerows and trees will minimise the loss of nesting habitat for non-ground nesting birds. It is assumed that only small areas of habitat will be lost, which will not be sufficient to affect populations as there is alternative habitat nearby. Nesting birds are protected under the Wildlife and Countryside Act 1981 (as amended) and obligations to protect nesting birds will be detailed within and secured by the Outline CEMP, Outline OEMP and Outline DEMP.
Ground nesting birds	Decommissioning	There will be no additional habitat loss for ground nesting bird at the decommissioning stage compared to the baseline conditions. Nesting birds are protected under the Wildlife and Countryside Act 1981 (as amended) and obligations to protect nesting birds will be detailed within and secured by the Outline CEMP, Outline OEMP and Outline DEMP.
Wintering birds	Construction, operation (including maintenance) and decommissioning	The Site forms part of a wider agricultural landscape with extensive alternative wintering and foraging habitat, and there are no sites designated for wintering birds within 10km. Retained and enhanced habitats will be managed through the Outline LEMP, Outline CEMP, Outline OEMP and Outline DEMP. Therefore, significant effects on wintering bird populations are not anticipated.
Schedule 1 birds	Construction, operation (including maintenance) and decommissioning	If any Schedule 1 birds are found nesting during construction, during maintenance or decommissioning, disturbance will be avoided by implementing species and task specific buffer zones. This will be detailed within and secured by the Outline CEMP, Outline OEMP and Outline DEMP.

Badgers	Operation (including maintenance) and decommissioning	No significant effects are anticipated during operation (including maintenance) or decommissioning because all retained setts will be protected with appropriate buffers in the design of the Proposed Development. Habitat connectivity will be maintained, and precautionary measures will prevent disturbance; these will be detailed within and secured by the Outline OEMP and Outline DEMP.
Other species of principal importance	Construction, operation (including maintenance) and decommissioning	Consideration of these species (including hedgehog and brown hare) within the design phase is needed to ensure fences are not a significant barrier to movement and do not prevent access to foraging land. These measures will be detailed within and secured by the Outline LEMP, Outline CEMP, Outline OEMP and Outline DEMP.

6.2.10 Opportunities for enhancing the environment

Opportunities for ecological enhancement are possible due to the different habitats present on, and adjoining, the Site and their generally low biodiversity value through intensive farming operations. No specific enhancement measures have yet been agreed; however, the biodiversity net gain strategy and Outline LEMP will outline how biodiversity enhancement will be secured and achieved. This will be cognisant of local biodiversity priorities identified in the Greater Lincolnshire Local Nature Recovery Strategy.

These measures will focus on compensating for potential adverse effects on habitats and species already known to be on the Site, and to improve the Site for species that could feasibly colonise in the future given the surrounding landscape. Therefore, enhancement measures that could be considered include some of the following:

- Management of retained priority habitats;
- Management that allows for maintaining and enhancing the arable weed communities;
- Enhancement of areas of grassland;
- Gapping-up existing hedges (using appropriate woody species) to improve ecological function and connectivity;
- New hedgerow planting (using appropriate woody species) to provide screening and to reinforce the existing hedgerow network;
- Enhancement of field boundaries and other edge-habitats to provide greater habitat connectivity and increased habitat for invertebrates and other species;

- Planting that includes seed-producing species to provide winter food for farmland birds in buffer strip margins, between Solar PV modules, and along boundary features;
- Creation of wildlife corridors through the Site to ensure fencing is not a significant barrier to mammals such as badger, brown hare and hedgehog so they can still forage and move across the fields. Allowing the movement of deer across the wider landscape will also be considered;
- Creation of new species-rich grassland in areas where Solar PV modules are not proposed, particularly to mitigate loss of ground-nesting bird habitat and improve foraging for bat and farmland bird species;
- Creation of flower-rich grassland and herbal 'ley' habitat, natural grassland or similar underneath and between Solar PV modules to restore soil health and create a nectar source for invertebrates - in particular pollinators and provide foraging for bat and bird species;
- Pond enhancement and creation;
- Sensitive tree planting, where appropriate;
- Management of deer to protect woodlands from damage; and
- Control and management of other invasive non-native species of plants and animal.

6.2.11 Proposed assessment methodology

The Ecological Impact Assessment (EcIA) within the ES will consider the likely effects of construction, operation (including maintenance) and decommissioning activities on the habitats and species of conservation importance scoped into further assessment. The assessment of effects will follow the significance criteria in **Appendix D**. The assessment will be informed by a combination of desk-based study, field surveys, and consultation with relevant statutory and non-statutory organisations.

The significance of effects will be determined using standard impact assessment methods and criteria, including the following:

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

- Designated sites and where a site have multiple designations, the effects on the features of each designation; and
- Protected species status.

Residual effects will be described and presented in terms of the likely significance of the effects on nature conservation interests, with all mitigation measures in place. Mitigation measures include avoiding, minimising, or reducing adverse effects. The assessment will also consider potential cumulative effects.

In accordance with the Guidelines for EcIA in the UK and Ireland produced by CIEEM (2024), an effect is either 'significant' at a particular geographical level (e.g. internationally, nationally, locally), or 'not significant'. A 'significant effect' is an effect "…*that either supports or undermines biodiversity conservation objectives for important ecological features, or for biodiversity in general*."

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

6.2.12 Difficulties and uncertainties

This chapter has been written using professional judgement of the likely habitats, and their condition and suitability for protected species. Where there is uncertainty, ecological receptors have been scoped into further assessment on a precautionary basis. If additional ecological receptors (not currently known to be present) are noted on-site during the further surveys, consideration will be afforded to the requirement (or otherwise) to scope them into further assessment.

6.2.13 References

CIEEM. (2024). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine.* (Winchester: CIEEM). Version 1.3 - Updated September 2024.

Forestry Commission. (2026). *National Forest Inventory (NFI)*. Online. Available at: https://www.forestresearch.gov.uk/tools-and-resources/national-forest-inventory/

Lincolnshire County Council. (2026). *Greater Lincolnshire Local Nature Recovery Strategy*. Online. Available at: https://www.glincslnrs.org.uk/

Natural England. (2026). *Ancient Woodland Inventory and Open Data Dataset*. Online. Available at: https://naturalengland-defra.opendata.arcgis.com/datasets/a14064ca50e242c4a92d020764a6d9df_0/about

Natural England. (2026). *MAGIC: Multi-Agency Geographic Information for the Countryside*. Online. Available at: https://magic.defra.gov.uk

UK Government. (1981). *Wildlife and Countryside Act 1981*. Online. Available at: https://www.legislation.gov.uk/ukpga/1981/69/contents

UK Government. (2006). *Natural Environment and Rural Communities Act 2006*. Online. Available at: https://www.legislation.gov.uk/ukpga/2006/16/contents

UK Government. (2017). *The Conservation of Habitats and Species Regulations 2017.* Online. Available at: https://www.legislation.gov.uk/uksi/2017/1012/contents

6.3 Climate

6.3.1 Consultation

No consultation to inform the climate assessment has been undertaken to date and no specific consultation in relation to climate change is envisaged, over and above the consideration of comments received to this EIA Scoping Report. Any matters raised during the consultation phases that specifically relate to climate will be considered for the ES. Consultation with regards to elements of climate vulnerability relating to flood risk will be covered further in the Flood Risk Assessment (FRA), which will be submitted in support of the DCO application.

6.3.2 Study area

Greenhouse gas (GHG) emissions

The GHG assessment will consider GHG emissions from within the Site and those indirect emissions from activities outside the Site. The scope of the GHG assessment includes the addition of GHG emissions directly from construction, operation (including maintenance) and decommissioning activities undertaken within the Site, including fuel consumption. It also includes indirect emissions which would occur outside the Site, but related to the activities of all stages of the Proposed Development, including, as an example, those from:

- The extraction, manufacture and transportation of construction products and materials to the Site;
- The transportation of workers to the Site; and
- Off-site transportation and disposal of waste.

These emissions would be estimated using Proposed Development-specific data and would include indirect emissions arising from activities outside the Site that support the Proposed Development. This may include emissions associated with water supply and wastewater treatment, the transport of materials to the Site, and the embodied carbon of construction materials, including emissions from raw material extraction, transportation and manufacture.

The receptor to GHG emissions is the global atmosphere, and so when assessing the impact and significance of GHG emissions, the national (Climate Change Act 2008 (as amended by the Climate Change Act (2050 Target Amendment Order 2019)) and associated Carbon Budgets) and global context (United Nations (2015) Paris Agreement) is considered.

Climate change risk

As the climate change risk assessment is an assessment of the impact of the effects of climate change on the Proposed Development, the study area is considered to be the entirety of the Site.

6.3.3 Data sources to inform the EIA baseline characterisation

GHG emissions

The GHG baseline characterisation will be conducted in accordance with the Institute of Sustainability and Environmental Professionals (ISEP) Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance (Edition 2.1, 2026), having consideration also for Royal Institution of Chartered Surveyors Whole life carbon assessment for the built environment (2023).

Standard emission factors will be applied, sourced from reputable agencies, such as Defra UK Government GHG Conversion Factors for Company Reporting (2026).

The assessment will consider North Kesteven District Council's target of achieving net zero by 2030, as set out within their Climate Emergency Strategy. It will also consider Lincolnshire County Council's commitment to become net carbon zero by 2050, outlined within the Council's Environment Policy (2026).

With regards to the national baseline, the UK Government set out a legally binding framework to cut GHG emissions by at least 80% by 2050 in the Climate Change Act (2008); as amended by the Climate Change Act 2008 (as amended by the Climate Change Act (2050 Target Amendment Order 2019)), changing the 80% reduction to a 100% reduction, or net zero, by 2050.

Potential GHG savings as a result of the operation of the Proposed Development will be calculated through a comparison against the emission intensity of alternative energy sources including:

- The national grid electricity emissions factors;
- The most carbon-efficient fossil fuelled technology currently available; and
- Comparable renewable technologies.

Data pertaining to the expected construction and operation (including maintenance) activities will be sourced from the Applicant's design/engineering specialists to estimate emissions associated with the Proposed Development. This includes construction energy consumption, expected maintenance requirements, product specification (e.g., Solar PV modules), total materials needed for construction and details on construction workforce.

Climate change risk

Flood risk within the Site will be assessed using the UK Government's flood map for planning tool (2026), which ranks an areas flood risk probability from different sources as either flood zone 1 (less than 0.1% chance of flooding annually), flood zone 2 (between 0.1% and 1% chance of river flooding annually, or between 0.5% and 1% chance of sea flooding annually), or flood zone 3 (greater than 1% chance of river flooding annually, or greater than 0.5% chance of sea flooding annually).

Baseline data or climatic conditions within the Site will be sourced from UK MET Office (2026) historical location-specific long-term climate averages from the closest climate station.

ThinkHazard (2026), a hazard screening tool developed by the Global Facility for Disaster Reduction and Recovery, has been used to identify and review climate-related hazards relevant to Lincolnshire and the Proposed Development.

A review of publicly available information on historical wildfire occurrences within the vicinity of the Site has been undertaken to inform the baseline understanding of wildfire risk.

6.3.4 Surveys to inform the EIA baseline characterisation

No surveys have been undertaken to date, and no surveys are expected or planned for this assessment.

6.3.5 Baseline conditions

GHG emissions

The baseline conditions describe the conditions of a business-as-usual scenario whereby the Proposed Development is not undertaken. The baseline comprises existing carbon stock and sources of GHG emissions within the Site of the existing activities on-site. In the case of GHG emissions, the sensitive receptor is the stability of the global climate.

The land within the Site predominantly consists of arable farmland, including one pig farm, and hedgerows, woodland parcels and grassland margins. The surrounding landscape is characterised by intensive agricultural land, with woodland blocks and hedgerows. At this stage, there is no known existing infrastructure within the Site that will need to be removed as part of the Proposed Development.

The national GHG baseline is also important to understand. The Climate Change Committee is an independent statutory body established under the Climate Change Act 2008 (as amended by the Climate Change Act (2050 Target Amendment Order 2019)) to advise the UK Government and Devolved Administrations on reducing GHG emissions and preparing for climate change. The Climate Change Committee undertakes an annual assessment of GHG emissions to determine whether the UK is on course to meet its target carbon budget.

In February 2025, the Climate Change Committee recommended that the UK set a Seventh Carbon Budget of 535 $MtCO_2e$ for the period 2038 to 2042, equivalent to reducing greenhouse gas emissions by around 87% by 2040 compared with 1990 levels. The UK Government subsequently accepted this advice and laid draft legislation in June 2026 to set the Seventh Carbon Budget at this level. The budget represents a world-leading commitment that is aligned with the UK's statutory net zero target and the objectives of the 2015 Paris Agreement.

Climate change risk

According to the UK Government's flood map for planning tool (2026), the Proposed Development is wholly located within Flood Zone 1, showing either no flood risk or very low flood risk (less than a 0.1% chance) of surface water flooding, river flooding and coastal flooding. See **Section 5.9** for further details of the Flood Risk Assessment and hydrological assessment.

Current baseline climate conditions for the Site have been reviewed using Met Office (2026) Location-specific long-term averages, while future baseline climate conditions have been reviewed using UK Climate Projections (2018) (UKCP18).

Met Office (2026) climate data indicate that the Site experiences a temperate maritime climate, characterised by mild temperatures and rainfall distributed throughout the year. UKCP18 indicate that future climate conditions are likely to include increases in average temperatures, more frequent and intense heat extremes, and changes in precipitation patterns, including an increased likelihood of heavy rainfall events.

Additional climate-related hazards have been screened using the ThinkHazard tool within the Lincolnshire area. The screening identified low and very low levels of risk associated with extreme heat and landslide hazards, respectively.

A review of historical wildfire activity within the vicinity of the Site did not identify any recorded significant wildfire events in close proximity to the Proposed Development. On this basis, the baseline susceptibility of the Site to wildlife is considered to be low.

6.3.6 Additional (secondary and tertiary) mitigation

GHG emissions

Construction

An Outline CEMP will be implemented to identify good working practices in line with appropriate standards, including low carbon practices. Some mitigation measures that are anticipated to be taken into account are:

- Where technical specifications allow, maximise the recycled content of construction materials such as concrete and steel;
- Maximise the specification of materials with an environmental product declaration with the aim of reducing embodied carbon emissions;
- Incentivise the use of local suppliers with a view to shorten Proposed Development supply chains and environmental footprint;
- On-site mobile and non-mobile plant should conform to the latest emissions standards, with mobile vehicles conforming to EURO 6 standards as a minimum. All plant should investigate the option of using Hydrotreated Vegetable Oil fuels or electric versions where possible; and
- Require main contractors to report on energy data, water usage and waste disposal and their GHG emissions as part of the Outline CEMP.

Operation (including maintenance)

Given the nature of the Proposed Development as a renewable energy project, it is anticipated to have an overall positive effect on the climate. Despite this, adherence to best practice relating to the maintenance (at that time) and replacement of components of the Proposed Development should be followed at all times. Any replacement and maintenance which takes place should also follow the mitigation measures proposed within the construction phase where applicable. Additional mitigation measures for the operational phase would be detailed in and secured by the Outline OEMP, which will be submitted in support of the DCO application.

Decommissioning

The decommissioning process is likely to result in GHG emissions, particularly from the removal, transport and end-of-life management of Solar PV modules and

associated infrastructure. Wherever practical, components would be prioritised for re-use, refurbishment and recycling, with disposal only considered as a last resort. Additional mitigation would be employed that aligns with the hierarchy for managing Proposed Development-related emissions (avoid, reduce, substitute and compensate). Additional mitigation measures for the decommissioning phase would be detailed in and secured by the Outline DEMP, which will be submitted in support of the DCO application.

Climate change risk

Construction

An Outline CEMP will be adopted which will include measures to decrease the risk of climate hazards on the construction process phase. These are anticipated to include:

- Weather forecasts to be monitored daily. Forecasts would be used to inform the sequencing of activities and the use of appropriate personal protective equipment;
- Provision of welfare facilities including breaks, shade, and hydration facilities, as well as first aid amenities;
- Provision of an Emergency Response Plan, to include on-site fire prevention, suppression, and evacuation procedures;
- Monitoring and maintenance of plant and equipment to ensure compliance of machinery with design specifications and flexibility in the construction activities programme to account for climatic variation;
- Appropriate on-site storage of plant and equipment; and
- Hazardous materials would be maintained in a safe storage area when not in use. This would be away from the Site access and egress points. Disposal of hazardous waste would be undertaken appropriately, taking into account the risks associated with high temperatures and increased rainfall.

Operation (including maintenance)

The condition and integrity of assets would be regularly assessed, and maintenance undertaken as early as required, giving consideration to materials with enhanced tolerance to fluctuating temperatures and exposure to rainfall. These measures would be detailed in and secured by the Outline OEMP.

Decommissioning

Anticipating the most appropriate additional mitigation measures to be implemented during the decommissioning phase is difficult due to the potential advancements in technology and good practice between the present and the time in which decommissioning will take place. Despite this, general adherence to the mitigation measures proposed during the construction phase is advised. These measures would be detailed in and secured by the Outline DEMP.

6.3.7 Description of likely significant effects

GHG - construction

GHG emissions will be inevitable during the construction phase. Main GHG emissions sources are likely to be through fuel consumption and the embodied GHG emissions of materials.

It is not expected that the GHG emissions from construction will compromise the ability of the UK, North Kesteven District Council or Lincolnshire County Council to meet its carbon reduction targets. However, in view of the cumulative contribution of all GHG emissions towards climate change, and the sensitivity of the global atmosphere to changes in atmospheric GHG concentrations, the GHG emissions associated with the construction of the Proposed Development will contribute negatively to climate change.

It should be noted however that the effects of individual Proposed Development phases, particularly in the context of renewable energy developments, are not usually viewed in isolation due to the anticipated beneficial impact of the operation of the Proposed Development. Furthermore, the negative effects of the construction phase regarding GHG emissions will be reduced through mitigation measures.

GHG - operation (including maintenance)

The operation of the Proposed Development will result in GHG emissions, primarily from the repair, replacement and maintenance of assets on the Site. It should be noted that the assessment will consider all applicable and material sources of emissions, where data is available. However, the operation (including maintenance) phase can be viewed as achieving net GHG emissions savings by offering additional renewable electricity generation in place of fossil fuel electricity generation. Given that this is a renewable energy development, downstream impacts from end users are not an applicable emission source. Emissions from electricity arise from generation rather than direct use, and these emissions will be included within the scope of the assessment.

Whilst not directly comparable to this development, this should align with the precedent set in the Finch case (*R (Finch) v Surrey County Council*, 2024). The GHG savings from the operation (including maintenance) phase are anticipated to be greater than the GHG emissions associated with the construction and decommissioning phases and will contribute to the decarbonisation of the National Grid, which would constitute a beneficial and significant effect on climate.

GHG - decommissioning

GHG emissions will be inevitable during the decommissioning phase, again due to the necessary use of heavy machinery. As is the case with construction, the receptor is not confined to the immediate vicinity of the Site; instead, it is the global atmosphere. As such, the receptor is highly sensitive, in view of the cumulative contribution of all emissions towards climate change. With this in mind, the GHG emissions associated with the decommissioning of the Proposed Development will have a negative effect upon the climate.

It should be noted however that the effects of individual Proposed Development phases, particularly in the context of renewable energy developments, are not usually viewed in isolation due to the intended beneficial impact of the operation of the Proposed Development. Furthermore, the negative effects of the decommissioning phase regarding GHG emissions will be reduced through mitigation measures.

Climate change risk – construction, operation (including maintenance) and decommissioning

No likely significant effects are anticipated concerning climate change risk.

6.3.8 Receptors/matters to be scoped into further assessment		
Receptor/matter	**Phase**	**Justification**
GHG emissions	Construction, operation (including maintenance) and decommissioning	Aligned with ISEP Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance (Edition 2.1, 2026), a development that causes GHG emissions to be avoided would have a beneficial effect that is significant. It is important to include all GHG emissions when considering the overall lifecycle GHG emissions of the Proposed Development, to determine an accurate assessment of net climate impact.
6.3.9 Receptors/matters to be scoped out of further assessment		
Receptor/matter	**Phase**	**Justification**
Climate change risk	Construction, operation (including maintenance) and decommissioning	UKCP18 projections suggest that climate change will lead to hotter drier summers, warmer wetter winters, increased likelihood of extreme weather events (e.g., heat waves, high rainfall events) and sea-level rise. Due to the embedded resilience of Solar PV modules to high heat and wind speeds, these factors are not expected to significantly impact on the construction, operation (including maintenance) or decommissioning of the Proposed Development. The Site itself falls within Flood Zone 1, and electrical infrastructure (Substation, BESS, Inverters, Transformers, and Switchgear) are anticipated to be sited in locations at low risk of flooding and/or set at the necessary minimum ground levels determined by the stand-alone FRA to be submitted in support of the DCO application, and in consultation with the relevant prescribed consultees. The potential for overland surface water flooding will be taken into account. The vulnerability of the Proposed Development to flooding and its potential to exacerbate flooding will be covered in more

		technical detail in the FRA. The FRA will, by nature, take into account the impact of climate change risk with regards to flooding on the Proposed Development. Additional climate-related hazards have been screened using the ThinkHazard tool, which identified low and very low risks from extreme heat and landslides, respectively. A review of historical wildfire occurrences in the Cranwell area also identified no significant wildfire events. On this basis, these hazards are not considered likely to result in significant effects on the Proposed Development and have been scoped out of further assessment. It is not anticipated that climate change will present a significant risk to human health, within the context of the Proposed Development. A Climate Change briefing note will be provided to all other disciplines with information that can be incorporated into their assessments and future baselines to ensure climate change is appropriately taken into account within their respective assessments. Therefore, climate change risk has been scoped out of further assessment.
In-combination impact assessment	Construction, operation (including maintenance) and decommissioning	The resilience of all receptors identified in other chapters are unlikely to be significantly affected by a combination of future climate change (e.g. temperature change, sea level rise, or wind) and the impacts of the Proposed Development. This will be informed by the Climate Change briefing note that will be provided to all other disciplines with information that can be incorporated into their assessments and future baselines to ensure climate change is appropriately taken into account within their respective assessments. Therefore, the in-combination impact assessment has been scoped out of further assessment.

6.3.10 Opportunities for enhancing the environment

The Proposed Development is expected to have a net beneficial impact on the climate, in that it will reduce GHG emissions associated with electricity consumption on a national scale. Opportunities exist to further increase the environmental benefit of the Proposed Development by ensuring that GHG emissions associated with the construction and decommissioning process are minimised. This can be ensured by the adoption of various additional mitigation measures, as detailed above and secured within the Outline CEMP, Outline OEMP and Outline DEMP.

There is scope to further improve the Site in terms of ecological enhancements and habitat creation, which can have a positive effect in terms of carbon sequestration. These will be document in the Outline LEMP, which will be submitted in support of the DCO application.

6.3.11 Proposed assessment methodology

Planning policy and guidance relevant to this assessment is listed below:

National planning policy:

- Overarching National Policy Statement for Energy (EN-1) (2026);
- National Policy Statement for Renewable Energy Infrastructure (EN-3) (2026);
- National Policy Statement for Renewable Energy Infrastructure (EN-5) (2026);
- National Planning Policy Framework (2026);
- British Energy Security Strategy (2022);
- Energy White Paper: Powering our Net Zero Future (2020);
- Powering Up Britain (2023);
- Net Zero Strategy: Build Back Greener (2022);
- The Ten Point Plan for a Green Industrial Revolution (2020); and
- The Clean Growth Strategy (2018).

Local planning policy:

- Lincolnshire County Council Environment Policy (2026); and
- North Kesteven District Council Climate Emergency Strategy and Action Plan (2022).

Guidance:

- The Institute of Sustainability and Environmental Professionals ‘Environmental Impact Assessment Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance’ (Edition 2.1, 2026); and
- Royal Institute of Chartered Surveys Whole life carbon assessment for the built environment (2023).

The assessment will quantify applicable Kyoto Protocol GHGs as measured in tonnes of carbon dioxide equivalence (tCO_2e), where equivalence means having the same warming effect as CO_2 over 100 years.

The GHG baseline characterisation will be conducted using a desk-based assessment of current land use, existing carbon stock and any activities that could cause GHG emissions. However, in line with the ISEP Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance (Edition 2.1, 2026), any agricultural land can generally be considered to have zero baseline emissions to ensure reasonable worst-case approach to establishing net GHG effect.

Data associated with the activities contributing to the construction, operation (including maintenance) and decommissioning of the Proposed Development will be provided by the design/engineering specialists. Where it is not possible to collect this data, as this assessment represents a forecast of emissions and some information may not yet be known, secondary data (such as estimates, extrapolations, benchmarks and proxy data such as distance travelled) will be used. Emissions will then be quantified by applying the most relevant and up-to date emission factors.

Lifecyle GHG emissions associated with the Proposed Development will be reported using the modular structure as outlined in Royal Institution of Chartered Surveyors (2023) guidance. The reporting modules are defined as follows, with 'A' modules corresponding to construction phase emissions, 'B' modules corresponding to operation phase emissions, and 'C' modules corresponding to decommissioning phase emissions:

- **A1-3 product stage** – this category includes the embodied emissions of materials used to construct the Proposed Development. It includes the emissions associated with raw material extraction, transport to the manufacturing site and manufacturing emissions;
- **A4 transport** – this comprises the emissions associated with the transport of materials from the manufacturing site to the construction site;
- **A5 construction and installation** – this source includes four sub-categories which include emissions from pre-construction demolition (if applicable), construction activities (such as equipment fuel use), material wastage and construction worker transport;
- **B1 in-use emissions** – emissions associated with refrigerant gas leaks (if applicable) and emission release from products or reabsorption into products (such as sequestration from timber);
- **B2-5 maintenance, repair, replacement and refurbishment** – this includes emissions associated with routine maintenance (B2), repair (B3), replacement of materials (B4) and any planned refurbishment (B5);
- **B6 operational energy** – energy used during the operation of the asset;
- **B7 operational water** – water used during the operation of the asset;
- **B8 user activities not covered in B1-7** – emissions may include transport of persons to and from the asset during operation, for example; and
- **C1-4 end of life** – this category includes deconstruction and demolition emissions (C1), transport of waste materials from the Site to disposal sites (C2), waste processing for recycling (C3) and disposal emissions from landfill (C4).

Given the international urgency of climate change, the sensitivity of the receptor (i.e. global climate) to fluctuations in greenhouse gas emissions is considered 'Very High'. Thus, the level of the significance of effects is determined by the magnitude, and

timing, of greenhouse gas emissions and the likelihood of avoiding severe climate change. Further information on the significance criteria can be found in **Appendix D**.

Aligned with the ISEP Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance (Edition 2.1, 2026), any development that causes greenhouse gases to be avoided, or removed from the atmosphere, has a beneficial effect that is always significant. In such a scenario, the Proposed Development substantially exceeds the national net zero requirements and is thus aligned with the goal of the Paris Agreement to limit temperature rise to well below 2°C, aiming for 1.5°C.

6.3.12 Difficulties and uncertainties

To ensure transparency within the EIA process, the following difficulties and uncertainties have been identified:

- The accuracy of a GHG assessment depends on the quality of the data provided. Primary data should always be used where available. Where it is not possible to collect these data, as this assessment represents a forecast of emissions and some information may not yet be known, secondary data (such as estimates, extrapolations, benchmarks and proxy data such as distance travelled) will be used, based upon industry approximations and professional best practice. Assessments such as this, based largely on secondary data, should only be viewed as an estimate of GHG emissions impact and actual emissions may vary significantly. Thus, when necessary, a conservative approach will be undertaken to ensure a robust assessment of possible emissions sources. All assumptions and limitations, including exclusions, will be documented as part of the assessment; and
- An emission factor is a representative value that relates the quantity of a pollutant released into the atmosphere with an activity associated with the release of that pollutant. Emission factors are typically available from government publications, independent agencies, and scientific research journals; however, the quality and accuracy of such factors can vary significantly. Factors can differ depending on the research body and/or underlying methodologies applied. Emission factors will therefore only be sourced from reputable sources, such as the Department for Energy Security and Net Zero UK Government GHG Conversion Factors for Company Reporting (2026).

6.3.13 References

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6.4 Cultural heritage

6.4.1 Consultation

Lincolnshire County Council Historic Environment Record (HER) was consulted on the 7 August 2026 in the preparation of this chapter for data on known heritage assets.

Engagement has been sought from North Kesteven District Council and Lincolnshire County Council to discuss the proposed approach to scoping and assessment. Initial comments have been received from North Kesteven District Council as regards the scope of the study area and the presence of locally listed buildings.

A call was held with Historic England, the Historic Environment (Infrastructure) Officer for Lincolnshire County Council and the Conservation Officer for North Kesteven District Council on 4 September 2026 to introduce the Proposed Development.

6.4.2 Study area

Overlapping study areas are proposed for the identification of heritage assets that may be affected by the Proposed Development.

A 1km buffer around the Site will be used to provide the historic narrative and assess the archaeological potential of the Site, and to identify known and potential heritage assets that may experience direct (physical) effects.

Indirect and potential effects resulting from changes to the settings of non-designated heritage assets and locally listed buildings, where this contributes to their significance, will be considered up to 1km from the Site.

Indirect and potential effects resulting from changes to the setting of designated heritage assets, where this contributes to their significance, will also be considered up to 5km from the Site. This will be informed by the zone of theoretical visibility (ZTV) (**, Appendix H, Figure 1**).

A stage 1 setting assessment is presented in **Appendix H**, which identifies those heritage assets with the potential to be sensitive to changes in setting.

6.4.3 Data sources to inform the EIA baseline characterisation

The following sources of information will be used to understand the current cultural heritage baseline of the Site and study areas:

- Designation data from the National Heritage List for England, downloaded from the Historic England website on 24 August 2026, and descriptions of designated heritage assets viewed on the Historic England website;
- Historic England research records, viewed through the Heritage Gateway website;
- Aerial photographs viewed via the Historic England Aerial Photo Explorer and Cambridge University Collection of Aerial Photography and other publicly available online sources;

- National Mapping Programme data available on the Historic England Aerial Archaeology Viewer;
- Archaeological records and aerial photographs held by Lincolnshire Historic Environment Record (HER);
- Historic maps and plans available online and in the local archives;
- Environment Agency LiDAR data (if available);
- Readily available published sources and unpublished archaeological reports; and
- Portable Antiquities Scheme (PAS) data.

6.4.4 Surveys to inform the EIA baseline characterisation

The Site is currently undergoing a geophysical magnetometer survey. Results are pending; however, initial survey findings are as follows:

- There is evidence of the possible north/south prehistoric ditch identified in the HER (MLI82191) in the north-east of the Site, possible unmapped field divisions and former field boundaries as well as evidence of quarrying, possible historical ploughing in the east of the Site and possible paleochannels; and
- The large possible paleochannel running across the west and portions of the east of the Site seems to have been subject to some artificial management as there are parallel, likely man-made features at its edges and indications of possible drainage ditches.

The following surveys are proposed to inform the EIA and support the DCO application:

- A targeted walkover of the Site. This will seek to confirm the location and state of preservation of previously recorded heritage assets within the Site, confirm the nature of any features detected in LiDAR survey, historic map regression and aerial photography, and identify currently unrecorded archaeological remains in areas of potential impact;
- Designated and non-designated heritage assets that have been identified in the stage 1 setting assessment (**Appendix H**) as potentially drawing significance from their wider setting, will be viewed from publicly accessible locations to confirm their baseline setting and to identify locations for visualisations to assist with the assessment of impacts. If assessment is not possible from publicly accessible locations, then efforts will be made to contact landowners to gain access;
- Subsequent detailed setting assessment visits to heritage assets identified (through the above stages of assessment) as potentially experiencing significant effects will also be carried out following design freeze and receipt of visualisations in order to assess potential impacts more fully; and
- The need for, scope, and timing of intrusive evaluation will be negotiated and agreed with Historic England, North Kesteven District Council and Lincolnshire County Council following completion of the desk-based assessments and geophysical magnetometer survey.

6.4.5 Baseline conditions

Designated heritage assets

There are no designated heritage assets within the Site (see **Appendix H, Figure 2**).

Within 1km of the Site, there are eight listed buildings (including one Grade I and one Grade II* listed buildings), one Scheduled Monument, no Conservation Areas and no Registered Park and Gardens (see **Appendix H, Figure 3**).

Within 5km of the Site, there are a further 143 listed buildings (including seven Grade I and 11 Grade II* listed buildings), seven Scheduled Monuments, six Conservation Areas and two Registered Park and Gardens (see **Appendix H, Figure 4**).

Non-designated heritage assets

There are four non-designated heritage assets within the Site, comprising:

- prehistoric boundary ditch (MLI82191);
- former unnamed farmstead (MLI20956);
- RAF Cranwell airfield (MLI83189);
- earthwork aircraft obstruction (MLI88625).

Earlier historic maps reveal a number of extraction pits within the Site, probably for sand.

There are a further 52 non-designated heritage assets within 1km of the Site (see **Appendix H, Figure 5**). The earliest is a flint scatter of uncertain prehistoric date and a Bronze Age spearhead. There are definite Roman assets recorded in the HER, including the Roman road Ermine Street which runs through the west of the study area and a number of find spots which have been located within 1km of the Site. A number of later prehistoric or possibly Romano British features have also been identified as cropmarks.

Evidence from the early medieval period within 1km of the Site includes the remains of a cross in Cranwell, which suggests that the settlement of Cranwell originated from this period. There is also evidence from the medieval period including a village cross, church, a moated site and ridge and furrow.

The majority of non-designated heritage assets from the post medieval period are related to farmsteads and agricultural buildings. Brauncewell Lodge Park is located next to the Site; this is a non-designated park and is associated with the Grade II listed Brauncewell Lodge (NHLE 1261461). There is a blacksmith adjacent to the Site. Another park and a school are located within 1km of the Site.

Non-designated heritage assets from the 20th century within 1km of the Site are associated with RAF Cranwell airfield; this airfield extended into the Site. RAF Cranwell was established in 1916 and had its own branch line. It became RAF College Service Flying Training School in 1939 and later a training school for Radio and Signals Operators.

There are four other non-designated heritage assets recorded within 1km of the Site of unknown date.

6.4.6 Additional (secondary and tertiary) mitigation

Construction

Precautionary mitigation to avoid accidental direct impacts on heritage assets within the Site during construction may include demarcating their presence using physical barriers, if appropriate, with a suitable buffer from the heritage asset established. This will in part be achieved through the Outline CEMP.

Where archaeological remains within the Site do not require preservation in situ and impacts cannot be avoided through primary mitigation, it is anticipated that additional mitigation to off-set adverse impacts would take the form of a programme of archaeological investigation and recording. Such a programme may include pre-commencement phases of archaeological excavation and/or archaeological "watching brief" (monitoring and recording) during construction. The need for and scope of such mitigation would be agreed with the Historic Environment (Infrastructure) Officer for Lincolnshire County Council and Historic England where necessary. The scope and methodology of the mitigation will be set out in a written scheme of investigation (WSI) in line with Chartered Institute for Archaeologists Standards and Guidance for archaeological monitoring and recording and excavation as appropriate.

Operation (including maintenance)

Where there is the potential for indirect effects or effects resulting from changes within the setting of a heritage asset, these are normally addressed through mitigation embedded into the design of the Proposed Development; however, where effects remain, it may be possible to provide additional mitigation. This could include planting to screen visual impacts, but these will depend on the heritage asset, the nature of the impact and the suitability of the mitigation. This will in part be achieved through the Outline OEMP.

Decommissioning

It is assumed that decommissioning will take place in the same footprint as construction and that no additional impacts to any heritage assets not already mitigated during construction and operation (including maintenance) will occur. This will in part be achieved through the Outline DEMP and Outline Soil Management Plan (Outline SMP), both of which will be submitted in support of the DCO application. These plans will set out how the spoil bunds will be located away from known archaeological remains and therefore avoid potential impacts to them through decommissioning activities such as soil rotavation. For heritage assets preserved in situ on the Site, precautionary mitigation to avoid accidental direct impacts on heritage assets within the Site during decommissioning may also include demarcating their presence using physical barriers, if appropriate, with a suitable buffer from the heritage asset established. No further mitigation is anticipated.

6.4.7 Description of likely significant effects

Potential significant effects of the Proposed Development can arise from direct or indirect physical effects during construction, operation (including maintenance) or decommissioning, or from changes to the setting of heritage assets, typically during

the operation (including maintenance) phase but potentially also during construction and decommissioning.

Indirect or secondary effects can also arise during operation (including maintenance).

Direct physical effects describe those development activities that directly cause damage to the fabric of a heritage asset. Typically, these activities are related to construction works and would only occur within the footprint of the heritage asset.

Indirect effects describe secondary processes, triggered by a development, which lead to the degradation or preservation of heritage assets. For example, changes to hydrology may affect archaeological preservation, or changes to the setting of a building may affect the viability of its current use and thus lead to dereliction.

Effects on heritage assets may also occur when the presence of a development changes the surroundings (the setting) of a heritage asset in such a way that it affects (positively or negatively) the heritage significance of that heritage asset. Visual changes are most commonly encountered, but other environmental factors such as noise, light or air quality can be relevant in some cases. Effects may be encountered at all stages in the life cycle of a development from construction to decommissioning, but they are only likely to lead to significant effects during the prolonged period which is the operational life of the development.

Potential effects on unknown heritage assets will be discussed in terms of the risk that a significant effect could occur. The level of risk depends on the level of archaeological potential combined with the nature and scale of disturbance associated with construction activities and may vary between 'High' and 'Negligible' for different elements or activities associated with a development, or for the development as a whole.

The layout of the Proposed Development is still being designed and surveys to establish the archaeological resource of the Site are ongoing. As such, there remains uncertainty regarding both the direct physical impacts on heritage assets as a result of construction, and the extent of visual change within the setting of heritage assets within the wider area. This has therefore resulted in heritage assets being scoped into further assessment (see **Section 6.4.8** below) which may, following further design evolutions, be scoped out of further assessment as effects will have been avoided, in agreement with the relevant statutory bodies. Additional justification for scoping out heritage assets from further assessment is presented in the stage 1 setting assessment (**Appendix H**).

6.4.8 Receptors/matters to be scoped into further assessment

Receptor/matter	Phase	Justification
Designated heritage assets		
Setting impacts to Scheduled Monument Dunsby Medieval	Operation (including maintenance)	The wider landscape, including the Site, may contribute to the significance of this asset. This landscape will be changed by the presence of the Proposed Development. This will alter

Village (NHLE 1018395)		the setting of this asset and could in turn affect its significance.
Setting impacts to Grade II* Listed Building College Hall at RAF Cranwell (NHLE 1254079)	Operation (including maintenance)	The wider landscape, including the Site, may contribute to the significance of this asset. This landscape will be changed by the presence of the Proposed Development. This will alter the setting of this asset and could in turn affect its significance.
Setting impacts to Grade II Listed Building Brauncewell Lodge (NHLE 1261461)	Operation (including maintenance)	The wider landscape, including the Site, may contribute to the significance of this asset. This landscape will be changed by the presence of the Proposed Development. This will alter the setting of this asset and could in turn affect its significance.
Non-designated heritage assets		
Physical impacts on heritage assets recorded in the HER (RAF Cranwell airfield (MLI83189), Prehistoric boundary ditch (MLI82191), earthwork aircraft obstruction (MLI88625), former unnamed farmstead (MLI20956)) and geophysical anomalies within the Site	Construction and operation (including maintenance)	Construction activity has the potential to directly impact on these assets through groundworks and tracking vehicles with potential for significant effects to occur. Physical changes during the operation (including maintenance) phase could include changes in hydrology or compression of soils from soil bunds.
Setting impacts to heritage assets recorded in the HER (RAF Cranwell airfield (MLI83189), Prehistoric boundary ditch (MLI82191), earthwork aircraft obstruction (MLI88625), unnamed former farmstead (MLI20956)) and	Operation (including maintenance)	The Proposed Development will alter the setting of these assets. This could affect their significance, with potential for significant effects to occur.

geophysical anomalies within the Site		
Setting impacts to Brauncewell Lodge Park (HER MLI92387)	Operation (including maintenance)	The landscape, including the Site, may contribute to the significance of this asset. This landscape will be changed by the presence of the Proposed Development. This will alter the setting of this asset and could in turn affect its significance.
Physical impacts on currently unknown non-designated heritage assets within the Site	Construction and operation (including maintenance)	There remains uncertainty about the extent and significance of heritage assets within the Site and therefore the potential for significant effects is unknown. These potential heritage assets are scoped into further assessment as a precaution until further information is known. Physical changes during the operation (including maintenance) phase could be changes in hydrology or compression of soils from soil bunds.
Setting impacts to currently unknown non-designated heritage assets within the Site	Operation (including maintenance)	The Proposed Development will change the setting of these assets. This may change the contribution that setting makes to their significance, with potential for significant effects to occur.
Physical impacts to non-designated preserved in situ remains within the Site	Construction, operation (including maintenance) and decommissioning	Heritage assets preserved in situ on the Site have the potential to be accidentally damaged during construction, operation (including maintenance) and decommissioning. Precautionary mitigation to avoid accidental direct impacts on heritage assets within the Site is required and may include demarcating their presence using physical barriers, if appropriate, with a suitable buffer from the asset established or specific controls, such as if removing concrete pads during decommissioning which overlay heritage assets preserved beneath.

6.4.9 Receptors/matters to be scoped out of further assessment		
Receptor/matter	**Phase**	**Justification**
Designated heritage assets		
Physical impacts to Scheduled Monument Dunsby Medieval Village (NHLE 1018395)	Construction and operation (including maintenance) and decommissioning	Construction, operation (including maintenance) and decommissioning activities are not at a level to cause physical harm to the fabric of this heritage asset, such as from vibration or dust from vehicles. Therefore, no significant effects will occur.
Setting impacts to Scheduled Monument Dunsby Medieval Village (NHLE 1018395)	Construction and decommissioning	Construction and decommissioning phase effects resulting in changes in the setting of this heritage asset will be temporary. Therefore, no significant effects will occur. Decommissioning will reverse any adverse effects resulting from changes to the setting of heritage assets during operation (including maintenance).
Physical impacts on Grade II* Listed Building College Hall at RAF Cranwell (NHLE 1254079)	Construction and operation (including maintenance) and decommissioning	Construction, operation (including maintenance) and decommissioning activities are not at a level to cause physical harm to the fabric of this heritage asset, such as from vibration or dust from vehicles. Therefore, no significant effects will occur.
Setting impacts to Grade II* Listed Building College Hall at RAF Cranwell (NHLE 1254079)	Construction and decommissioning	Construction and decommissioning phase effects resulting in changes in the setting of this heritage asset will be temporary. Therefore, no significant effects will occur. Decommissioning will reverse any adverse effects resulting from changes to the setting of heritage assets during operation (including maintenance).
Physical impacts on Grade II Listed Building Brauncewell Lodge (NHLE 1261461)	Construction and operation (including maintenance) and decommissioning	Construction, operation (including maintenance) and decommissioning activities are not at a level to cause physical harm to the fabric of this heritage asset, such as from vibration

		or dust from vehicles. Therefore, no significant effects will occur.
Setting impacts to Grade II Listed Building Brauncewell Lodge (NHLE 1261461)	Construction and decommissioning	Construction and decommissioning phase effects resulting in changes in the setting of this heritage asset will be temporary. Therefore, no significant effects will occur. Decommissioning will reverse any adverse effects resulting from changes to the setting of heritage assets during operation (including maintenance).
Physical impacts to all known and currently unknown designated heritage assets not scoped into further assessment (see **Section 6.4.8**)	Construction, operation (including maintenance) and decommissioning	Construction, operation (including maintenance) and decommissioning activities are not at a level to cause physical harm to the fabric of these heritage assets, such as from vibration or dust from vehicles. Therefore, no significant effects will occur.
Setting impacts to other designated heritage assets not scoped into further assessment (see **Section 6.4.8**)	Construction, operation (including maintenance) and decommissioning	All designated heritage assets identified in the stage 1 setting assessment as not sensitive to changes in setting have been scoped out of further assessment (**Appendix H**).
Non-designated heritage assets		
Physical impacts on heritage assets recorded in the HER (RAF Cranwell airfield (MLI83189), Prehistoric boundary ditch (MLI82191), earthwork aircraft obstruction (MLI88625), unnamed former farmstead (MLI20956)) and geophysical anomalies within the Site	Decommissioning	Decommissioning will not result in physical impacts to heritage assets within the Site (with the exception of in situ remains) as such impacts will have already been mitigated during construction and operation (including maintenance). Therefore, no significant effects will occur.
Setting impacts to heritage assets recorded in the HER:	Construction and Decommissioning	Construction and decommissioning phase effects resulting in changes in the setting of these heritage assets will

(RAF Cranwell airfield (MLI83189), Prehistoric boundary ditch (MLI82191), earthwork aircraft obstruction (MLI88625), unnamed former farmstead (MLI20956)) and geophysical anomalies within the Site		be temporary. Therefore, no significant effects will occur. Decommissioning will reverse any adverse effects resulting from changes to the setting of these heritage assets during operation (including maintenance).
Physical impacts to Brauncewell Lodge Park (HER MLI92387)	Construction and operation (including maintenance) and decommissioning	Construction, operation (including maintenance) and decommissioning activities are not at a level to cause physical harm to the fabric of this heritage asset, such as from vibration or dust from vehicles. Therefore, no significant effects will occur.
Setting impacts to Brauncewell Lodge Park (HER MLI92387)	Construction and decommissioning	Construction and decommissioning phase effects resulting in changes in the setting of this heritage asset will be temporary. Therefore, no significant effects will occur. Decommissioning will reverse any adverse effects resulting from changes to the setting of this heritage asset during operation (including maintenance).
Physical impacts on currently unknown non-designated heritage assets within the Site	Decommissioning	Decommissioning will not result in physical impacts to heritage assets within the Site (with the exception of in situ remains) as such impacts will have already been mitigated during construction and operation (including maintenance). Therefore, no significant effects will occur.
Setting impacts to currently unknown non-designated heritage assets within the Site	Construction and decommissioning	Construction and decommissioning phase effects resulting in changes in the setting of heritage assets in the surrounding area will be temporary and will not result in significant effects. Therefore, no significant effects will occur.

		Decommissioning will reverse any adverse effects resulting from changes to the setting of heritage assets during operation (including maintenance).
Physical impacts to all known and currently unknown non-designated heritage assets not scoped into further assessment (see **Section 6.4.8**)	Construction and operation (including maintenance) and decommissioning	Construction, operation (including maintenance) and decommissioning activities are not at a level to cause physical harm to these non-designated heritage assets, such as from vibration or dust from vehicles. Therefore, no significant effects will occur.
Settings impacts to non-designated preserved in situ remains within the Site	Construction, operation (including maintenance) and decommissioning	These heritage assets are below-ground archaeological remains whose significance primarily derives from their archaeological interest. Any contribution to their significance by their settings is likely to be made only by their immediate settings and to be minimal. The anticipated changes to the assets' settings by the Proposed Development during all phases are not anticipated to be of a level that the overall significance of these assets is affected.

6.4.10 Opportunities for enhancing the environment

Measures to enhance the significance of heritage assets will be considered by the Applicant as the design of the Proposed Development progresses.

6.4.11 Proposed assessment methodology

The Proposed Development would result in a change to the existing baseline. This has the potential to impact on heritage significance. In accordance with EIA Regulations, the assessment would identify impacts and effects as direct or indirect, adverse or beneficial, and short-term, long-term or permanent.

Direct impacts are those which physically alter a heritage asset and therefore its heritage significance.

Effects upon setting alter the heritage significance of an asset by causing visual or sensory change within its setting affecting the ability to understand, experience or appreciate the asset's cultural significance. The assessment of effects resulting from change within the setting of heritage assets will follow the process set out in Historic England's Setting of Heritage Assets guidance.

The assessment of effects will follow the significance criteria in **Appendix D**.

The residual effect is a product of the importance of the heritage asset and the magnitude of impact following mitigation. The importance of a heritage asset reflects any statutory or non-statutory designation or in the case of non-designated heritage assets, the professional judgement of the assessor, taking into account regional research frameworks and comments from consultees as referenced in the latest National Planning Policy Framework (NPPF), 2026: Section 20. Conclusions of the assessed magnitude of impacts is a product of the consideration of the elements of an asset and it's setting that contribute to its cultural significance and the degree to which the Proposed Development would change these contributing elements. The assessment therefore reflects the varying degrees of sensitivity of different heritage assets to change brought about by different types of development.

The assessment will be carried out with reference to the following planning policy and guidance:

National planning policy

- Overarching NPS for Energy (EN-1);
- NPS for Renewable Energy Infrastructure (EN-3);
- NPS for Electricity Networks Infrastructure (EN-5); and
- NPPF, 2026: Section 20 (Conserving and enhancing the historic environment).

Local planning policy

- Central Lincolnshire Local Plan (Adopted 2023).

Guidance

- English Heritage (2008) Conservation Principles, Policies and Guidance;
- Historic England (2019) Statements of Heritage Significance: Analysing Significance in Heritage Assets (Historic England Advice Note 12);
- Historic England (2015) Managing Significance in Decision-Taking in the Historic Environment (Historic Environment Good Practice Advice in Planning: 1 & 2);
- Historic England (2017) The Setting of Heritage Assets (Historic England's Historic Environment Good Practice Advice in Planning GPA3);
- Historic England (2026) Commercial Renewable Energy Development and the Historic Environment: Historic England Advice Note 15 (2nd ed);
- Institute of Environmental Management and Assessment, Institute of Historic Building Conservation, Chartered Institute for Archaeologists (2021) Principles of Cultural Heritage Impact Assessment;
- Design Manual for Roads and Bridges: LA 106 – Cultural Heritage Assessment;
- Design Manual for Roads and Bridges: LA 104 - Environmental assessment and monitoring;
- Standards and Guidance published by the Chartered Institute for Archaeologists (CIfA) (including Standard and guidance for historic environment desk-based assessment (2020) and Code of Conduct: professional ethics in archaeology (2025)); and
- Association of Local Government Archaeological Officers, Chartered Institute for Archaeologists, Federation of Archaeological Managers and Employers, Historic

England & Solar Energy UK (2026) Archaeology and Solar Farms: Good practice guide.

6.4.12 Difficulties and uncertainties

To ensure transparency within the EIA process, the following difficulties and uncertainties have been identified:

- Existing records for the historic environment do not record all heritage assets. This will be addressed through the desk-based assessment and LiDAR to identify previously unrecorded heritage assets and assess the potential for below ground archaeological remains. The geophysical magnetometer survey will also further investigate the potential for below ground archaeological remains.

6.4.13 References

ALGAO, CIfA, FAME, Historic England & Solar Energy UK. (2026). *Archaeology and Solar Farms: Good practice guide*. Online. Available at: https://historicengland.org.uk/images-books/publications/archaeology-solar-farms/archaeology-solar-farms-good-practice-guide/

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Department for Energy Security and Net Zero. (2026). *National Policy Statement for renewable energy infrastructure (EN-3), 2025*. Online. Available at: National Policy Statement for Renewable Energy Infrastructure (EN-3)

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Historic England. (2015). *Managing Significance in Decision-Taking in the Historic Environment Historic Environment Good Practice Advice in Planning: 2*. Online. Available at: https://historicengland.org.uk/images-books/publications/gpa2-managing-significance-in-decision-taking/gpa2/

Historic England. (2017). *The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3 (Second Edition)*. Online. Available at: https://historicengland.org.uk/images-books/publications/gpa3-setting-of-heritage-assets/heag180-gpa3-setting-heritage-assets/

Historic England. (2019). *Statements of Heritage Significance: Analysing Significance in Heritage Assets Historic England Advice Note 12*. Online. Available at: https://historicengland.org.uk/images-books/publications/statements-heritage-significance-advice-note-12/heag279-statements-heritage-significance/

Historic England. (2026). *Commercial Renewable Energy Development and the Historic Environment: Historic England Advice Note 15 (2nd ed)*. Online. Available at: https://historicengland.org.uk/images-books/publications/commercial-renewable-energy-development-historic-environment-advice-note-15/https://historicengland.org.uk/images-books/publications/commercial-renewable-energy-development-historic-environment-advice-note-15/heag302-commercial-renewable-energy-development-historic-environment-2ed/

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6.5 Land and groundwater

6.5.1 Consultation

No consultation to inform the land and groundwater assessment has been undertaken to date. It is proposed to consult with Lincolnshire County Council, North Kesteven District Council and the Environment Agency in relation to the scope and methodology as part of the post-scoping phase of the Proposed Development.

6.5.2 Study area

The study area for land and groundwater is the area within the Site and up to 1km from the Site boundary. The study area is shown in **Appendix I, Figure 1**.

The extent of the study area is based on professional judgement and has been drawn to identify receptors that may be impacted by the construction, operation (including maintenance) and decommissioning phases, as well as those matters that may impact the Proposed Development. The extent of the study area allows for consideration of features that could require assessment if mobile groundwater conditions are evident.

A consistent 1km study area has been applied around the Site boundary. Given the topography within and surrounding the Site is predominantly gently undulating, no preferential groundwater flow directions have been identified as a result of steep slopes or nearby watercourses that would warrant the adoption of an irregular study area extent. On determining the study area, it has therefore been concluded that a regular 1km buffer around the Site provides a wide enough study area to incorporate any receptors/features that would require consideration in the assessment. It is not anticipated that any alterations to this study area would be required at later stages in the project lifecycle.

6.5.3 Data sources to inform the EIA baseline characterisation

The following data sources have been used to understand the existing land and groundwater baseline condition as part of this scoping exercise:

- MAGIC MAP (Multi-Agency Geographic Information Website Map) (Department for Environment, Food & Rural Affairs (Defra));
- British Geological Survey (BGS) mapping and borehole logs;
- Site-specific environmental database search report;
- Findings from a Site walkover survey (see below); and
- Mineral resources information from the Lincolnshire Minerals and Waste Local Plan (adopted December 2017).

The following information will be used to inform the assessment (post-scoping):

- A Preliminary Risk Assessment report has been prepared for the Site, in accordance with Land Contamination Risk Management guidance (Environment Agency, 2025) (see **Appendix J**). The assessment comprises a desk-based

review of information available online, the information available in the environmental database search report, and from the Site walkover survey.

6.5.4 Surveys to inform the EIA baseline characterisation

A Site walkover survey was undertaken on 7 July 2026. No additional surveys to inform the EIA baseline characterisation are proposed.

6.5.5 Baseline conditions

Baseline conditions relating to land and groundwater receptors are detailed below. Relevant information is also shown in **Appendix I, Figure 1** and **Appendix J**. It should be noted that alongside land and groundwater receptors that could be adversely affected by the Proposed Development, this section also covers features associated with land and groundwater that could affect the construction, operation (including maintenance) or decommissioning of the Proposed Development (natural geological hazards and potential contamination).

Geological units

The geological mapping indicates that there are generally no superficial geological units across the Site, with the exception of the presence of minor amounts of head deposits (clay, silt, sand and gravel) along the northern boundaries of Fields 1, 2 and 3 and a small area in the central part of Field 2.

The bedrock geology across the Site is composed of units from the Lower and Upper Lincolnshire Limestone Members. These are predominantly limestone units, with some mudstones possibly present along the northern boundaries of Fields 1, 2 and 3.

Made ground is potentially present in localised areas associated with historical mineral extraction sites or farm tracks, but there is no indication that extensive areas of artificial ground would be present. There are no mapped areas of artificial ground shown on the BGS map database.

An initial review of BGS borehole records has been undertaken, and these are in agreement with the expected geological succession.

Designated geological sites

There are no geologically designated SSSIs within the Site or the study area.

There are no Local Geological Sites within the Site. One Local Geological Site, Brauncewell Quarry, is located within the study area, approximately 200m from the Site boundary, north-east of Field 7.

Mineral extraction sites and mineral safeguarding areas

The information that has been reviewed to date from the Site-specific environmental database search report (as provided in the Preliminary Risk Assessment report in **Appendix J**) has not identified any operational mineral extraction sites within the Site. There is one operational mineral extraction site within the study area, the boundary of which is approximately 200m to the north-east of Field 7. This operates for the extraction of limestone.

There are three recorded historical mineral extraction sites within the Site and 17 recorded historical sites within the study area. All on-site extraction sites involved excavation of limestone. Extraction sites in the study area were mainly for the excavation of limestone, although a minority involved sand, sand and gravel, or clay and shale.

A mineral safeguarding area is present within the Site and the study area, relating to limestone resources. This underlies the entire Site and is present across the majority of the study area with the exception of a zone to the south of Fields 4 and 5.

Hydrogeology

The limestone bedrock deposits underlying the Site are classified as a principal aquifer, with superficial geological units, where present, defined as secondary (undifferentiated) aquifers. A principal aquifer is defined as a layer of rock with high permeability and high water storage capacity. Secondary undifferentiated aquifers are aquifers where it is not possible to apply either a Secondary A or B definition because of the variable characteristics of the rock type.

The bedrock aquifers are defined as being of high groundwater vulnerability, with the superficial units being medium to high vulnerability.

The aquifer in the limestone bedrock is classified as a groundwater Source Protection Zones 3 (SPZ3: total catchment zone).

The Site and study area are not within a Drinking Water Protected Area (surface water), a Drinking Water Safeguard Zone (surface water), or a Drinking Water Safeguard Zone (groundwater).

The Site and the majority of the study area are within a Water Framework Directive groundwater body known as Witham Limestone Unit A. This is categorised as having an overall ‘poor’ status.

The Site and study area are not within a location that is defined as being part of a groundwater dependent terrestrial ecosystem.

There are no active licences for water abstraction within the Site. There is one active licensed groundwater abstraction (for agricultural and domestic use) within the study area, located approximately 870m east of the Site.

The locations of any private water abstractions (licensed or unlicensed) have not been reviewed at this stage, but typically any private domestic water supplies would be assumed to have a 50m diameter groundwater SPZ.

Natural geological hazards

According to the environmental database search report, the hazard potential is low from geological hazards within one limited section of the Site, with most areas within the Site being assigned very low risk or no hazard categorisations. There is one location outside the Site, but within the study area, that is assigned a moderate hazard categorisation (relating to the potential for a landslide hazard). This is located approximately 100m to the north-east of Field 7.

Potentially contaminative land use

According to available historical mapping, the Site has been used for agricultural purposes, with some reported historical mineral extraction locations. RAF Cranwell and associated Ministry of Defence (MOD) housing and airfield are located within the study area, to the south of the Site, along with the village of Cranwell. There is a

sewage treatment works approximately 220m west of Field 8. Some waste from the pig farm area was observed stockpiled along the boundary of Field 5 during the Site walkover.

No licensed waste management facilities or landfill sites have been recorded within the Site. Off-site, there are a number of licences associated with the landfill operations at Brauncewell Quarry (approximately 200m north-east of Field 7 at the closest point), with expired licences for several phases of historical landfilling, and active licences associated with the transfer and treatment of inert and excavation waste.

No significant pollutions incidents have been recorded within Site or within the study area in the last 20 years.

6.5.6 Additional (secondary and tertiary) mitigation

The following additional mitigation measures would be expected to be committed to in order to ensure that the Proposed Development proceeds with minimal effects on land and groundwater receptors.

Construction

An Outline CEMP will include measures such as emergency response plans for accidental leaks/spillages of fuels or other potentially contaminative materials; management plans in case any unexpected contamination is encountered; measures to ensure safe use and storage of fuels/chemicals; adhering to good site housekeeping to prevent accidents/incidents relating to potential contaminants; silt management procedures to prevent uncontrolled release; and activities such as concrete mixing or wheel-washing being controlled to minimise potential for impacts on land or groundwater.

Operation (including maintenance) and decommissioning

Measures will be detailed in the Outline OEMP and the Outline DEMP that relate to the activities that will be involved in these phases, to minimise effects on land and groundwater receptors (similar to the specific examples provided above for the construction phase).

6.5.7 Description of likely significant effects

Construction

There is the potential for likely significant effects on groundwater receptors during the construction phase, specifically the principal aquifer that is present within the limestone bedrock (which is classified as a total catchment groundwater source protection zone). There is the potential for the quality or quantity of groundwater to be adversely affected by the Proposed Development by activities during construction such as accidental release of fuels/chemicals, earthworks or foundation excavations and changing existing drainage regimes. The aquifer is defined as being of high or very high importance, which means that a full assessment is considered to be appropriate to fully quantify the potential effects.

Operation (including maintenance)

There are not expected to be any likely significant effects on land or groundwater receptors during the operation (including maintenance) phase, due to the fact that operation (including maintenance) activities will predominantly comprise visual inspections, replacement of consumables, cleaning or repair of Solar PV modules, water management or habitat management, so will not directly disturb the land or groundwater receptors.

Decommissioning

Potentially significant effects on groundwater receptors may occur during decommissioning, particularly in relation to the principal aquifer within the limestone bedrock. Potential impacts include the accidental release of fuels or other hazardous substances during the removal of infrastructure and any associated excavation works.

6.5.8 Receptors/matters to be scoped into further assessment

Receptor/matter	Phase	Justification
Principal aquifer within limestone bedrock	Construction and decommissioning	The aquifer is of either high or very high importance, therefore construction and decommissioning activities have the potential to directly impact the groundwater quality or quantity, with the potential for significant effects to occur (for example a deterioration in the chemical quality of groundwater, or changes to the groundwater flow regime).
Recorded groundwater abstraction locations for human consumption	Construction and decommissioning	Based on information provided by the landowner, there are no active private groundwater abstractions within the Site. Based on the information provided in the environmental database search report (as presented in **Appendix J**), there are no licensed groundwater abstractions within the Site. The closest licensed groundwater abstraction within the study area is approximately 870m to the east of the Site. This is considered to be at a sufficient distance from the Site to not

		require further assessment based on ground conditions. However, as the dataset is not yet available for unlicensed private recorded groundwater abstractions, it is possible that such features are present within the study area. If there are unlicensed private recorded groundwater abstractions (used for human consumption) present within the study area but outside the Site, the distance from the Site will be considered in order to determine whether the receptor should be scoped into further assessment or could be reasonably scoped out at a later date in agreement with the appropriate authority. If scoped in, the assessment would consider the potential for impacts on the quality and quantity of groundwater present at the abstraction locations during the construction and decommissioning phases.

6.5.9 Receptors/matters to be scoped out of further assessment

Receptor/matter	Phase	Justification
Designated geological sites: SSSIs	Construction, operation (including maintenance) and decommissioning	There are no geologically-designated SSSIs within the Site or study area; therefore, this receptor is proposed to be scoped out for all phases, as the absence of any such sensitive sites precludes them from being impacted.
Designated geological sites: Local Geological sites	Construction, operation (including maintenance) and decommissioning	There are no designated Local Geological Sites within the Site. There is one Local Geological site within the study area, approximately 200m to the north-east of Field 7

		(Brauncewell Quarry). This receptor is proposed to be scoped out for all phases, as any works within the Site will not directly affect off-site geological features, and therefore there is not considered to be a potential for significant effects to occur upon this off-site receptor.
Mineral extraction areas	Construction, operation (including maintenance) and decommissioning	There are no active mineral extraction sites within the Site or study area; therefore, the absence of such sites precludes any impacts from the Proposed Development upon these receptors during all phases.
Mineral safeguarding areas	Construction, operation (including maintenance) and decommissioning	There is a mineral safeguarding area for limestone that is located within the Site and study area. Although foundations and excavations would penetrate the upper part of the limestone bedrock, the mineral resource is regionally extensive and the area affected by the intrusive works would be very small in comparison to the overall extent of the geological unit. Accordingly, any loss or displacement of the mineral resource would affect only a negligible proportion of its overall extent. Further to this, the minerals will be available for extraction after the decommissioning phase and will not be permanently sterilised, so significant effects are not predicted. A Mineral Safeguarding Assessment will be prepared as part of the Planning Statement to consider the potential for the Proposed Development to prejudice or detrimentally

		impact upon the operation of the safeguarded sites. Given the 'temporary' nature of the Proposed Development, it is not considered that the resource will be adversely affected by the Proposed Development.
Principal aquifer within limestone bedrock	Operation (including maintenance)	This receptor will be scoped into further assessment for the construction and decommissioning phases (see **Section 6.5.8** above), but likely significant effects are not anticipated during the operation (including maintenance) phase as the activities involved are less likely to result in adverse impacts (i.e. no excavation or piling works, no earthworks).
Recorded groundwater abstraction locations for human consumption	Operation (including maintenance)	This receptor will be scoped into further assessment for the construction and decommissioning phases (see **Section 6.5.8** above), but significant effects during operation (including maintenance) are considered unlikely due to the nature of activities involved.
Other groundwater receptors (source protection zones and Water Framework Directive groundwater bodies)	Construction, operation (including maintenance) and decommissioning	These elements relating to groundwater importance are of lower sensitivity than the principal aquifer or the groundwater abstraction locations and are not considered likely to be significantly affected by the Proposed Development during any of the phases, due to a combination of the lower receptor importance and the ability to avoid impacts by use of highly effective mitigation with respect to protection of groundwater.

		The groundwater is defined as being part of an SPZ3 (total catchment zone), which is classified as being of medium importance. The WFD groundwater body is categorised as having an overall 'poor' status and a WFD Waterbodies Stage 1 Screening Assessment will be submitted to the Environment Agency and will be submitted in support of the DCO application.
Other groundwater receptors (drinking water protection areas, drinking water safeguarding zones and groundwater dependent terrestrial ecosystems)	Construction, operation (including maintenance) and decommissioning	These elements relating to groundwater receptors are not present within the Site and study area; therefore, the absence of such features rules out any impacts from the Proposed Development during all phases.
Natural geological hazards and potentially contaminative land uses	Construction, operation (including maintenance) and decommissioning	Although 'natural geological hazards' and 'potentially contaminative land uses' are not receptors, there is a potential for these types of hazards to adversely impact on the construction, operation (including maintenance) and decommissioning of the Proposed Development; therefore, these issues are sometimes considered within an EIA alongside the land and groundwater receptors that are listed above. For the Proposed Development, the potential risks from natural geological hazards are considered to be low and do not require assessment within the ES (as confirmed by information presented within the site-specific environmental database search report, provided within **Appendix J**).

		Potential risks from contamination sources are also considered to be relatively low, given the historical use of the Site and land within the study area. The Preliminary Risk Assessment report prepared for the Site (see **Appendix J**) presents the baseline information that was used to undertake the geotechnical and contamination assessment relating to these potential hazards and provides further details. Therefore, although it is not proposed to further assess these issues as part of the ES, they have been/will be considered further within the environmental and geotechnical assessment for the Site (which will include the Preliminary Risk Assessment which has already been completed, and is provided in **Appendix J**, as well as a report on intrusive ground investigation works, both of which will be undertaken in accordance with Land Contamination Risk Management guidance (LCRM)). The report on the intrusive ground investigation will provide conclusions and recommendations relating to any contamination that may be identified on the Site, and any geotechnical constraints (including remediation or mitigation if necessary), and will provide geotechnical parameters for foundation designs. It should be noted that the potential for contamination sources introduced accidentally

		by the Proposed Development to impact the receptors scoped into further assessment (see **Section 6.5.8** above) will still be assessed, within the section of the ES relating to the identified groundwater receptors (proposed to be scoped in for the construction and decommissioning phases). However, the potential for impacts from existing contamination to affect the Proposed Development are fully considered by the Preliminary Risk Assessment (presented in **Appendix J**) and by subsequent intrusive ground investigation, and any contamination that is identified will be remediated (if necessary, in agreement with the appropriate authorities) prior to any construction works commencing (which will be secured by a requirement to the DCO).
Unexploded ordnance (UXO)	Construction, operation (including maintenance) and decommissioning	As considered for natural geological hazards and potentially contaminative land uses above, UXO is not a receptor, but could pose a hazard to the construction, operation (including maintenance) and decommissioning of the Proposed Development. The Preliminary Risk Assessment for the Site (see **Appendix J**) has identified that the Site and study area are at low risk from wartime bombs. It is understood that RAF Cranwell was not operational during the Second World War, so would not have been expected to have been targeted. As such, detailed

		UXO risk assessment work is not considered to be necessary, and assessment of this matter is not considered to be required as part of the EIA.

6.5.10 Opportunities for enhancing the environment

No opportunities for environmental enhancement have been identified in respect of land and groundwater at this stage.

6.5.11 Proposed assessment methodology

The following documents are relevant to the methodology used for the land and groundwater assessment:

- Design Manual for Roads and Bridges (DMRB) LA 109: Geology and Soils;
- DMRB LA 113: Road Drainage and the Water Environment; and
- DMRB LA 104: Environmental Assessment and Monitoring.

A desk-based Preliminary Risk Assessment report has been prepared in support of the EIA, and this assesses the potential risks on the existing land and groundwater baseline, including issues relating to natural geological hazards and contamination. The Preliminary Risk Assessment report conclusions, along with results of subsequent ground investigations, determine necessary mitigation measures to ensure that the construction, operation (including maintenance) and decommissioning phases of the Proposed Development do not result in significant effects on the receiving land and groundwater environment.

The significance of potential effects is assigned based on a set of criteria from the DMRB standards referenced above, as provided in **Appendix D**.

The methodology used for this assessment classifies a significance of effect of moderate, large or very large to be a significant effect, with a significance of effect of neutral or low classified as not significant.

6.5.12 Difficulties and uncertainties

The following difficulties and uncertainties relating to the land and groundwater have been identified at this stage:

- Data on site history have been obtained from historical maps and there may be developments that occurred between map editions that are not evident. However, this is considered to be unlikely to result in significant concerns for this Site, given the relatively short time gaps between map editions, and the fact that on-site features remained predominantly unchanged between editions; and
- No intrusive site survey data was available at this stage of the EIA process, but this will be available as the works associated with the Proposed Development progress, and the absence of the information at this stage is not uncommon and will not affect the ability to undertake the assessment.

6.5.13 References

British Geological Survey (BGS). (2020). *BGS GeoIndex*. Online. Available at: https://mapapps2.bgs.ac.uk/geoindex/home.html?_ga=2.45729700.1829595907.1744018249-765859744.1744018249

Design Manual for Roads and Bridges (DMRB). (2019). *LA 109: Geology and Soils, Revision 0*. Online. Available at: https://www.standardsforhighways.co.uk/tses/attachments/by-attachment-id/322131ba-f801-43d0-8597-472e60c53128?inline=true

Design Manual for Roads and Bridges (DMRB). (2020). *LA 104: Environmental Assessment and Monitoring, Revision 1*. Online. Available at: https://www.standardsforhighways.co.uk/tses/attachments/by-attachment-id/c326ef05-0bda-4e02-9903-de8d02640cea?inline=true

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Environment Agency. (2025). *Land Contamination Risk Management guidance.* Online. Available at: https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm

Lincolnshire County Council. (2016). *Lincolnshire Minerals and Waste Local Plan*. Online. Available at: https://www.lincolnshire.gov.uk/directory-record/61697/minerals-and-waste-local-plan-core-strategy-and-development-management-policies

Natural England. (2026). *MAGIC: Multi-Agency Geographic Information for the Countryside*. Online. Available at: https://magic.defra.gov.uk

6.6 Landscape and visual

6.6.1 Consultation

An email was sent (on 20 August 2026) to lead planning officers and development managers at Lincolnshire County Council and North Kesteven District Council to identify who will be able to respond to queries on landscape and visual matters and request their input on key receptors and viewpoints to include in the landscape and visual impact assessment (LVIA).

A response from the Built Heritage Officer from Lincolnshire County Council was received on 24 August 2026, identifying the following initial heritage considerations:

- Whether the proposed study area is sufficiently broad and flexible to capture relevant setting effects;
- Cumulative effects with Springwell Solar Farm/other large schemes in the area;
- The group value of historic farmsteads, including relationships between listed and non-designated buildings; and
- A proportionate review of other listed and designated assets across the scoping area, including those around RAF Cranwell.

The first two of these points are most relevant to landscape and visual amenity.

A subsequent email was received on 1 September 2026 from Lincolnshire County Council's landscape consultants to confirm they support the points of the Built Heritage Officer (see above) and requesting proposed viewpoint locations, zone of theoretical visibility (ZTV) mapping, study area, cumulative developments and proposed Order Limits, if possible, to provide a proportionate initial response ahead of the formal EIA scoping response.

A further email was received on 29 September 2026 from North Kesteven District Council which requested that visibility of the Site be reviewed to the south of the Grade II* RAF college hall officers mess at RAF Cranwell. In particular, it was noted that visibility of the Site and the RAF college hall officers mess be reviewed from the area around:

- Byards Leap/B6403, A17/Viking Way (Ermine St); and
- Fulbeck Heath PRoW Fulb/13/1, Maiden House/Hurlingham Business Park.

Following submission of the EIA Scoping Report, discussions will continue with the relevant council officers and advisors to seek agreement on the study area and assessment approach to the LVIA, residential visual amenity, cumulative and night-time assessment, representative viewpoints and type of visualisation to be included in support of the DCO application.

6.6.2 Study area

Best practice guidance for the assessment of landscape and visual effects is established in the Guidelines for Landscape and Visual Impact Assessment (GLVIA3), which states:

'Scoping should … identify the area of landscape that needs to be covered in assessing landscape effects. This should be agreed with the competent authority, but it should also be recognised that it may change as the work progresses, for example as a result of fieldwork, or changes to the proposal. 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.'

and:

'Scoping should identify the area that needs to be covered in assessing visual effect, the range of people who may be affected by these effects and the related viewpoints in the study area that will need to be examined. The study area should be agreed with the competent authority at the outset and should consider the area from which the proposed development will potentially be visible. The emphasis must be on a reasonable approach which is proportional to the scale and nature of the proposed development.'

To assist in the determination of an appropriate and proportionate study area for the LVIA, a series of preliminary ZTV plans have been prepared and these are presented in the following figures in **Appendix K**.

- **Figure 1:** Bare earth ZTV of the maximum extents of the solar array (3.5m high panels);
- **Figure 2:** Screening ZTV of the maximum extents of the solar array (3.5m high panels);
- **Figure 3:** Bare earth ZTV of the substation infrastructure and BESS, illustrating the tallest likely structure at 12m in height, together with solar array (3.5m high panels); and
- **Figure 4:** Screening ZTV of the substation infrastructure and BESS, illustrating the tallest likely structure at 12m in height, together with solar array (3.5m high panels).

The ZTVs illustrate the 'worst case' scenario of visibility for the various structures of the Proposed Development, based on the maximum parameters set out in **Chapter 2**. The purpose of the ZTVs at this scoping stage is to identify the maximum possible extents of visibility and to help identify potential visual receptors.

It should be noted that the ZTVs in **Appendix K, Figures 2 and 4** take account of the screening effect of notable blocks of woodland and buildings, but do not take account of walls, hedgerows, tree lines, or smaller tree groups. As is typical for all such ZTVs, the visibility shown on the plans is exaggerated and the actual extent of visibility of any development on the Site would be considerably more constrained than is indicated on these preliminary ZTVs.

In the case of the solar array ZTV (**Appendix K, Figures 1-2**), the visibility is based on extent of the solar arrays as shown on the zonal masterplan in **Appendix B**.

In the case of the ZTVs for the Substation compound and the BESS (**Appendix K, Figures 3-4**), the ZTV assumes that the full extent of the potential zone identified for these structures is filled with them. In reality, the Substation and BESS would occupy only a fraction of the land area modelled and therefore visibility would be considerably less than implied by these ZTVs.

Based on analysis of the ZTVs (**Appendix K, Figures 1-4**) and field work undertaken to date, it is considered unlikely that there would be any view of the solar array, Substation or BESS beyond 3km of the Site boundary. In most locations, visibility would in reality be restricted to much closer than this. It is therefore proposed that the LVIA will use a 3km study area offset from the boundaries of the Site, which is more than adequate and proportionate for the consideration of landscape and visual amenity and identifying all non-negligible effects arising as a result of the Proposed Development.

6.6.3 Data sources to inform the EIA baseline characterisation

The assessment will draw upon information in the following published landscape character assessments:

- National Character Area (NCA) Profile 47 - Southern Lincolnshire Edge (Natural England, 2014);
- North Kesteven Landscape Character Assessment (David Tyldesley and Associates, 2007); and
- South Kesteven Landscape Character Assessment (FPCR, 2007).

The LVIA will also consider the following sources of baseline information as appropriate:

- Lincolnshire County Council Definitive Map (accessed online);
- North Kesteven Stepping Out Walks (accessed online); and
- Green Infrastructure Study for Central Lincolnshire (Chris Blandford Associates, 2011).

Recreational walks and trails in North Kesteven including the Spires and Steeples Trail, the Ridges and Furrows Trail and a series of circular 'Stepping Out Walks' are promoted locally. The published description of these walks will be reviewed as appropriate and can be viewed at the following:

https://www.hillholtwood.co.uk/stepping-out-walks

6.6.4 Surveys to inform the EIA baseline characterisation

Several visits to the Site and the surrounding landscape have already been undertaken to inform this EIA Scoping Report. Footpaths through and around the Site have been walked and local roads driven to understand the local landscape and how this is reflected in existing landscape character assessments. These site visits have provided an understanding of the landscape features, landscape condition, landscape pattern, landscape perceptions, visual characteristics, key views and visual receptors.

Further site visits will be undertaken throughout the assessment process including during winter 2026/2027 to understand the changing landscape and photograph baseline views that would represent a worst-case scenario, from a range of locations (representative viewpoints) within and surrounding the Site. These will represent the range of views of visual receptors across the study area. Agreement on the location of the viewpoints will be sought through further consultation with the Lincolnshire County Council and North Kesteven District Council.

The requirement for Residential Visual Amenity Assessment will be determined as the Proposed Development progresses through design refinement. Agreement on the approach will be sought with Lincolnshire County Council and North Kesteven District Council. It is anticipated that visits will be made to selected residential properties within 200m of the Site to assess the potential for visual effects on residential amenity.

6.6.5 Baseline conditions

The Site is located on relatively flat landform with gentle undulations that occasionally rise to form localised ridgelines with open views over open fields. Vegetation cover is varied across the study area. Fields are defined by a mix of hedgerows and low stone walls with grass banks. Small blocks of woodland encompass the nearby Cranwell village, whilst others are dispersed across the surrounding farmland; mature trees often provide shelterbelts and edges to settlements. The gentle landform combined with vegetation structure would limit the distance over which any new structures would be visible.

Landscape designations

No part of the Site or its immediately surrounding context falls within a statutorily designated landscape. The nearest National Landscape or National Park to the Site is the Lincolnshire Wolds National Landscape, which is located more than 30km to the north-east and would not be affected by the Proposed Development.

There are no Registered Parks and Gardens within 3km of any part of the Site; the nearest (Rauceby Hall) is located just over 3.5km to the south and is publicly accessible. There would be no intervisibility with the Proposed Development at this distance due to surrounding vegetation, land uses and landform.

There are no local landscape designations covering any part of the Site. The nearest local designation is the Lincolnshire Cliff Area of Great Landscape Value (AGLV); an escarpment west of and parallel to the A607 between Grantham and Lincoln. This AGLV is located approximately 3.2km to the west of the Site. Promoted viewpoints along the cliff are for views to the west (not east towards the Site). The ZTVs indicate that there would be no visibility of the Site from the AGLV, and this has been confirmed through site work.

Landscape character

The Site comprises open farmland, predominantly in arable use. It is located on a gently undulating dip slope to the east of the Lincoln Cliff, which falls gradually eastwards from the A607 between Grantham and Lincoln towards the Lincolnshire Fens. National Character Area Profile 47 (NCA 47) defines this as the Southern Lincolnshire Edge. NCA 47 is an expansive character area, spanning an elevated, open plateau landscape between Grantham and Lincoln. The NCA profile provides a useful context for the broad area but provides limited detail for understanding the local landscape within the study area. The North Kesteven Landscape Character Assessment provides more detailed local descriptions, which is more appropriate for understanding the landscape baseline and reporting effects on landscape character. Within the North Kesteven Landscape Character Assessment, the boundaries of the

‘Central Plateau’ regional landscape character type (LCT) typically follow the boundaries of the NCA (excluding the Lincoln Cliff as a separate LCT).

The Central Plateau LCT is sub-divided into Landscape Character Sub-Areas (LCAs). The Site and majority of the study area is located within the Limestone Heath LCA (LCA 7). A small area in the south of the study area is located within the Rauceby Hills LCA (LCA 8). The southwest of the study area is in South Kesteven and falls into the Southern Lincolnshire Edge LCA, as classified in the South Kesteven Landscape Character Assessment.

Appendix K, Figure 5 illustrates the boundaries of LCAs within the Site and study area, taken from the North Kesteven Landscape Character Assessment and South Kesteven Landscape Character Assessment.

The Central Plateau has a history of use for airfields and RAF airbases (notably RAF Cranwell to the south of the Site and RAF Digby approximately 5.2km north-east). Modern large-scale arable farmland now sits alongside an older, sparse settlement pattern of small-scale hamlets and isolated farmsteads.

Initial field work has identified that the descriptions of the Limestone Heath LCA 7 within the North Kesteven Landscape Character Assessment and Southern Lincolnshire Edge LCA within the South Kesteven Landscape Character Assessment are largely reflective of the landscape character of the Site and much of the study area. Notable local landscape features include the dry valley within the north of the Site and scattered plantation woodland including that which partly encompasses the Site and Cranwell barracks. There is an existing solar farm approximately 2.5km south of the Site near North Rauceby.

It is proposed to further analyse the landscape context of the Site as part of the LVIA.

Visual receptors

A review of the Lincolnshire County Council Definitive Map shows that there are several PRoW within the study area, including Brau 2/1 along the southern Site boundary and through the Site and Cran 1/1 (Green Lane) along the eastern Site boundary. Other PRoW connect with the local roads that form the northern Site boundary and form part of locally promoted routes, as described below.

The Ridges and Furrows Trail (a regionally promoted recreation walk) passes adjacent to a short section of the northern Site boundary before turning east and then south to follow the eastern Site boundary towards Cranwell. A series of locally promoted ‘Stepping Out’ walks are located to the north and south of the study area, passing adjacent to a section of the northern Site boundary to the west of Brauncewell. In addition, the Viking Way is a long walking route that passes to within 500m of the Site to the west.

PRoW are distributed throughout the study area but with a somewhat greater concentration and proximity to the north and east of the Site, whilst views from the south and west are more limited. Recreational users of PRoW would be some of the most sensitive visual receptors of any change in the landscape.

The north-eastern fields of the Site are partially visible from the A15 trunk road and the southernmost fields from the B1429 (Cranwell Avenue) which runs between the A15 and A17 through Cranwell. Views from other minor roads and country lanes are

limited to the north of the study area, including from Long Lane which passes adjacent to the northern Site boundary.

Cranwell village, residential quarters within the barracks at RAF Cranwell and the hamlet at Brauncewell all lie just beyond the Site boundary. Depending on the final design and layout of the Proposed Development, there is the potential for there to be views of the Proposed Development from the fringes of these settlements. However, there is also potential through sensitive design and landscape mitigation to minimise the view from properties and community infrastructure within these villages.

The settlement of Leasingham lies just within the study area, but outside the ZTV and has no views of the Proposed Development.

Elsewhere there are isolated residential properties and farmsteads which will be considered, as necessary, in the LVIA.

There are three recreational receptors (shown in **Appendix K, Figure 6**) from which the Proposed Development may be visible; namely Bloxholme Woods Nature Reserve Walk, Knights Templar Preceptory Tower and Cranwell Aviation Museum.

There are no promoted/recognised viewpoints within the study area.

6.6.6 Additional (secondary and tertiary) mitigation

Construction

No additional mitigation is envisaged during this phase. There is limited potential for additional mitigation for short term landscape and visual effects of construction activities and equipment.

Operation (including maintenance)

An Outline LEMP will be developed in consultation with Lincolnshire County Council and North Kesteven District Council to secure the long-term management of the landscape and biodiversity strategy.

Decommissioning

Decommissioning of the Proposed Development will be undertaken in accordance with the principles established in the Outline LEMP.

6.6.7 Description of likely significant effects

At this stage, prior to any formal assessment and in the absence of fixed development proposals, it is acknowledged that there is the potential for significant landscape and visual effects to arise during the construction, operation (including maintenance) and decommissioning phases of the Proposed Development. Further assessment based on firm development proposals and taking account of mitigation may result in a finding of limited or no significant effects.

The LVIA will consider the potential effects upon:

- landscape fabric;
- landscape character; and
- visual receptors including residential, transport and recreational receptors.

The ZTVs presented in **Appendix K, Figures 1-4** illustrate theoretical visibility out to 3km (for the Solar PV modules, Substation and BESS). Based on Site analysis to date and previous experience of assessing the significance of landscape and visual effects for solar farms in similar landscapes, it is considered likely that any significant landscape and visual effects arising from the Solar development and BESS would be limited to within a distance of approximately 1km. Significant effects associated with the Substation may extend up to approximately 3km.

6.6.8 Receptors/matters to be scoped into further assessment

Receptor/matter	Phase	Justification
LCA 7: Limestone Heath (North Kesteven Landscape Character Assessment)	Construction, operation (including maintenance) and decommissioning	The Site is located within this LCA (which is a sub-division of the Central Plateau LCT) and there is likely to be a direct, large scale of change to characteristics of the landscape within part of this LCA.
Southern Lincolnshire Edge LCA (South Kesteven Landscape Character Assessment)	Construction, operation (including maintenance) and decommissioning	The western edge of the Site is within 500m of this LCA. The LCA is in the adjoining South Kesteven authority area but displays similar characteristics to those within LCA 7 (North Kesteven Landscape Character Assessment). As such, there is likely to be a large scale of change to characteristics of the landscape within part of this LCA.
Users of the A15 and B1429	Construction, operation (including maintenance) and decommissioning	A large volume of traffic passes along the A15 whilst the B1429 provides more local access for traffic. Receptors are generally not of high sensitivity but the views available are likely to be experienced by large numbers of people from these two roads.
Users of the PRoWs and local road network which passes through and within 3km of the Site (including the Ridges and Furrows Arts and Heritage Trail,	Construction, operation (including maintenance) and decommissioning	Users of the PRoWs and local road network generally have a high sensitivity. These receptors may have both direct and indirect views of the Proposed Development.

Viking Way, the Stepping Out walks and Bloxholme Woods Nature Reserve Walk)		
Residents and visitors to the villages/hamlets of Cranwell and Brauncewell	Construction, operation (including maintenance) and decommissioning	Depending on the final layout and design of the Proposed Development, there may be views of the Proposed Development from these settlements, although it is intended to minimise visual intrusion for these receptor groups as far as possible.
Residents of the barracks at RAF Cranwell	Construction, operation (including maintenance) and decommissioning	Depending on the final layout and design of the Proposed Development, there may be views of the Proposed Development from the residential quarters of the barracks. It is intended to minimise visual intrusion for this receptor group as far as possible.
Isolated Farmsteads and Residential Properties within 1km of the Site	Construction, operation (including maintenance) and decommissioning	Higher sensitivity receptors – consideration will be required of residential visual amenity. It is intended to minimise visual intrusion for this receptor group as far as possible.
Knights Templar Preceptory Tower	Construction, operation (including maintenance) and decommissioning	The ZTVs (**Appendix K**) indicate some limited visibility from this recreational receptor – consideration will be required of the visual amenity of visitors. It is intended to minimise visual intrusion for this receptor group as far as possible.
Nighttime effects	Construction, operation (including maintenance) and decommissioning	Directional lighting will form part of the Proposed Development. As such, assessment of night-time effects during construction, operation (including maintenance) and decommissioning will be considered in the LVIA where likely significant adverse effects may arise.

6.6.9 Receptors/matters to be scoped out of further assessment		
Receptor/matter	**Phase**	**Justification**
NCA 47: Southern Lincolnshire Edge	Construction, operation (including maintenance) and decommissioning	The NCA covers a broad area between Grantham and Lincoln, and key characteristics are relevant at a much broader scale than that of the Site. Fieldwork has identified that there are notable differences in the landscape character within the study area. As such, a finer grain understanding and assessment will provide a more proportionate approach. The North Kesteven and South Kesteven LCAs provide more detailed, localised descriptions of the landscape character and features within the study area, of a more proportionate scale to the Site and Proposed Development.
Central Plateau LCT (North Kesteven Landscape Character Assessment)	Construction, operation (including maintenance) and decommissioning	There is no detailed description for the Central Plateau LCT which is sub-divided into two LCAs within the study area. These two LCAs (LCA 7: Limestone Heath and Southern Lincolnshire Edge LCA) provide a detailed description of the landscape character across the Central Plateau LCT and have been scoped into further assessment (see **Section 6.6.8** above); the Central Plateau LCT has therefore been scoped out of further assessment as it does not contain the requisite detail for assessment.
Lincolnshire Wolds National Landscape	Construction, operation (including maintenance) and decommissioning	The National Landscape is over 30km from the Site. There would be no intervisibility with the Proposed Development at this distance and no significant effects on the features of the National Landscape.
Lincoln Cliff AGLV	Construction, operation (including maintenance) and decommissioning	The AGLV is a west facing scarp slope, orientated north-south and located over 3km to the west of the Site, with promoted views facing west away from the Site. Fieldwork has confirmed that there would be no intervisibility with the Proposed Development and no significant effects on the key features of the AGLV,

		including the promoted views focussing west.
Rauceby Hall, Registered Park and Garden	Construction, operation (including maintenance) and decommissioning	The publicly accessible Registered Park and Garden is located over 3.5km to the south of the Site. There would be no intervisibility with the Proposed Development at this distance due to surrounding vegetation, land uses and landform.
LCA 8: Rauceby Hills (North Kesteven Landscape Character Assessment)	Construction, operation (including maintenance) and decommissioning	The ZTVs indicate some distant visibility from LCA 8: Rauceby Hills approximately 2.5km to the south of the Site. However, fieldwork has established that there would be limited intervisibility between the Site and LCA 8 due to intervening vegetation and landform, which would limit effects on landscape character.
Villages/hamlets of Leasingham, Byard's Leap, North Rauceby and Temple Bruer (including Temple Farm)	Construction, operation (including maintenance) and decommissioning	Even though the ZTVs (**Appendix K**) indicate some distant visibility from the edges of these settlements, once intervening hedgerows and other vegetation is taken into account, it is highly unlikely there would be any views of the Proposed Development from these settlements. Any glimpses would be distant, filtered and negligible.
PRoW and local roads beyond 3km from the Site	Construction, operation (including maintenance) and decommissioning	It is unlikely that there would be any view of the Proposed Development at this distance. Any glimpses of the Site beyond this distance are not likely to result in effects which would reach the threshold of a significant effect.
Isolated residential properties over 1km from the Site	Construction, operation (including maintenance) and decommissioning	Whilst there may be glimpses from individual properties beyond 1km of the Site, this will be a matter of private visual amenity and under no circumstances would this give rise to an overbearing effect on residential amenity.
Users of the A17 approaching Sleaford to the south of Cranwell	Construction, operation (including	Medium/Low sensitivity receptors may have very limited and intermittent views of activity during construction, operation (including maintenance) and

and the B1191 to the east of the A15	maintenance) and decommissioning	decommissioning. Any glimpses would be distant, filtered and negligible.
Cranwell Aviation Museum	Construction, operation (including maintenance) and decommissioning	Even though the ZTVs (**Appendix K**) indicate some distant visibility from this recreational receptor, once distance, intervening hedgerows and other vegetation is taken into account, it is highly unlikely there would be any views of the Proposed Development. Any glimpses would be distant, filtered and negligible.

6.6.10 Opportunities for enhancing the environment

Opportunities for landscape enhancement are possible due to existing features including woodland, hedgerow and grassland vegetation present on Site and in the surrounding landscape in the context of the intensively farmed landscape. No specific enhancement measures have yet been agreed.

An Outline LEMP will be developed in consultation with Lincolnshire County Council and North Kesteven District Council to outline how landscape and biodiversity enhancements will be achieved and secure the long-term management of the landscape and biodiversity within the Site.

The measures would focus on compensating for potential adverse effects on the landscape and visual amenity and to improve the landscape structure and features within and around the Site. This could include planting of new hedgerow and tree/woodland where appropriate, to provide screening and reinforce the existing hedgerow and tree network.

6.6.11 Proposed assessment methodology

The LVIA will be undertaken in accordance with published best practice guidance, namely the Landscape Institute and IEMA (now ISEP) Guidelines for Landscape and Visual Impact Assessment (Third Edition) (GLVIA3) and associated technical guidance notes published by the Landscape Institute, comprising:

- Notes and Clarifications on Aspects of Guidelines for Landscape and Visual Impact Assessment (Third Edition) (Landscape Institute, 2024);
- Technical Guidance Note 06/19: Visual Representation of Development Proposals (Landscape Institute, 2019);
- Technical Guidance Note 02/21: Assessing landscape value outside national designations (Landscape Institute, 2021);
- Technical Guidance Note 02/19: Residential Visual Amenity Assessment (Landscape Institute, 2019); and
- Technical Guidance Note 04/20: Infrastructure (Landscape Institute, 2020).

‘*Landscape and Visual Impact Assessment is a tool used to identify and assess the significance of and the effects of change resulting from development on both the*

landscape as an environmental resource in its own right and people's views and visual amenity.' (GLVIA3, paragraph 1.1).

Wherever possible, identified effects will be quantified, but the nature of landscape and visual assessment requires interpretation using professional judgement. In order to provide a level of consistency to the assessment, the prediction of magnitude and assessment of significance of the residual landscape and visual effects will be based on pre-defined criteria.

GLVIA3 states that '*professional judgement is a very important part of the LVIA' (paragraph 2.23) and that 'in all cases there is a need for the judgements that are made to be reasonable and based on clear and transparent methods so that the reasoning applied at different stages can be traced and examined by others*.' (paragraph 2.24). It goes on at paragraph 3.32 to state that '*there are no hard and fast rules about what effects should be deemed 'significant' but LVIAs should always distinguish clearly between what are considered to be the significant and non-significant effects*.'

The LVIA will define the existing landscape and visual baseline environment; assess its sensitivity to change; describe the key landscape and visual related aspects of the Proposed Development; describe the nature of the anticipated changes and assess the effects arising during construction, operation (including maintenance) and decommissioning.

Although linked, landscape and visual effects are considered separately. Landscape effects derive from changes in the landscape fabric, which may result in changes to the character, whereas visual effects are the effect of these changes as experienced by people (visual receptors).

The specific significance criteria to be used in the LVIA are set out in **Appendix D**.

All above ground primary and secondary elements of the Proposed Development will be considered in the LVIA as visible features which either individually or collectively have the potential to give rise to significant landscape and visual effects.

A selection of viewpoints, for which agreement will be sought with Lincolnshire County Council and North Kesteven District Council, will be used in the LVIA to represent views of different receptor groups, at various distances from the site and to illustrate any particularly sensitive views identified through scoping.

Annotated photographs will be provided for each of the assessment viewpoints used in the LVIA to illustrate the baseline views experienced at each location. The annotated photographs will accord with guidance for 'Type 1' visualisations as defined in Landscape Institute Technical Guidance Note 06/19 (Landscape Institute TGN 06/19).

A series of photowires and/or photomontages will be presented for key viewpoints (number and locations to be determined/agreed through further consultation). These will be produced using the same base photographs as the annotated photographs and accord with guidance for 'Type 3' or 'Type 4' visualisations as defined in Landscape Institute TGN 06/19.

Mitigation measures will be developed through the design process as appropriate and taken into consideration in the assessment of effects. Construction phase effects,

operation phase (including maintenance) effects for Year 1 and Year 10[6] and decommissioning phase effects will be assessed.

The LVIA will conclude by summarising which if any effects are considered to be 'significant'.

As set out within Landscape Institute Technical Guidance Note 02//19 'Residential Visual Amenity Assessment':

'Changes in views and visual amenity are considered in the planning process. In respect of private views and visual amenity, it is widely known that no one has 'a right to a view.' and:

'*It is not uncommon for significant adverse effects on views and visual amenity to be experienced by people at their place of residence as a result of introducing a new development into the landscape. In itself this does not necessarily cause particular planning concern. However, there are situations where the effect on the outlook/visual amenity of a residential property is so great that it is not generally considered to be in the public interest to permit such conditions to occur where they did not exist before*.'

If appropriate, the LVIA will present, as an appendix to the ES, a residential amenity assessment of visual effects on residential properties for any property where there is a possibility that the visual effects may approach the threshold described above.

Cumulative landscape and visual effects will be assessed as appropriate in the ES. Other projects to be considered in the cumulative LVIA will be identified through stakeholder consultation.

The LVIA will consider relevant planning policy contained within:

- Central Lincolnshire Local Plan (adopted, 2023);
- Leasingham and Roxholm Neighbourhood Plan 2012 – 2040 (Made Version, 2023); and
- Welbourn Neighbourhood Development Plan 2015-203 (Made Version, 2015).

It is noted that Central Lincolnshire is in the process of developing an authority wide Design Code for Central Lincolnshire. The progress of this will be monitored and, if published during the assessment process, it will be considered within the LVIA.

6.6.12 Difficulties and uncertainties

To ensure transparency within the EIA process, the following difficulties and uncertainties have been identified at this stage:

- The need for residential visual amenity assessment during construction, operation (including maintenance) and decommissioning has not yet been determined. There are properties within 200m of the Site, on the western edge of Cranwell village, the northern edge of Cranwell barracks and north-east of the Site on Long Lane. As the detailed design is developed to include offset buffers for the Proposed Development, it will become clear if Residential Visual Amenity Assessment will be

[6] New planting will be established successfully by Year 10; it is assumed that any new trees would have a height of c.6m and new hedgerow would have a height of 3-3.5m after 10 years, which allows for a proportionate assessment of effects.

necessary. Agreement will be sought with Lincolnshire County Council and North Kesteven District Council.

- The need for lighting of the Proposed Development during construction, operation (including maintenance) and decommissioning has not yet been identified. This will be identified as the detailed design is developed. Where this is considered likely to result in significant adverse effects, assessment of night-time effects within the LVIA will be agreed with statutory consultees.

6.6.13 References

Central Lincolnshire Local Plan Team. (2023). *Central Lincolnshire Local Plan*. Online. Available at: https://www.n-kesteven.gov.uk/sites/default/files/2023-04/Local%20Plan%20for%20adoption%20Approved%20by%20Committee.pdf

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David Tyldesley and Associates. (2007). *North Kesteven Landscape Character Assessment*. Online. Available at: https://www.n-kesteven.gov.uk/sites/default/files/2023-01/north_kesteven_landscape_character_assessment_report.pdf

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https://landscapeinstitute.org/wp-content/uploads/2026/05/LITGN-2024-01-GLVIA3-NC_Aug-2024.pdf

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6.7 Noise and vibration

6.7.1 Consultation

No consultation regarding the noise and vibration assessment has been undertaken to date.

The Environmental Health department at Lincolnshire County Council will be consulted regarding the methodology detailed in this section. Consultation will be sought in order to seek agreement on the following primary items:

- Baseline noise survey locations and programme of monitoring;
- Guidance and standards pertinent to the assessment(s);
- Receptors for inclusion in the assessment(s); and
- The proposed acoustic criteria to determine significant effects.

6.7.2 Study area

The study area for the construction and decommissioning phase assessments (including associated traffic flows) will consider noise and vibration sensitive receptors that are located within 300m of the Site boundary/affected road network. This is based on daytime working hours and has been determined based on the guidance set out in British Standard (BS) 5228:2009+A1:2014 and other related documents, including Design Manual for Roads and Bridges (DMRB) 'LA 111 - Noise and Vibration'.

It is understood at this stage that no 'out of hours' working will be required. However, in the event of necessary 'out of hours' working, the study area for construction noise would be extended to 600m beyond the Site boundary.

For the assessment of the operation (including maintenance) phase noise levels, the study area extends out to the nearest or most exposed noise sensitive receptors to the proposed noise-emitting installations. This will be identified through analysis of noise model outputs and digital mapping.

The receptors selected for inclusion within the assessment will be presented graphically and agreed during consultation with Lincolnshire County Council and North Kesteven District Council, as appropriate.

6.7.3 Data sources to inform the EIA baseline characterisation

The following sources of information have informed the EIA baseline characterisation:

- Site boundary detailing the extent of land within which the Proposed Development will be constructed, operated and decommissioned;
- Ordnance Survey AddressBase Plus data and online aerial imagery and mapping for the study area surrounding the Proposed Development.
- Natural England Designated Sites database; and
- Department for Environment, Food and Rural Affairs (Defra) Round 4 strategic noise mapping.

Additional datasets which will be used to inform the assessment post-scoping include:

- Third-party noise assessments, where available and applicable;
- Traffic data for road links likely to be used by vehicles associated with the Proposed Development (as identified through the Transport and Access assessment); and
- Baseline noise surveys for the Proposed Development at locations representative of noise sensitive receptors, to establish the prevailing pre-development acoustic environment (as defined in **Section 6.7.4** below).

6.7.4 Surveys to inform the EIA baseline characterisation

A baseline noise survey is proposed to quantify and characterise the existing acoustic environment across the study area.

It is proposed that a baseline noise monitoring exercise will be undertaken in accordance with BS 7445-1:2003 'Description of environmental noise – Guide to quantities and procedures', using equipment that will conform to the Class 1 requirements of BS EN 61672-1:2013 'Electroacoustics. Sound level meters. Specifications' and BS EN IEC 60942:2018 'Electroacoustics, Sound calibrators'.

Monitoring will occur at the nearest noise sensitive receptors, or locations representative of the nearest noise sensitive receptors, to the Proposed Development. Noise measurements will be taken for a period of up to one week in each location, to quantify the existing acoustic environment and nature of the sound sources experienced by the surrounding receptors. Monitoring will be continuous throughout the daytime and night to establish baseline conditions during the potential operational times of the Proposed Development (up to 24 hours per day, seven days per week). Weather conditions will be monitored concurrently on-site for the duration of the survey. Baseline monitoring will be used to derive suitable assessment criteria for both the construction, operation (including maintenance) and decommissioning phases.

6.7.5 Baseline conditions

The baseline acoustic environment at receptors in the vicinity of the Site is likely to be characterised by sources such as wind-swept vegetation, birdsong, domestic noise sources, air traffic related to RAF Cranwell, and traffic from local roads (including the A15 and A17). The influence of these sources is expected to vary according to weather conditions and time of day. The operational Brauncewell Quarries is located approximately 200m to the north-east of the Site boundary, which may contribute to the baseline noise environment.

The area surrounding the Site includes Cranwell village and isolated residential properties. These receptors are considered to have the highest level of sensitivity to noise and vibration. Cranwell Primary School and RAF College Cranwell are also located within the defined study area which have the highest level of sensitivity during daytime hours.

There are PRoW including bridleways within the defined study area.

It is also noted that there is one Site of Special Scientific Interest (SSSI), High Dyke, within approximately 400m of the Site boundary.

6.7.6 Additional (secondary and tertiary) mitigation

Construction

In developing the control measures during the construction phase, best practicable means (BPM), as defined in Section 72 of the Control of Pollution Act 1974 and Section 79 of the Environmental Protection Act 1990, would be applied during all construction works to minimise noise and vibration at neighbouring residential properties and other sensitive receptors. In doing so, due consideration would be given to the recommendations contained within BS 5228:2009+A1:2014.

Measures to minimise levels of noise and vibration during the construction phase may include, but not be limited to:

- The use of lower emitting noise level plant items;
- Management of operations to more appropriate periods;
- Use of noise barriers/temporary enclosures;
- Sensitive routing of construction traffic, both within the Site and on the public highway;
- Preparation of a Noise and Vibration Management Plan, forming part of the Outline CEMP;
- Design of the construction compound layouts to reduce the need for reversing vehicles;
- Use of low-noise vehicle reversing systems; and
- Community liaison.

Best practice mitigation measures to be implemented will be detailed within and secured by the Outline CEMP.

Operation (including maintenance)

If deemed necessary following the outcome of the operational phase assessment, noise control measures will be introduced. When choosing attenuation measures or implementing an effective noise reduction programme, there are two possible approaches (or a combination of both approaches) for treatment:

- Mitigation at source – modify the source or adopt alternative plant/equipment to radiate a lower noise level; and
- Mitigation through transmission – increase separation distances to off-site receptors, deflect or block the acoustic path of noise via barriers or similar means.

This list of mitigation is not exhaustive, the specifics of which (and the extent) would be determined as part of the assessment when the location and type of noise-generating equipment is known. Best practice mitigation measures to be implemented will be detailed within and secured by the Outline OEMP.

Decommissioning

Measures outlined above as part of the construction phase would likely be applied during the decommissioning phase. Decommissioning phase mitigation measures will be detailed within and secured by the Outline DEMP.

6.7.7 Description of likely significant effects

Construction

Noise and vibration generated by equipment and activities associated with construction, including movements along the road network, have the potential to impact nearby sensitive receptors. This has the potential to result in temporary significant adverse effects.

Operation (including maintenance)

Noise arising from the operation of inverters; transformers; heating, ventilation, and air conditioning systems (HVAC); and other ancillary electrical infrastructure required for the Solar PV modules/Battery Energy Storage System (BESS)/Substation infrastructure have the potential to lead to significant noise effects at sensitive receptors surrounding the Site.

Noise impacts associated with each element will be assessed in detail (accounting for mitigation where necessary) to ensure the Proposed Development can operate within the appropriate and relevant noise limits.

Decommissioning

Noise and vibration levels associated with effects arising due to decommissioning related activities and traffic have the potential to impact nearby sensitive receptors, resulting in temporary significant adverse effects.

6.7.8 Receptors/matters to be scoped into further assessment

Receptor/matter	Phase	Justification
Noise	Construction and decommissioning	Noise due to construction plant and activities has the potential to impact sensitive receptors surrounding the Site.
Vibration	Construction and decommissioning	Vibration due to construction plant and activities has the potential to impact sensitive receptors surrounding the Site.
Road traffic noise	Construction and decommissioning	Increase in vehicle movements has the potential to impact sensitive receptors in the vicinity of the affected road network.
Noise	Operation (including maintenance)	Noise arising from the operation of the Proposed Development has the potential to impact sensitive receptors surrounding the Site.

6.7.9 Receptors/matters to be scoped out of further assessment		
Receptor/matter	**Phase**	**Justification**
Vibration	Operation (including maintenance)	Levels of vibration associated with the operation of the Proposed Development will be low and are highly unlikely to be perceptible over the distance ranges between the plant and the nearest sensitive receptors.
High Dyke SSSI	Construction, operation (including maintenance) and decommissioning	The SSSI is located approximately 400m west of the Site boundary and is designated for calcareous grassland and two plant species. This is a sufficient distance away from the Proposed Development that the protected characteristics of the SSSI should not be impacted during construction, operation (including maintenance) or decommissioning by noise or vibration.
Road traffic noise	Operation (including maintenance)	The increase in road traffic during operation is likely to be negligible, with infrequent vehicles only likely to be required for routine maintenance.
PRoWs - Footpaths	Construction, operation (including maintenance) and decommissioning	The transient use of PRoWs indicates that members of the public on the affected paths would be exposed to sound from the development for only a limited duration. As noise exposure would not exceed a threshold harmful to human health, significant effects would not occur.
PRoWs - Bridleways	Construction, operation (including maintenance) and decommissioning	While there is a risk to horses being startled by sudden loud noises during construction, decommissioning and operation (including maintenance), this would be mitigated through a commitment to follow best practice guidance from the British Horse Society for undertaking works near bridleways. This commitment is included within the Commitments Register in **Appendix F**.

6.7.10 Opportunities for enhancing the environment

No opportunities to enhance the environment from a noise and vibration perspective are envisaged at present.

6.7.11 Proposed assessment methodology

Significance criteria and receptor sensitivity categorisation for all phases of the Proposed Development is provided in **Appendix D**.

Construction assessment

The construction assessment will account for the following (primary) activities:

- Use of construction compounds;
- Groundworks – clearance works, general earthworks, access tracks, site establishment;
- Cable installation works, including trenchless techniques where applicable;
- Installation of infrastructure including Solar PV modules, BESS and Substation; and
- Vehicle/HGV movements.

The noise contribution of the different construction activities will be assessed in line with the guidance in BS 5228-1:2009+A1:2014. Where there is potential for significant adverse effects as a result of construction-induced noise, recommendations for noise control measures will be identified.

The effect of construction traffic on the existing road network will be calculated using the methodology set out in the Calculation of Road Traffic Noise Memorandum (CRTN) and assessed in accordance with the requirements of DMRB LA 111, or appropriate alternative for low-flow roads. The assessment will determine the level of noise increase in the short term, due to the inclusion of construction traffic on the existing network.

Activities with the potential to generate perceptible levels of vibration at sensitive receptors include, but are not limited to, piling and compaction. Where these activities are likely to occur, predictions of possible vibration levels will be made using guidance and empirical formulae contained within BS 5228-2:2009+A1:2014. Predicted vibration levels will be assessed against appropriate criteria within BS 5228-2:2009+A1:2014. Where there is potential for significant adverse effects as a result of construction induced vibration, control measures will be identified.

Operational assessment

An operational phase assessment of the noise emitting infrastructure associated with the Site will be undertaken to the requirements of BS 4142:2014+A1:2019. This will account for the following (primary) noise generating elements:

- Inverters/transformers;
- Substation transformers; and
- BESS containers.

Noise predictions of the proposed infrastructure will be derived from computer noise modelling and will be compared with the measured prevailing background sound level (L_{A90}) at the nearest, or most exposed, receptors. Determination of the significance of effect will consider the magnitude of the predicted sound level relative to the background sound level, and the context in which the sound will occur.

The assessment will utilise information regarding the location, number, type and noise emission data for the proposed plant operating across the Site. Where the assessment identifies potential significant adverse effects, guidance on potential noise control methods for the fixed plant and machinery will be provided. This will enable the final design of the proposed installations to be developed, incorporating the required noise mitigation.

Where receptors may be exposed to noise from the Proposed Development and one or more third-party developments, a cumulative noise impact assessment will be carried out.

Decommissioning assessment

The impact of decommissioning will follow the assessment outlined above as part of the construction phase. At this stage, it is assumed that activities would not be significantly different to those proposed during construction.

6.7.12 Difficulties and uncertainties

To ensure transparency within the EIA process, the following difficulties and uncertainties have been identified:

- The overview of baseline acoustic conditions is based on desk-based studies only at scoping stage;
- The construction assessment will assume the use of standard construction techniques appropriate for the type of works being undertaken. The final techniques, plant selection and programme are expected to be determined by the appointed contractor, in consultation with relevant authorities prior to commencement of construction; and
- Details of noise emitting plant/equipment associated with the Proposed Development have not been defined at this stage, in terms of both specification and location within the Site.

6.7.13 References

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UK Government. (1974). *Control of Pollution Act 1974.* Online. Available at: https://www.legislation.gov.uk/ukpga/1974/40/contents

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6.8 Population

6.8.1 Consultation

No consultation regarding the population assessment has been undertaken to date.

Consultation with the North Kesteven District Council and Lincolnshire County Council PRoW Officers will be undertaken to discuss and agree the approach to any PRoW diversions (if required) and details of any new PRoWs.

6.8.2 Study area

There is no statutory guidance when assessing potential impacts to population. However, Design Manual for Roads and Bridges (DMRB) 'LA 112 Population and Human Health' (hereafter referred to as DMRB LA 112) provides direction when assessing the impacts of a project in relation to population and human health. While it is recognised that DMRB is primarily used for assessing transport-related development, in the absence of other guidance, the LA 112 scoping methodology has been adapted and combined with professional judgement.

The potential effects on population in relation to the Proposed Development will be assessed at different spatial extents depending on the nature of the impact.

The consideration of potential impacts to the below matters is focused to the location where users are likely to experience impacts to the use or amenity of the receptor. The study area is therefore focused on land within the Site and a radius extending 500m:

- Private property and housing (i.e., the risk of demolition or impacts to access resulting from the use of land as a result of the Proposed Development);
- Community land and assets (i.e., the risk of land being required for the operation of and access to the Proposed Development and severance to community land or assets as a result of the Proposed Development);
- Businesses (i.e., the risk of loss of customer footfall or business revenue as a result of the Proposed Development); and
- Walkers, cyclists and horse riders (via impacts to PRoW).

The consideration of impacts to agricultural land holdings (i.e. the risk of land being taken out of agricultural use as a result of the Proposed Development) is focused on the land within the Site only.

The consideration of the agricultural economy (i.e., contribution to the loss of land available for agricultural purposes and the potential impact on the wider agricultural sector through loss of employment opportunities) will focus on effects within the North Kesteven administrative boundaries.

The consideration of employment (i.e., job creation through the Proposed Development and the potential loss of agricultural jobs) and associated gross value added (GVA) in relation to the Proposed Development will focus on the effects within the North Kesteven administrative boundaries.

Evidence from the Construction Industry Training Board (CITB) Workforce Mobility and Skills Survey indicates that construction workers commonly move between

projects within their region and that the East Midlands contains an established and accredited construction workforce. Therefore, it is anticipated that the majority of construction workers required during the construction phase would be drawn from within the East Midlands. On this basis, the East Midlands has been adopted as the regional socio-economic study area for the consideration of employment generation, expenditure and GVA effects.

The consideration of likely significant effects on tourism is focused on impacts to visitor's experience as a result of noise impacts, visual change and increased traffic. A 3km study area has been selected as it represents the largest study area for assessing noise, traffic and visual impacts. As detailed in **Section 6.6**, it is anticipated that there would be no more than negligible adverse visual effects from the Proposed Development on visual receptors beyond 3km of the Site.

The consideration of occupancy rates as a result of the increase in workforce staff during construction, operation (including maintenance) and decommissioning will be based on the availability of accommodation options within local settlements such as Cranwell and Sleaford.

6.8.3 Data sources to inform the EIA baseline characterisation

The data used to inform the assessment will be obtained from the following sources:

- Ordnance Survey (OS) mapping, Department for Environment, Food and Rural Affairs (Defra's) Magic maps to describe the baseline of the surrounding area in relation to population;
- North Kesteven District Council – Central Lincolnshire Local Plan 2023 and Policies Map, Economic Strategy 2024, Tourism strategy 2024-2029, Authority Monitoring Report: 2024 to 2025-Housing in North Kesteven, Getting out and about in nature, North Kesteven District Profile Summer 2025 and Visitor Attractions;
- Lincolnshire County Council's PRoW electronic map to identify PRoWs within the study area;
- Office for National Statistics (ONS) Census 2021 data, together with other relevant demographic and socio-economic datasets published between 2023 and 2025;
- NOMIS labour market profile data – a source of official Labour market and demographic statistics;
- The Visit England and Visit Lincolnshire websites to consider the presence of tourist assets within the study area and for data relating to the occupation of beds within accommodation providers in the study area;
- CITB data to inform consideration of potential temporary construction worker accommodation requirements and associated overnight stays;
- Long Distance Walkers Association website to obtain information on promoted recreational receptors within the study area;

- Hill Holt Wood[7] website to obtain information on local and non-designated recreational walking routes, and access to the countryside;
- National Trails website to identify designated long-distance recreational routes within and surrounding the study area; and
- Defra – Land use, Livestock and Agricultural workforce in England by Local Authority dataset to describe agricultural landholdings and agricultural economy baseline.

6.8.4 Surveys to inform the EIA baseline characterisation

No surveys have been undertaken to date and none are proposed to be undertaken to inform the assessment.

6.8.5 Baseline conditions

The term 'population' in this chapter relates to the impacts to the population primarily in relation to the socio-economic effects which may occur as a result of the construction, operation (including maintenance) and decommissioning of the Proposed Development.

Private property and housing

The are no properties or houses within the Site or the 500m study area that would require demolition in order to construct, operate or decommission the Proposed Development.

The Site is not located on land allocated for housing development in the Central Lincolnshire Local Plan. The study area intersects an area identified as Value Zone B for the purposes of affordable housing delivery. Under Policy S22: Affordable Housing, qualifying residential developments within Value Zone B are expected to provide 20% affordable housing, subject to relevant thresholds and viability considerations. As the Proposed Development does not include residential development, the affordable housing provisions are not considered applicable.

Community land and assets

The Site is located on land used for agricultural purposes only.

There is no community land located within the Site. Community land and assets typically comprise facilities to serve local residents, including education and healthcare, places of worship, and recreational facilities such as parks, sports facilities and open spaces.

The following community assets and recreational facilities are located within 500m of the Site:

- An area of public open green space containing a play area and sport facility is located approximately 90m from the Site;
- A further area of open green space is located approximately 300m south of the Site;

[7] An environmental social enterprise and registered charity that manages the Stepping Out walking network in partnership with North Kesteven District Council

- A children's play area and football pitch are situated approximately 370m east of the Site;
- Sultan Qaboos Pavilion Sports Club is located approximately 400m south of the Site;
- Cranwell Parish Social Club is located approximately 450m east of the Site; and
- Cranwell Village Hall, a community facility serving local residents, is located approximately 500m east of the Site.

These assets provide a range of recreational, sporting and community facilities that contribute to the health, wellbeing and social cohesion of the local population.

Community facilities and designated open space are mostly concentrated around the settlements of Sleaford, Leasingham and Ruskington within the North Kesteven District.

No common land is located within the Site or the 500m study area.

Agricultural land holdings

The Site supports a single agricultural land holding with one tenant pig farmer currently operating at the Site.

Agricultural economy

Food production and farming are identified as key economic sectors within the study area. North Kesteven covers approximately 356 square miles, of which around 90% is in agricultural use (North Kesteven District Council, 2024). The district contains approximately 516 agricultural holdings, extending across 78,574 hectares and employing 276 full-time and 134 part-time agricultural workers in North Kesteven (Defra, 2026). This reflects the predominantly rural character of the district and the importance of agriculture as both a land use and source of employment.

Businesses and development land

There are 4,800 businesses in North Kesteven as of 2024. 84.1% of them are micro (0 to 9 employees), 13% small (10 to 49 employees), 2.6% medium (50 to 249 employees) and 0.3% large (250+ employees) (ONS, 2023).

The study area supports a diverse range of businesses, varying from small independent enterprises to larger industrial and commercial operations. Businesses identified within the study area include graphic design services, jewellery retail, business administration services, self-catering and holiday accommodation, building materials supply, picture framing, and convenience retail.

The Site supports a tenant pig farming business; however, impacts to this business are addressed as part of the agricultural land holdings element and are not considered further within this section.

Beyond the tenant pig farming business, no other businesses or development land are located within the Site.

Two rental accommodation providers (identified via google maps) are located within the 500m study area:

- Dysons Blacksmith Cottage, a holiday rental apartment, is located approximately 50m north of the Site; and

- Stable Cottage, a self-catering holiday accommodation, is located approximately 480m northwest of the Site.

Walkers, cyclists and horse riders

There is one PRoW within the Site:

- LL|Brau|2/1 Bridleway – Begins at Lighter-than-Air Road, at the northern end of Restricted Byway LL|Cran|2/1, and continues northwards along the track known as Devil's Dip, running between Field 2 and Fields 3 and 4 within the Site, before connecting to Long Lane. The bridleway extends for approximately 1.2km.

The following PRoWs are within 500m of the Site:

- LL|Cran|2/1 Restricted Byway – Commences on Lighter-than-Air Road approximately 250m south of the Site and leads northwards for approximately 860m to join Bridleway LL|Brau|2/1;
- LL|Fulb|13/1 Bridleway – Commences within agricultural land approximately 440m west of the Site and leads generally north-south through agricultural fields, passing Hurlingham Business Park before terminating within agricultural land, a distance of approximately 1.8km;
- LL|Brau|1/2 and LL|Brau|1/1 Footpaths – Commence north of Long Lane adjacent to Dyson's Blacksmith Cottage, approximately 15m north of the Site, and lead northwards along an access track and through agricultural fields for approximately 1.63km, comprising LL|Brau|1/2 for approximately 80m and LL|Brau|1/1 for approximately 1.55km, before terminating south of Temple Road;
- LL|Brau|10/1 Footpath – Commences on Long Lane immediately north of and adjacent to the Site and leads eastwards across agricultural land for approximately 1.1km;
- LL|Brau|9/1 Footpath – Commences on Long Lane immediately north of and adjacent to the Site and leads north-eastwards across agricultural land for approximately 600m;
- LL|Brau|7/1 Footpath – Commences on Long Lane approximately 400m east of the Site and leads northwards along an access track adjacent to Brauncewell Quarries for approximately 530m;
- LL|Brau|4/1, LL|Brau|4/2 and LL|Cran|1/1 Bridleways – Commence on Long Lane and lead southwards along Green Lane and the Site, continuing for approximately 250m, 570m and 950m respectively before terminating north of College Road, a combined distance of approximately 1.77km;
- LL|Cran|754/1 Footpath – Commences on North Road and leads towards and along the football pitch for approximately 95m, located approximately 400m east of the Site;
- LL|Brau|12/1 Footpath – Commences adjacent to a watercourse approximately 400m east of the Site and leads generally north-south for approximately 500m;
- LL|Brau|11/1 and LL|Brau|11/2 Footpaths – Commence immediately adjacent to the Site on Green Lane and lead eastwards alongside a watercourse through agricultural land for approximately 460m and 1km respectively before terminating west of the A15; and

- LL|Brau|3/1 Footpath – Commences on Long Lane approximately 350m north-east of the Site and leads southwards along an access track before turning eastwards adjacent to a private residential property, continuing along the edge of a woodland block for approximately 300m before terminating west of the A15, a total distance of approximately 1.4km.

The Stepping Out Network is a collection of approximately 130 miles of waymarked walking routes comprising 28 routes across the North Kesteven District. Sections of the network utilise local PRoWs within the study area.

The following Stepping Out Network walks are within 500m of the Site:

- Ridges and Furrows Part 1, Sleaford to Cranwell – A 9.5km linear walk from Sleaford to Cranwell. The route ends on Cranwell Avenue, approximately 170m south of the Site; and
- Ridges and Furrows Part 2, Cranwell to Wellingore – A 16km linear walk from Cranwell to Wellingore. The walk begins on Cranwell Avenue, approximately 170m south of the Site. The walk follows Bridleways LL|Cran|1/1, LL|Brau|4/2 and LL|Brau|4/1, together with Footpaths LL|Brau|7/1, LL|Brau|10/1, LL|Brau|1/1 and LL|Brau|1/2, all of which are aligned with the walk route.

The Viking Way, a long-distance recreational route extending approximately 149 miles (240km) through Lincolnshire, Leicestershire and Rutland, passes approximately 420m west of the Site. The route is a regionally important, promoted walking trail and forms part of the wider PRoW network. Whilst the Viking Way is a recognised and well-used long-distance route, it is not designated as a National Trail and does not have statutory protection in its own right.

The Bloxholme Woods Nature Reserve Walk is an approximate 3.2 mile (5.2km) circular trail located within Bloxholme Wood, north of Sleaford. It is not designated as a National Trail and does not have statutory protection in its own right.

None of these PRoWs are designated national trails. It is assumed that these PRoWs are used regularly by walkers, cyclists and horse riders as a means of leisure, travel or for farm machinery to move around farmland.

No National Cycle Network routes have been identified within the Site or the 500m study area.

Tourism

North Kesteven District Council's Tourism Strategy embraces 'traditional tourism and the wider Visitor Economy' (North Kesteven District Council, 2024). In 2023, North Kesteven received 2.9 million visits, contributing £201 million to the local economy. Of these, 89% were day visits, and 93% of these trips were made by private car. In contrast, visitors who stayed for more than one night (326,000 visits with an average stay of 2.9 nights) contributed £75.42 million.

North Kesteven District Council identifies Cranwell Aviation Heritage Museum and Knights Templar Preceptory Tower as the only visitor attraction within the 3km study area. The former derives its visitor appeal principally from its cultural and historic significance rather than from the quality of the surrounding landscape. Consequently, it is not considered a tourism receptor that is highly dependent on scenic views or landscape character to attract visitors, although the rural setting may contribute

positively to the overall visitor experience. The latter is owned and managed by Lincolnshire County Council.

Occupancy rates

The East Midlands construction workforce demonstrates a degree of regional mobility (CITB, 2026):

- 56% were working in the East Midlands and had also lived there when they entered the construction industry; and
- Around half had worked at their previous construction Site within the East Midlands, suggesting that workers tend to move between projects within the region.

As such, a large proportion of construction workers are expected to be drawn from the established East Midlands workforce.

Cranwell presents a limited number of overnight accommodations:

- Small-scale Bed & Breakfasts and guest houses (e.g. Byards Leap Lodges and Blacks Oxenford Farm);
- Self-catering cottages and holiday lets, such as The Coach House, Cranwell Village, Stable Cottage and Dysons Blacksmith Cottage; and
- A limited number of holiday rentals marketed through Airbnb other booking platforms.

The nearest concentration of overnight accommodation is Sleaford, located approximately 3 to 5km east of Cranwell. Sleaford contains a larger accommodation offer, including:

- Travelodge Sleaford;
- The Carre Arms Hotel;
- The SOLO Hotel;
- The Mallards;
- Riverside Guest House;
- Marquis of Granby; and
- Additional guesthouses, holiday lets and serviced accommodation.

Booking platforms identify approximately 25 hotels and places to stay within Sleaford, and a variety of accommodation providers in the wider Sleaford area.

In the absence of accommodation occupancy data for Cranwell and Sleaford, national and regional hotel performance data provide a useful benchmark. The VisitEngland's England Occupancy Survey reported an average hotel room occupancy rate of 83% in June 2026, with a year-to-date occupancy rate of 76% across England. Hotels in the East Midlands recorded an average occupancy rate of 80% during June 2026, slightly below the national average.

Smaller hotels (1-100 rooms), which are likely to be most comparable to the accommodation stock available in and around Cranwell and Sleaford, recorded an average occupancy rate of 81%.

Employment and GVA

The population of North Kesteven District is approximately 122,500, representing an increase of 5.7% over the previous five years. The median age of residents is 46 years, with females accounting for 50.9% of the population and males 49.1% (ONS, 2024).

North Kesteven District residents live within approximately 100 predominantly small communities. The largest population centres are Sleaford, with approximately 19,800 residents, and North Hykeham, with approximately 16,900 residents. Nearly one-third of the district's population resides within the Lincoln Fringe, the area surrounding the City of Lincoln (North Kesteven District Council, 2025).

In 2024, the employment rate in North Kesteven was 80.8%, higher than the East Midlands average of 75.5%. The unemployment rate was 2.8%, which was lower than the regional average.

Economic inactivity, defined as people who are neither in employment nor actively seeking work, accounted for 18.0% of the working-age population (ONS, 2024).

According to Census 2021 data, the largest employment sectors in North Kesteven were:

- Human health and social work activities (14.8%);
- Public administration and defence (14.3%);
- Wholesale and retail trade (13.7%);
- Education (10.1%); and
- Construction (8.9%).

Despite the district being predominantly rural in character, only 2.7% of residents were employed in agriculture, forestry and fishing (ONS, 2021).

The most common occupations among North Kesteven residents aged 16 years and over were:

- Professional occupations (17.5%);
- Associate professional and technical occupations (15.1%);
- Managers, directors and senior officials (13.5%);
- Skilled trades occupations (11.5%); and
- Administrative and secretarial occupations (10.6%).

RAF Cranwell is an important employment centre within the local area, supporting a range of military, training and associated roles. As a major RAF training establishment, its activities contribute to employment and economic activity within Cranwell and the wider area.

GVA is a measure of economic productivity that quantifies the contribution of an area, industry or sector to the economy. In 2023, North Kesteven contributed approximately £3.2 billion in GVA to the national economy, representing an increase of 47% since 2015 (North Kesteven District Council, 2024). The district's GVA per workforce job was approximately £74,496 (North Kesteven District Council, 2024).

The regional GVA in 2025 in the relevant industries is as follows (ONS, 2025):

- £432 million generated by public administration and defence activities;

- £393 million generated by wholesale and retail trade; repair of motor vehicles and motorcycles;
- £193 million generated by human health and social work activities;
- £162 million generated by education activities;
- £312 million generated by the construction industry (all construction-related activities); and
- £135 million generated by agriculture, forestry and fishing; mining and quarrying activities.

6.8.6 Additional (secondary and tertiary) mitigation

No additional mitigation is proposed with regard to private property and housing, community land and assets, agricultural land holdings, agricultural economy, businesses and development land, tourism, occupancy rates or employment and GVA.

Regarding walkers, cyclists and horse riders, an Outline Public Right of Way and Access Strategy (Outline PRoWAS) will be produced and submitted in support of the DCO application. The Outline PRoWAS will document how PRoWs will be managed during the construction, operation (including maintenance) and decommissioning phases to enable them to be accessible and used as safely as possible.

6.8.7 Description of likely significant effects

Private property and housing

There are no properties or houses at risk of demolition as a result of the construction, operation (including maintenance) or decommissioning of the Proposed Development. Impacts to the amenity of private property and housing are addressed in **Section 6.6** and **Section 6.7**. As detailed in **Section 6.6**, there is the potential for views of the Proposed Development from surrounding villages; however, minimising the potential visibility on these receptors will be a key consideration when finalising the design of the Proposed Development. Similarly, **Section 6.7** discusses the potential for noise impacts to residential receptors.

From a population perspective, no significant effects on private property and housing are anticipated as a result of the Proposed Development

Community land and assets

There is no community land or assets located within the Site and therefore the Proposed Development would not result in the direct loss of community land or assets.

There are a number of larger settlements located within the study area that support community land and assets. No land currently being used as a community asset would be impacted during any phases of the Proposed Development. Construction, operational and decommissioning activities associated with the Proposed Development are not anticipated to result in damage to any key characteristics, features or elements of community associated within the study area.

Therefore, it is anticipated that there would be no significant effects on community land and assets as a result of the Proposed Development.

Agricultural land holdings

The Site is located on privately owned agricultural land managed by one agricultural landholder. The landowner has voluntarily entered into an agreement with the Applicant to allow the use of their land for the purposes of the Proposed Development and, as such, no effects relating to land ownership and land severance are anticipated.

Similarly, upon expiry of the existing lease, the tenant farming operation would relocate the agricultural business to an alternative agricultural field and therefore the Proposed Development is not anticipated to result in the direct loss of any agricultural jobs at the Site.

Agricultural economy

As a worst case scenario, it is assumed that all the land within the Site would be taken out of agricultural use for the 26 month construction period, 40 year operational period and decommissioning period of the Proposed Development. Therefore, there is a potential impact to the agricultural economy through reducing the amount of land available to support the agricultural economy and agricultural jobs.

As stated above, the North Kesteven District contains approximately 516 agricultural holdings, extending across 78,574 hectares. The Site comprises approximately 255 hectares of land. Therefore, the land-take associated with the Proposed Development would result in approximately 0.3% of North Kesteven District's agricultural land being temporarily taken out of agricultural use to support the construction and operation of the Proposed Development.

Based on the district authority average employment per hectare data, the land take associated with the Proposed Development has an indicative capacity to support just over one full-time job within the agricultural sector. This reflects a small proportion of the agricultural land affected (0.3%) and a small number of potentially affected workers.

Businesses and development land

The study area supports a range of businesses, including graphic design services, jewellery retail, business administration services, building materials supply, picture framing and convenience retail. The majority of these businesses are not considered sensitive to changes in landscape character/views, noise or traffic impacts and are therefore not anticipated to be adversely affected by the Proposed Development. The construction and operation (including maintenance) of the Proposed Development will result in localised changes to the visual environment and localised noise and traffic effects. Two businesses identified within the study area, namely Dysons Blacksmith Cottage and Stable Cottage, are considered to be sensitive to changes to the surrounding environment. These businesses rely on the environment (such as their rural setting) as a means of generating revenue and therefore could be affected by changes to the visual landscape, construction noise and traffic. These businesses may experience a reduction in customer footfall which would result in a decrease in business revenue.

Following a review of **Section 6.6**, Stable Cottage is well screened by vegetation and therefore impacts to views are considered to be not significant. Therefore, it is

concluded that Stable Cottage can continue operating with minimal impacts to the business revenue or footfall. However, there is the potential for significant effects to views from Dysons Blacksmith Cottage. The business likely utilises the surrounding rural landscape, scenic views and tranquil character of the area to attract customers. As a result, there is potential for adverse visual effects arising from the Proposed Development to affect the attractiveness of these businesses to visitors. Minimising the potential visibility of the Proposed Development from these receptors will therefore be a key consideration in the refinement of the design and layout of the Proposed Development. Consequently, there is potential for significant effects on Dysons Blacksmith Cottage as a result of the Proposed Development.

Walkers, cyclists and horse riders

All PRoWs would be retained in their existing alignment, where practicable. However, there is the possibility that PRoWs within the study area would need to be temporarily diverted as a result of the construction activities. It is anticipated that any temporary diversions would be managed by a banksperson to ensure the safe passage of walkers, cyclists and horse riders using PRoW from construction plant and logistics sites during construction.

Due to the requirement to manage access to PRoW during construction, users may experience an increase in journey duration. Where impacts may occur, the Outline PRoWAS (to be submitted in support of the DCO application) will detail the proposed mitigation measures in order to remove or minimise the potential for impacts to occur.

It is anticipated that no PRoW will be permanently diverted or closed to facilitate the operation (including maintenance) of the Proposed Development.

Tourism

Tourism within the North Kesteven District is primarily associated with aviation heritage, historic attractions and cultural venues. These visitor attractions appeal to tourists visiting the area principally for their heritage, cultural and educational offer.

As such, they are not considered to be tourism receptors that are highly dependent on the surrounding landscape or scenic quality to attract visitors, although the wider rural setting may contribute positively to the overall visitor experience and sense of place. The Proposed Development would not result in the loss of or restrict access to these tourism assets and is therefore no likely significant effects are anticipated.

Occupancy rates

The maximum construction workforce is expected to peak at approximately 250 workers per day, with the majority of workers anticipated to be sourced from North Kesteven and the wider East Midlands region. Based on the assumption that approximately 5% of workers would require overnight accommodation (CITB, 2025), demand is expected to peak at approximately 13 workers. The Proposed Development would not generate any permanent site-based staff; however, up to 3 full-time equivalent remote jobs would be created which may result in ad-hoc site maintenance activities during the operation phase.

Although accommodation provision within Cranwell is limited, Sleaford, located approximately 3 to 5km east of the Site, provides a relatively large supply of hotels and other accommodation options. Consequently, while the temporary presence of construction workers may increase demand for overnight accommodation during the

construction phase, the effect on local accommodation capacity is not anticipated to be significant.

During operation, maintenance workers may have to attend the Site on an ad-hoc basis. The workers may be required to stay overnight and utilise local accommodation providers; however, due to the limited frequency and number of workers, this is considered negligible.

Employment and GVA

The construction workforce is expected to peak at approximately 250 workers. As a result, the construction phase has the potential to generate beneficial effects on employment and GVA. This is particularly relevant given that construction is one of the largest employment sectors in North Kesteven District. Furthermore, the construction industry generates approximately £312 million of GVA across the region. The Proposed Development therefore has the potential to support local employment and utilise existing construction skills during the construction and decommissioning phases.

The Proposed Development would not generate any permanent site-based staff; however, up to 3 full-time equivalent remote jobs would be created which may result in ad-hoc site maintenance activities during the operation (including maintenance) phase. Whilst it is recognised that the Proposed Development will support employment during the operational (including maintenance) phase, the remote nature of the opportunities is not anticipated to have a material impact on local employment and GVA.

6.8.8 Receptors/matters to be scoped into further assessment

Receptor/matter	Phase	Justification
Businesses (Dysons Blacksmith Cottage)	Construction, operation (including maintenance) and decommissioning	Dysons Blacksmith Cottage may experience adverse visual effects arising from the Proposed Development during the construction, operation and decommissioning phases, which could affect the visitor experience associated with this business.

6.8.9 Receptors/matters to be scoped out of further assessment

Receptor/matter	Phase	Justification
Private property and housing	Construction, operation (including maintenance) and decommissioning	There would be no properties or houses at risk of demolition as a result of the construction, operation (including maintenance) or decommissioning of the Proposed Development. The land for the Proposed Development is not allocated for residential development,

		and no new planning applications have been submitted for housing developments within the Site. It is therefore anticipated there would be no significant effects on private property and housing during the construction, operation (including maintenance) or decommissioning phases of the Proposed Development.
Community land and assets	Construction, operation (including maintenance) and decommissioning	The Proposed Development would cover a large area of privately owned agricultural land. This land is not being used as community land and there are no community assets located within the Site. The construction, operation (including maintenance) and decommissioning of the Proposed Development is not anticipated to damage any key characteristics, features or elements of community assets located within the study area. Therefore, no significant effects are expected in relation to community land or assets.
Agricultural land holdings	Construction, operation (including maintenance) and decommissioning	The Site hosts a single agricultural holding with one landowner who has entered a voluntary agreement with the Applicant for the lease of the land for the purposes of the Proposed Development. A tenant pig farming operation currently occupies land within the Site; however, upon expiry of the existing lease, the tenant would relocate the agricultural business to alternative agricultural land and therefore no direct job losses are anticipated. It is therefore anticipated that there would be no significant effects on agricultural landholdings during the construction, operation (including maintenance) or decommissioning phases of the Proposed Development.
Agricultural economy	Construction, operation (including maintenance) and decommissioning	The Proposed Development is anticipated to result in the loss of approximately 0.3% of agricultural land within the North Kesteven District. The loss of this amount of land is not considered to breach the thresholds for significance to the agricultural economy

		during the construction, operation (including maintenance) or decommissioning phases of the Proposed Development.
Businesses and development land (excluding Dyson Blacksmiths Cottage)	Construction, operation (including maintenance) and decommissioning	The businesses identified within the study area (with the exception of Dyson Blacksmiths Cottage) are not considered to be sensitive to changes in the surrounding environment associated with the construction, operation (including maintenance) and decommissioning of the Proposed Development.
Walkers, cyclists and horse riders	Construction, operation (including maintenance) and decommissioning	Any temporary diversions to PRoW would be mitigated through the provision of alternative routes and measures to maintain accessibility and connectivity. It is therefore anticipated that there would be no significant effects on PRoW users during the construction, operation (including maintenance) or decommissioning phases of the Proposed Development.
Tourism	Construction, operation (including maintenance) and decommissioning	Visitor attractions within the 3km study area derive their appeal principally from their aviation heritage, cultural, educational and historic value and would not be directly affected by the Proposed Development during the construction, operation (including maintenance) or decommissioning phases.
Occupancy rates	Construction, operation (including maintenance) and decommissioning	The maximum construction workforce is expected to peak at approximately 250 workers per day, with around 13 workers anticipated to require overnight accommodation. This level of demand is expected to have a negligible effect on visitor accommodation availability and occupancy rates, given the sufficient local supply of accommodation. Operational staff may attend Site on an ad-hoc basis with no permanent presence at the Site. The number of operational staff and frequency of them attending Site would be much lower than that of the construction phase. Decommissioning would require a temporary workforce, with associated accommodation

		demand expected to be no greater than during construction. Consequently, no significant effects on local accommodation occupancy rates are anticipated.
Employment and GVA	Construction, operation (including maintenance) and decommissioning	The Proposed Development has the potential to support employment and economic activity during the construction phase, with no adverse effects on employment or productivity anticipated. Operational employment requirements would be limited, while decommissioning activities would be temporary, and neither phase is expected to materially affect employment or productivity. It is therefore anticipated that there would be no significant adverse or beneficial effects on employment and productivity during the construction, operation (including maintenance) or decommissioning phases of the Proposed Development.

6.8.10 Opportunities for enhancing the environment

There is opportunity to create new, or to enhance the current condition of affected PRoWs, including upgrading access, signage or safety.

6.8.11 Proposed assessment methodology

The DMRB LA 112 methodology will be adapted and combined with professional judgement for the purposes of the assessment. The assessment criteria to be adopted are detailed in **Appendix D**.

It is recognised that accommodation providers can help to facilitate the tourist economy; however, to avoid double counting, accommodation providers (i.e. bed & breakfast and hotels – namely Dysons Blacksmith Cottage) will be considered as business receptors.

6.8.12 Difficulties and uncertainties

To ensure transparency within the EIA process, it is acknowledged that, as the Proposed Development does not have a fixed layout at this time, it is currently not possible to determine the number and length of PRoW that will be diverted and/or managed.

6.8.13 References

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6.9 Soil

6.9.1 Consultation

No consultation to inform the soil assessment has been undertaken to date. However, communication has taken place with representatives from Lincolnshire County Council and North Kesteven District Council with consultation planned in the near future to help guide the shape and focus of the assessment going forwards. Consultation is also planned with Natural England to discuss Site survey strategies, and to agree a methodology for assessing the significance of effect on soil health.

6.9.2 Study area

The study area is defined as the Site, an area of 255 hectares (ha). IEMA (now ISEP) guidance (2022) recommends that:

"The scoping of EIAs should consider potential impacts on the functional capabilities of soils, their sensitivity, vulnerability, and general condition." (p. 24)

Effects on soils are highly localised and impacts to their functional capabilities would be limited to areas directly affected by the construction, operation (including maintenance) and decommissioning of the Proposed Development. Soils can dramatically change within a short distance; therefore, it is not considered necessary to extend the study area beyond the Site boundary.

The size of this study area may be subject to refinement later in the project lifecycle if the Site boundary changes. However, the study area will remain the boundary of the Site for all assessments on agricultural land and soils.

6.9.3 Data sources to inform the EIA baseline characterisation

Baseline data has been collected using the following sources of data:

- British geological survey maps (British Geological Survey, 2026);
- The National Soil Map for England and Wales (NATMAP) and associated datasets, available through the Department for Environment, Food & Rural Affairs and Cranfield University's Land Information System Portal (LandIS) (Defra and Cranfield University, 2026); and
- Predictive Agricultural Land Classification Map for England (Defra, 2025)

6.9.4 Surveys to inform the EIA baseline characterisation

No surveys have been undertaken to inform the EIA baseline characterisation at the EIA scoping stage.

Following scoping, the following surveys will be undertaken to inform the EIA:

- An Agricultural Land Classification (ALC) survey of the whole Site will be undertaken in accordance with Defra and Natural England (2025) guidelines; and
- A soil health survey will be undertaken in fields within which hard infrastructure and ecological mitigation are proposed, in accordance with the Agriculture and Horticulture Development Board (AHDB) (2022) soil health scorecard approach. The hard infrastructure areas to survey will be the proposed locations of the Substation, BESS, Inverters and Collector Compound.

6.9.5 Baseline conditions

Land use

The Site consists of eight agricultural fields totalling 255ha, the majority of which have historically been used for agricultural production, with one in use by a tenant as a pig farm. A quarry is located approximately 300m to the north-east of the Site, while an RAF base is sited approximately 800m to the south. The majority of the surrounding land is made up of agricultural fields.

Geology

The geological mapping indicates that there are generally no superficial geological units across the Site, with the exception of the presence of minor amounts of head deposits (clay, silt, sand and gravel) along the northern boundaries of Fields 1, 2 and 3 and a small area in the central part of Field 2.

The bedrock geology across the Site is composed of units from the Lower and Upper Lincolnshire Limestone Members. These are predominantly limestone units, with some mudstones possibly present along the northern boundaries of Fields 1, 2 and 3.

Made ground is potentially present in localised areas associated with historical mineral extraction sites or farm tracks, but there is no indication that extensive areas of artificial ground would be present. There are no mapped areas of artificial ground shown on the British Geological Survey (BGS) map database.

Graphics of bedrock (**Figure 1**) and superficial geology (**Figure 2**) present within the Site are presented in **Appendix L**.

Agricultural Land Quality

The ALC system is based on the long-term physical or chemical limitations of a soil profile for agricultural use. The profile can be limited due to climate, site, soil or interactive factors. The current agricultural use, or intensity of use, does not affect the grading as this is dependent on land management practices that can be easily changed.

The entirety of the Site is mapped as predictive ALC Grade 3b (non-prime, not BMV), as shown in **Appendix L, Figure 3**.

Soil

One soil association, Marcham, has been mapped within the Site, as illustrated in **Appendix L, Figure 4**.

Marcham soils are shallow and calcareous coarse and fine loamy soils. They are permeable and well drained and readily accept winter rainfall with little surface run-

off. These soils are moderately droughty for arable crops, and are widely used for growing cereals, sugar beet and potatoes (Defra and Cranfield University, 2026).

Data associated with Defra and Cranfield University's (2026) LandIS portal indicate that a soil profile was recorded approximately 150m from the Site boundary, within an area mapped as the same bedrock geology and soil association as the Site. Particle size distribution analysis of the topsoil identified a medium sandy loam texture. Profile descriptions record the soil as very porous, very to moderately stony, calcareous and possessing a moderately well-developed structure.

Although the profile lies outside the Site boundary and therefore outside the study area, it provides a useful indication of the soil conditions likely to be present within the Site. These characteristics are consistent with the mapped Marcham soil association, which comprises shallow, calcareous, coarse and fine loamy soils.

Datasets available on the LandIS portal (Defra and Cranfield University, 2026) also show that a single auger boring has been undertaken within Field 2, from which a slightly calcareous sandy clay loam topsoil to 30cm depth was identified.

Soil nutrient average concentrations and organic matter will be determined through soil health surveys that will take place on areas planned for ecological mitigation and the hosting of hard infrastructure. Soil texture and structure will be recorded as part of the ALC surveys undertaken throughout the entirety of the Site.

6.9.6 Additional (secondary and tertiary) mitigation

While relevant embedded measures will be developed to avoid and minimise the impact of the Proposed Development on agricultural land and soils, the following additional mitigation measures are anticipated to be proposed:

Construction

Both an Outline SMP, informed by ALC survey results, and an Outline CEMP will be submitted in support of the DCO application. Prior to construction commencing, a Detailed SMP, secured as a requirement of the DCO, will be produced by the Principal Contractor and will be informed by the Outline SMP. This will include project-specific requirements and additional detail as the design is refined and construction methodologies are finalised. The Outline SMP will include measures to mitigate against damage to soils such as:

- Storing stripped soils temporarily in segregated stockpiles dependent on soil type, correctly managed including grassing and weeding regularly, to reduce the risk of erosion and prevent the soil from becoming anaerobic.
- Determining access routes for the importation of construction materials, plant and equipment to avoid unnecessary trafficking of soil.
- Managing vehicle movements through measures such as track matting to reduce risk of compaction.
- Controlling the timing of works to ensure that soils are only handled when in a dry, friable condition and when below the plasticity limit.
- Redistributing soils excavated during construction across nearby agricultural fields, allotments and landscaping regions allowing the material to be

reincorporated into the existing soil resource and avoiding the development of anaerobic conditions associated with prolonged storage.

Operation (including maintenance)

The Outline SMP and Outline OEMP will detail measures to manage any potential impacts to the soil and agricultural land during the operation (including maintenance) phase. As detailed above for the construction phase, the Outline SMP will identify areas that may be more susceptible to damage and stipulate that soils are only to be handled in a dry, friable condition and when below the plasticity limit. The Outline SMP will also provide details on managing soil and maintaining the physical properties of the soil, such as grassland management to prevent soil erosion and runoff.

It may be possible to use the open spaces between the infrastructure and the land beneath the Solar PV modules to support a grass sward during the operation (including maintenance) phase.

During the operation (including maintenance) phase, soil conditions may be monitored, and results compared to the baseline surveys undertaken in support of the DCO application.

Decommissioning

The Outline SMP and Outline DEMP will detail and secure measures to manage any potential impacts to soil and agricultural land during the decommissioning phase. The Outline SMP will identify those areas within the Site which may be more susceptible to damage, detail measures for soil management during decommissioning activities and will stipulate that soils are only to be handled in a dry, friable condition and when below the plasticity limit. Established access tracks will be used during the decommissioning phase, thus limiting impacts on soil due to vehicle movements. Where vehicle movements are required over soils, the timing of these will be managed by the Outline SMP where possible to prevent damage to soil structure through compaction.

Following decommissioning, soil conditions will be assessed to ensure that land is returned to its pre-construction ALC grade quality where possible.

6.9.7 Description of likely significant effects

The following description of the potential for likely effects is based on the relevant IEMA (now ISEP) (2022) guidance in conjunction with the land and soil baseline conditions as described in **Section 6.9.5**. A detailed description of receptor sensitivity, magnitude of impact and significance of effect criteria is given in **Appendix D**.

Areas of hard infrastructure, for the purposes of the below assessment, are defined as the Substation, BESS, Collector Compounds and Inverter Transformer Stations.

Construction

The agricultural land within the Site will not be available during the construction phase. Therefore, the land will not be available for agricultural use, and the Site will result in a loss of agricultural outputs.

Construction activities have the potential to adversely affect soil through the

disturbance, stripping, handling and temporary storage of topsoil and subsoil. Such activities may disrupt the physical, chemical and biological properties of the soils, including soil porosity, microbial activity and nutrient cycling processes and cause erosion. Construction traffic and plant movements may also lead to compaction, which may restrict water infiltration and root development, and reduce overall soil function. During construction, there is not anticipated to be a significant effect on soil handling resilience, given the implementation of soil handling measures to be outlined in the Outline SMP. There may be a significant adverse effect on soil health, depending on the baseline soil health conditions on the Site.

Operation (including maintenance)

Agricultural land within the Site will similarly be unavailable for agricultural use during the operation (including maintenance) phase.

In Solar PV development areas, the elimination of disturbance to soils from agricultural machinery would create an increase in soil organic matter, improved soil structure, aggregate stability and resistance to erosion, which would in turn support enhanced biological activity and nutrient cycling processes. Locations of planned hard infrastructure components would be constructed on concrete foundations, resulting in the permanent sealing of the underlying soils. There is not anticipated to be a significant effect on soil handling resilience during the operation (including maintenance) phase, given the implementation of soil handling measures to be outlined in the Outline SMP. There may be a significant adverse effect on soil health in areas of hard infrastructure, depending on the baseline soil health conditions on the Site, and a not significant beneficial effect in areas of Solar PV development and ecological mitigation.

Decommissioning

During decommissioning, all physical infrastructure will be removed and agricultural land within the Site in Solar PV development areas will become available for agricultural use. However, there is a potential for permanent degradation of agricultural land quality within areas where hard infrastructure is located.

Decommissioning activities are likely to be less significant in comparison to those outlined for the construction phase, and may include disruption of soil horizons, compaction and trafficking of soil by vehicles as a result of excavation works and the removal of buried infrastructure. There are not likely to be significant effects on soil handling resilience, given that soil handling operations will be undertaken in accordance with the Outline SMP. There may be a significant adverse effect on soil health in areas of hard infrastructure, given permanent damage to soils in areas where hard infrastructure has been located for the 40-year lifespan of the Proposed Development. In areas of Solar PV development and ecological mitigation, there in anticipated to be a not significant beneficial effect on soil health.

6.9.8 Receptors/matters to be scoped into further assessment		
Receptor/matter	**Phase**	**Justification**
Agricultural land quality	Construction, operation (including maintenance) and decommissioning	The Proposed Development would occupy approximately 255ha of agricultural land for an operational lifetime exceeding 40 years. This would result in the temporary loss of this land for agricultural production, and the assumed permanent loss of land under hard infrastructure given that it cannot be guaranteed that this land can be restored to its pre-construction condition. An assessment (including survey) should therefore be undertaken to confirm the ALC of the Site, and to accurately determine the sensitivity of this receptor, the magnitude of impact and the significance of effects associated with its loss.
Soil handling resilience	Construction, operation (including maintenance) and decommissioning	Construction activities associated with the Proposed Development have the potential to adversely affect soil handling resilience through compaction, rutting, and the disturbance of soil horizons resulting from vehicle movements and soil handling operations. These effects could reduce soil function and may affect the long-term agricultural capability of the land if soils are not appropriately managed and reinstated. While effects are likely to be greatest during construction and decommissioning phases, periodic maintenance operations may also result in effects during operation (including maintenance), depending on the methods adopted for operational access and maintenance. There is the potential to scope this receptor out from further assessment for the operation

		(including maintenance) phase depending on design, but at this stage it is proposed that effects on soil handling resilience be assessed during all three phases.
Soil health	Construction, operation (including maintenance) and decommissioning	The Proposed Development has the potential to affect soil health through construction activities which may alter the physical, chemical and biological properties of soils. During operation, the long-term change in land management associated with the Solar development may influence soil health indicators through changes in cultivation practices, vegetation cover and vehicle access requirements. Soil health is also relevant during decommissioning, when soil disturbance associated with infrastructure removal and site restoration may affect the recovery of soil functions. Soil health should therefore be scoped into the assessment for all three stages.

6.9.9 Receptors/matters to be scoped out of further assessment

Receptor/matter	Phase	Justification
Food security	Construction, operation (including maintenance) and decommissioning	Crop yields are influenced by a range of factors, including climatic conditions, crop type and agricultural management practices, and cannot be reliably attributed to the soil resource alone. Agricultural output is also influenced by technological developments, including precision breeding (Defra, 2024), which have contributed to long-term improvements in crop yields and production efficiency. In addition, site-specific yield data is often unavailable or insufficient to support a robust assessment.

		Food security is influenced by complex national and international supply chains and wider economic factors. Therefore, any reduction in agricultural production associated with the Proposed Development is unlikely to result in a measurable effect on food security. Furthermore, explicit reference within the National Planning Policy Framework (NPPF) (Ministry of Housing, Communities and Local Government, 2026) to the consideration of agricultural land used for food production in no longer in the current revision.

6.9.10 Opportunities for enhancing the environment

It may be possible to use the open spaces between the infrastructure and the land beneath the Solar PV modules to support a grass sward during the operation (including maintenance) phase, which will help to improve soil resilience and maintain soil function.

6.9.11 Proposed assessment methodology

Scope of assessment

The assessment will consider potential effects arising during the construction, operation (including maintenance) and decommissioning phases of the Proposed Development. This includes:

- Direct and indirect effects on agricultural land quality, including the permanent and temporary loss of agricultural land;
- Effects on BMV agricultural land;
- Effects on soil resources arising from excavation, handling, storage and reinstatement;
- Effects on soil health within areas of proposed hard infrastructure and ecological mitigation; and
- Opportunities for the maintenance or enhancement of soil health through long-term land management.

Guidance and best practice

The assessment methodology at scoping stage and throughout the EIA will be informed primarily by IEMA's (now ISEP) (2022) ‘A New Perspective on Land and Soil in Environmental Impact Assessment’, which provides a widely accepted framework for assessing impacts on agricultural land and soils through the

evaluation of receptor sensitivity, magnitude of impact and significance of effect. The assessment criteria are provided in **Appendix D**. Following the IEMA guidance, significance is calculated in accordance with a significance matrix (**Appendix D**), which calculates whether an effect is significant based on the intersection of receptor sensitivity and magnitude of impact. Impacts described as moderate, large or very large will be classed as significant in this assessment. Where there is some room for professional judgement, such as whether an effect could be classed as either slight or moderate (following, for example, a minor magnitude of impact on a highly sensitive receptor), factors such as the scarcity of the resource locally and the permanence of the effect will be considered. The proposed approach to soil health assessment has also been informed by ISEP's (2025a) 'Soil Health and Environmental Assessment' guidance, which advocates consideration of soil physical, chemical and biological characteristics alongside assessments of agricultural land quality and soil function. Receptor sensitivity related to soil health has also been influenced by the AHDB (2022) scorecard approach, which is referenced in ISEP's (2025) soil health assessment guidance. In addition, the ISEP (2025) 'Solar PV on Agricultural Land' guidance has informed the scope and methodology of this assessment, and the identification of appropriate survey locations to establish a baseline for the soil health assessment.

Influence of policy on methodology

National and local policy has informed the proposed methodology for the agricultural land and soils assessment. At the local level, the adopted Central Lincolnshire Local Plan 2018-2040 (Central Lincolnshire Joint Strategic Planning Committee, 2023) includes Policy S67, which recognises the importance of agriculture to the local economy and seeks to protect BMV agricultural land. The policy states that developments resulting in the loss of BMV land will only be supported where it can be demonstrated that the need for the development outweighs the need to safeguard the agricultural land resource. Policy S14 on renewable energy supports ground-based photovoltaic and associated infrastructure proposals in principle, if the development does not take place on BMV land.

At the national level, policy similarly considers the value of agricultural land and soil resources, and the use of BMV land. The Overarching National Policy Statement for Energy (EN-1) (Department for Energy Security and Net Zero, 2025), Section 5.11, requires applicants to consider the impacts of energy infrastructure on soils and agricultural land, whilst the National Policy Statement for Renewable Energy Infrastructure (EN-3) (Department for Energy Security and Net Zero, 2025), Section 2.10.21 specifically identifies the need to consider poorer quality land over BMV land in Solar Photovoltaic Generation developments. The NPPF (Ministry of Housing, Communities and Local Government, 2026), Statement 187, similarly emphasises the economic benefits of BMV land. Collectively, these local and national policies highlight the importance of establishing the ALC of the Site and assessing the potential effects of the Proposed Development on agricultural land and soil resources.

6.9.12 Difficulties and uncertainties

To ensure transparency within the EIA process, the following difficulties and uncertainties have been identified at this stage:

- As a detailed ALC survey has not yet been completed, all discussions of agricultural land quality are based on publicly available data such as predictive ALC mapping (Defra, 2025), NATMAP mapped soil associations and related datasets (Defra and Cranfield University, 2026) and BGS geology maps (British Geological Survey, 2026), which cannot be assumed to be accurate.
- The provisional soil textures outlined in this report are based on national soils maps which cannot be assumed to be accurate. Once an ALC has been undertaken and soils textured, the types of soil present on the Site can be accurately categorised and impacts on those soils assessed.
- As soil health surveys have yet to be undertaken, there is currently no baseline information available to characterise the physical, biological and chemical conditions of the soils across the key areas of the Site for the assessment on soil health. This information will be available once soil health surveys of the relevant areas have been completed.
- The methodology for assessing the significance of effect on soil health will need to be discussed with Natural England, as this is a relatively new field and the available guidance does not outline a detailed methodology for assessment.

6.9.13 References

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6.10 Transport and access

6.10.1 Consultation

At the time of writing, no consultation to inform the transport and access assessment has been undertaken.

It is envisaged the key consultees will be the local highway authority and planning authorities which may be impacted during the construction and decommissioning phases of the Proposed Development. Anticipated consultees comprise:

- North Kesteven District Council, inclusive of PRoW team;
- Lincolnshire County Council, inclusive of Highways and PRoW/Active Travel teams; and
- National Highways.

Early agreement on highways study area for construction traffic is required, along with traffic distribution, routing and abnormal load routes. This also includes survey collection methodologies and assumptions in forecasting which will be agreed at the appropriate stage of analysis alongside:

- Aspects of the environment and issues relating to those that should be considered and addressed in the ES (with emphasis on any issues local to the Proposed Development); Assessment methodologies particularly in relation to sensitive receptors; and
- Other relevant bodies or organisations that may have a vested interest in the Proposed Development or be able to provide relevant information.

6.10.2 Study area

Based on the current proposals and available options for vehicular access, the highways study area for the local highway network will comprise the following links (see **Appendix M, Figure 1**).

- A15;
- A17;
- B1429 (Cranwell Avenue);
- Rauceby Lane; and
- Long Lane.

This study area has been identified assuming that the majority of development-related traffic routes to and from the Site will use these links for access from the wider Strategic Road Network. This is influenced by the location of ports south of the Humber and on the Suffolk coast for specialist equipment and Solar PV modules, along with locally available aggregates. The highways study area will be kept under review as the project develops.

The extent of the highways study area will be discussed and agreed with Lincolnshire County Council prior to assessment following confirmation of the proposed access locations and the anticipated construction traffic routeing inclusive of any Abnormal

Indivisible Load (AIL) requirements associated with transformer, substation and or BESS equipment for the Proposed Development.

Consideration of PRoW, permissive paths, non-motorised and active travel links will also be made within the assessment. No National Cycle Network Routes are present within the highways study area.

The following PRoWs are present within the immediate vicinity of the Site (see **Appendix M, Figure 1**) and will be considered within the assessment:

- Cran 1/1 – bridleway;
- Cran 2/1 – restricted byway;
- Brau 1/1 – footpath;
- Brau 1/2 - footpath;
- Brau 2/1 – bridleway;
- Brau 4/1 - bridleway
- Brau 4/2 - bridleway;
- Brau 7/1 – footpath;
- Brau 9/1 – footpath;
- Brau 10/1 – footpath; and
- Brau 11/1 – footpath.

Brau 2/1 is present within the Site; all others noted are adjacent but outside of the Site. These have been included to consider any impacts related to the use of these nearby PRoW.

6.10.3 Data sources to inform the EIA baseline characterisation

A limited number of Department for Transport (DfT) traffic count sites are available within the highways study area:

- A15 (data available for point east near Cranwell Village: 36224); and
- A17 (data available for point west near Brant Broughton: 18719 and at the eastern approach to the A17/A15 roundabout: 36231).

Supplementary traffic data collection may be required to assess the impacts of the Proposed Development, with no DfT data available on links B1429 (Cranwell Avenue), Rauceby Lane and Long Lane.

While the DfT count point located on the A17 to the west sits outside the core assessment links, it provides a useful indication of baseline traffic conditions prior to more detailed analysis. It is proposed that this dataset will provide baseline traffic data, alongside any relevant local authority datasets where available. Any data gaps in this information may be supplemented with specifically commissioned traffic surveys (see **Section 6.10.4** below).

Local imagery and Ordnance Survey mapping will be utilised in the assessment.

PRoW, active travel and permissive path link data will be requested from Lincolnshire County Council as the local highway authority and extracted utilising their definitive mapping.

6.10.4 Surveys to inform the EIA baseline characterisation

Existing relevant DfT traffic count data is available along the study area links of the A17 and A15, which would be reviewed in reference to construction traffic routeing to each respective access and will be considered in line with traffic estimate data provided by the Applicant for the construction phase of the Proposed Development.

Lincolnshire County Council will be consulted as to whether annual average daily traffic (AADT) data is available for the identified links in the highways study area. On any identified links which may be affected by construction traffic, not already covered by these existing data sources, supplementary traffic data or new surveys may be required; this may include PRoW or active travel links. Collision data will be obtained from Lincolnshire County Council to identify any collision clusters, trends, or sensitive locations within the highways study area.

A site walkover survey will also be undertaken to inform the assessment of potential impacts, such as confirming the sensitivity of links and observing general driver behaviour along the local highway network.

6.10.5 Baseline conditions

The land use surrounding the Site is largely comprised of agricultural fields. Several existing local settlements including Cranwell village, RAF Cranwell settlement and existing industrial uses (Brauncewell Quarries site) are in the locality of the Site.

Surrounding the Site, the local roads comprise principal A-road (A15/A17) and B-roads (B1429) and a series of minor roads. The condition of these road links varies, with two-way well-surfaced links present on the A15/A17 and B1429; however, minor roads are at some level of disrepair in respect to condition (presence of wear and tear, for example). Some Traffic Regulation Order parking restrictions are in place in Cranwell Village.

A preliminary review of the DfT online traffic data portal indicates that historic traffic counts are available for the A15 within the transport study area approaching the Site.

Within the transport study area, the identified DfT count point 36224 provides a manual count undertaken in 2022 of 14,609 vehicles, with subsequent years estimated using annual average daily flow (AADF) from the previous year on this link, giving an annual average daily flow of 15,229 vehicles in 2025.

Data for the A17 is also available, although the count points are situated further afield, and therefore may be less representative of localised conditions. A count point on the A17, west of Brant Broughton (18719) provides a manual count for 2025 of 19,110 vehicles. A count point east of the Holdingham roundabout (36231) provides a manual count for 2024 of 29,579 vehicles with the 2025 flow estimated using AADF from the previous year on this link, giving a count of 29,905 vehicles. These count points indicate a high-flow rate for vehicles along the A road network including moderate Heavy Goods Vehicle (HGV) proportions. Data for more local and minor roads is less evident.

At the time of writing, in the immediate vicinity of the Site and within the highways study area links, no discernible collision cluster locations are present.

6.10.6 Additional (secondary and tertiary) mitigation

Construction

At this stage, not all construction-related mitigation requirements are known. However, this will be developed as the preferred construction traffic routes are identified and upon definitive agreement of the proposed highways study area with Lincolnshire County Council. However, as a minimum, an Outline Construction Traffic Management Plan (Outline CTMP) will be produced and submitted in support of the DCO application. It is anticipated that a Detailed CTMP would be secured by a DCO requirement to mitigate against the effects of construction traffic on the local highway network, both in terms of traffic routing, timing of construction staff/HGV movement measures such as start and end times for example. These will also be considered within the Outline CTMP.

The extent to which AILs will be required and their routeing is under investigation. Details of AILs will be considered within the Outline CTMP.

Further work in relation to diversions and potential stopping up orders for PRoWs will be progressed as the design is refined in terms of what land parcels will be used and access routes into and away from the Site.

An Outline PRoWAS will be produced and submitted in support of the DCO application. The Outline PRoWAS will outline how PRoWs will be managed during the construction phase (and the operation (including maintenance) and decommissioning phases) to enable them to be accessible and used as safely as possible.

Operation (including maintenance)

The operational requirements of the Proposed Development will predominantly require regular visits by light goods vehicles and cars on a weekly basis, along with occasional short duration periods of higher intensity vehicle movements associated with infrastructure replacement as components reach their end of life, all of which will be fully accommodated by the permanent access arrangements and within the existing network capacity. Therefore, it is not anticipated that additional mitigation will be required for this phase of the Proposed Development.

Decommissioning

At this stage, mitigation beyond that implemented for construction and retained during operation is not anticipated for the decommissioning phase. However, this remains subject to confirmation of the preferred decommissioning traffic routes and agreement of the final highways study area with Lincolnshire County Council. As such, any additional mitigation measures proposed for the construction phase will be reviewed to consider their suitability/applicability for the decommissioning phase. Any measures identified as being suitable/applicable will be detailed in and secured by the Outline DEMP.

It is not proposed to prepare an Outline Decommissioning Traffic Management Plan in support of the DCO application due to the long-term nature of the Proposed Development and the significant uncertainty surrounding future network conditions. Instead, a Detailed Decommissioning Traffic Management Plan would be produced closer to the decommissioning period and secured by a DCO requirement, reflecting the technologies, routing options and highway context in place at that time.

6.10.7 Description of likely significant effects

Construction

Traffic associated with the construction of the Proposed Development will comprise both haulage and construction vehicles, as well as trips generated by workers travelling to and from the Site. The areas immediately surrounding the Site and the adjacent local highway network are expected to experience the greatest impact from these movements. Given the available routes for construction workers to the Site from settlements within a reasonable commuting distance, their dispersal across the local highway network and time periods would lead to reduced impacts on any given link, although these movements still have the potential to affect sensitive receptors such as Cranwell village. HGV movements are expected to vary over the construction phase; an initial peak is anticipated during mobilisation (primarily for aggregate, Site cabins, fencing and plant), followed by a consistent delivery of Solar PV modules and BESS. The proposed assessments will quantify construction-phase traffic demand across an indicative programme, and any identified impacts will be addressed within the ES. At this stage, without agreed access arrangements and HGV routeing, it is not possible to identify which receptors may be affected by construction traffic. These will be agreed with the Lincolnshire County Council as the local highway authority, following discussions around location of temporary compounds and traffic routeing.

Operation (including maintenance)

Traffic associated with the operation (including maintenance) phase is expected to be limited and primarily related to on-site staff movements to and from the Site as well as infrequent servicing/maintenance activity. There will also be a need for occasional replacement of infrastructure at the end of its life which will lead to short duration higher intensity traffic volumes, no greater than those experienced during the construction phase. For infrastructure replacement, any mitigation provided as part of the construction phase is likely to be permanent and therefore no further mitigation would be required. The surrounding highway network is anticipated to experience only minor changes in daily traffic flows, with the most noticeable effects occurring on the immediate approach roads to the Site.

Decommissioning

Traffic generated during the decommissioning phase will comprise haulage vehicles associated with dismantling activities, alongside staff movements. As with the construction phase, the areas closest to the Site and the local highway network will experience the greatest impact. The scale of decommissioning traffic is expected to be similar to the construction phase, though anticipated to be over a shorter duration. The proposed assessments will quantify decommissioning phase traffic demand, and any identified impacts will be addressed within the ES.

6.10.8 **Receptors/matters to be scoped into further assessment**		
Receptor/matter	**Phase**	**Justification**
A-Road A17 A-Road A15 B-Road B1429 Local Roads (minor) PRoW including public bridleway, restricted byway and footpaths: • Cran 1/1 – bridleway; • Cran 2/1 – restricted byway; • Brau 1/1 – footpath; • Brau 1/2 - footpath; • Brau 2/1 – bridleway; • Brau 4/1 - bridleway • Brau 4/2 - bridleway; • Brau 7/1 – footpath; • Brau 9/1 – footpath; • Brau 10/1 – footpath; and • Brau 11/1 – footpath. Sensitive locations (e.g. hospitals, schools)	Construction	During the construction phase, traffic would be generated by a range of activities including: • Construction workers to and from the Site; • Supply of construction materials and plant associated with the establishment of compounds and main construction works; • Movement of plant; • Removal of soil resources, spoil or waste; and • Service vehicles and visitors. Construction traffic estimates are currently unknown; therefore, this phase of works has been scoped into further assessment to enable consideration of impacts on receptors within the highways study area against the Guidelines for the Environmental Assessment of Traffic and Movement (Institute of Environmental Management and Assessment (IEMA), 2023).
A-Road A17 A-Road A15 B-Road B1429 Local Roads (minor) PRoW including public bridleway, restricted byway and footpaths: • Cran 1/1 – bridleway; • Cran 2/1 – restricted byway; • Brau 1/1 – footpath; • Brau 1/2 - footpath; • Brau 2/1 – bridleway;	Decommissioning	Traffic generated on the local highway network during the decommissioning phase will be similar in volume to that during the construction phase, including the movement of workers, materials and plants. As with the construction phase, the number of anticipated trips is currently unknown and as such, this phase of works has been scoped into further assessment. However, the construction phase assessment will provide the worst-case benchmark, with decommissioning traffic generation

• Brau 4/1 - bridleway • Brau 4/2 - bridleway; • Brau 7/1 – footpath; • Brau 9/1 – footpath; • Brau 10/1 – footpath; and • Brau 11/1 – footpath. Sensitive locations (e.g. hospitals, schools)		being no greater than construction traffic.

6.10.9 **Receptors/matters to be scoped out of further assessment**		
Receptor/matter	**Phase**	**Justification**
A-Road A17 A-Road A15 B-Road B1429 Local roads (minor) PRoW including public bridleway, restricted byway and footpaths: • Cran 1/1 – bridleway; • Cran 2/1 – restricted byway; • Brau 1/1 – footpath; • Brau 1/2 - footpath; • Brau 2/1 – bridleway; • Brau 4/1 - bridleway • Brau 4/2 - bridleway; • Brau 7/1 – footpath; • Brau 9/1 – footpath; • Brau 10/1 – footpath; and • Brau 11/1 – footpath. Sensitive locations (e.g. hospitals, schools)	Operation (including maintenance)	Once the Proposed Development is operational, the effect on the local road network is expected to be minimal. Traffic is expected to be generated primarily through staff movements to and from the Site for routine maintenance with a limited number of vehicles on a weekly basis. Access will be required less frequently for major maintenance and upgrades, including infrastructure replacement, which is predicted to require less traffic movements than that for construction and for a significantly shorter duration due to the likely piecemeal nature of any replacements. Therefore, it is not expected that the changes in traffic on the existing network will change by more than 10% for HGVs or 30% for all vehicle movements (or for any reasonable duration) during the operation (including maintenance) phase, these being defining thresholds for environmental effects on the local transport network.

6.10.10 **Opportunities for enhancing the environment**
With the exception of measures that promote sustainable travel to and from the Site for construction worker travel, the temporary nature of any potential traffic impacts

associated with the Proposed Development means that no specific opportunities for transport related enhancement have been identified at this stage.

6.10.11 **Proposed assessment methodology**

Construction and decommissioning

At this time, only changes in link flows are expected to require assessment, with the impacts on peak hour junction capacity unlikely to be material. However, the assessment will review pertinent junctions through which construction traffic will route as part of the Proposed Development. Confirmation of this approach will be discussed and agreed with Lincolnshire County Council when construction routes and numbers are available.

The presence of any local junctions will also be reviewed in respect to the busy nature of the local A-road network, and the propensity for local junctions (including the Holdingham Roundabout) to accommodate additional vehicular movements from both a capacity and road safety perspective. Specifically, the following have been identified for consideration when assessing the baseline condition of the study area:

- Cranwell Village;
- Byards Leap;
- RAF Cranwell;
- Long Lane; and
- Braucewell Quarries.

At this stage, the following receptors are anticipated within these locations:

- Residential properties located adjacent to, or with frontage onto, construction traffic routes;
- Employment-generating land uses;
- Receptors associated with potentially vulnerable users;
- Community and cultural assets;
- Facilities and infrastructure used by people walking;
- Cycling and micromobility infrastructure;
- Locations used for recreation and community activities; and
- Users of the local highway network.

Assessment of the transport and access impacts and their significance will be based on the IEMA Guidelines (2023) as noted above, and the Guidelines provide two broad rules as criteria to assist in determining the scale and extent of the environmental assessment. These are:

- *"Rule 1: Include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%)";* and
- *"Rule 2: Include highway links of high sensitivity where traffic flows have increased by 10% or more."*

Where the estimated traffic flow is below these thresholds, the impacts from the Proposed Development are considered to be low or insignificant in environmental terms and further detailed assessment is not required.

It is noted that accuracies better than 10% are not achievable and that day-to-day variation in traffic volumes on a road is frequently at least + or -10%. As a result, changes in traffic of less than 10% create no discernible environmental impact.

If traffic flows exceed the thresholds, a detailed assessment of the effects must be undertaken, assessing the sensitivity of receptors and the magnitude of change to determine whether the effects are considered significant or not significant. The following categories that may be assessed are:

- Severance of communities;
- Road Vehicle driver and passenger delay;
- Non-motorised user delay;
- Non-motorised amenity;
- Fear and intimidation on and by road users;
- Road user and pedestrian safety; and
- Hazardous/large loads.

An effect is determined to be significant or not significant through interpretation and professional judgement, supported by data or quantified information wherever possible. This includes considering the number of people experiencing the impact, their sensitivity, and any harm to natural or cultural resources. It must be made clear how the impact has been defined as significant or not.

The rationale for defining an effect as significant or not significant will follow the criteria presented in **Appendix D**.

Any impact on PRoWs will be considered as a 'non-motorised user' against the IEMA Guidelines (2023), with impacts managed via the Outline PRoWAS. It is envisaged that any impacts would be temporary and as a result, mitigation implemented would ensure that no significant effects occur on users of these routes.

For assessment of effects where PRoWs are relevant, consideration of the likely use of a PRoW will be first considered to determine its sensitivity. This will be complemented by PRoW usage data, where available, to understand usage, and stakeholder engagement to determine local importance.

6.10.12 Difficulties and uncertainties

To ensure transparency within the EIA process, the following difficulties and uncertainties have been identified:

- The overview of baseline conditions is based on desk-based studies only at scoping stage and is based on data available at the time of writing. Field surveys may reveal differences in findings, such as more recent changes to the local highway network; and
- Traffic estimates for any stage of the Proposed Development are not confirmed at this time and may be subject to change, but will be confirmed prior to undertaking the assessment.

6.10.13 **References**

IEMA. 2023. *Guidelines for the Environmental Assessment of Traffic and Movement*. Online. Available at: https://www.iema.net/media/5mrmquib/iema-report-environmental-assessment-of-traffic-and-movement-rev07-july-2023.pdf

7 INTERACTION EFFECTS AND CUMULATIVE EFFECTS

7.1 Proposed assessment methodology

7.1.1 Schedule 4 paragraph (5)(e) of the EIA Regulations states that the ES should include *"a description of the likely significant effects of the development on the environment resulting from… the* ***cumulation of effects*** *with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources"* **[Ref. 7-1]**.

7.1.2 Regulation 5(2) states that the EIA must identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the proposed development on the following factors….population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage and the landscape. Regulation 5(2)(e) refers to the need to assess "*the* ***interaction*** *between [those] factors*".

7.1.3 Cumulative effects occur as a result of several actions on an environmental receptor which may overlap or act in combination. The following types of cumulative effects will be considered in accordance with the EIA Regulations and best practice guidance:

- **Intra-project combined effects** – the interaction and combination of different environmental residual (post-additional mitigation) effects from within the Proposed Development affecting a receptor; and
- **Inter-project cumulative effects** – the combined residual (post-additional mitigation) effects of the Proposed Development and another project or projects on a single receptor/resource.

7.1.4 There is no widely accepted methodology for assessing cumulative effects, although various best practice and guidance documents exist. However, relevant guidance has been considered, including from the Institute of Environmental Management and Assessment (IEMA) (now ISEP)[8] **[Ref. 7-2]** and the assessment guidance set out in the Planning Inspectorate's Advice on Cumulative Effects Assessment **[Ref. 7-3]** on inter-project cumulative effects.

7.1.5 The following approach will be adopted for the assessment of cumulative effects, based on previous experience, the types of receptors being assessed, the nature of the Proposed Development, the other developments under consideration and the information available to inform the assessment.

[8] IEMA was rebranded to the Institute of Sustainability and Environmental Professionals (ISEP) in July 2025.

Intra-project combined effects

7.1.6 The approach to the assessment of interactions of environmental effects (intra-project combined effects) will consider the changes in baseline conditions at common sensitive receptors (i.e., those receptors that have been identified as experiencing likely significant environmental effects by more than one environmental factor) due to the Proposed Development. The assessment will be based upon residual (post-additional mitigation) effects of 'slight/minor' or greater significance only ('negligible' residual effects will not be considered). The assessment will also include consideration of where multiple non-significant effects could combine to become significant. The study area for the assessment of intra-project combined effects will be informed by the study areas for the individual environmental factor assessments.

7.1.7 The assessment of the intra-project combined effects will be undertaken using a two-stage approach:

Stage 1 – Screening

7.1.8 Screening will be undertaken to determine whether a sensitive receptor is exposed to more than one type of residual (post-additional mitigation) effect during the construction, operation (including maintenance) and decommissioning phases of the Proposed Development. Those common sensitive receptors exposed to two or more types of residual (post-additional mitigation) effects, with significance of 'slight/minor' or greater, will be taken forward to Stage 2 of the assessment.

7.1.9 If there is only one type of effect on a sensitive receptor (i.e., only one environmental factor assessment chapter has identified effects on that sensitive receptor), then it will be considered that there are no potential intra-project combined effects and the sensitive receptor will not be taken forward to Stage 2 of the assessment.

Stage 2 – Assessment

7.1.10 A quantitative assessment of the overall significance of the intra-project combined effects on common sensitive receptors identified at Stage 1 will be undertaken, based on technical information provided in the environmental factor assessment chapters and supporting appendices, as well as professional judgement. Given that the types of effects may be very different in some cases, a quantitative assessment may not be possible, and it may be necessary to apply professional judgement in determining the significance of each individual effect.

7.1.11 The evaluation at the receptor level will consider:

- The magnitude of change at the common receptor;

- Previously identified sensitivity; and
- Duration and reversibility of interaction.

7.1.12 The focus will be on determining a change in the level of effect likely to be experienced and whether this is significant or not.

7.1.13 The significance will be determined by professional judgement and based upon a 'lead' environmental factor which will consider indirect effects upon the receptor within the corresponding assessment in the ES. Where a significant effect is stated within the relevant environmental factor chapter in the ES, this will be taken forward into the Stage 2 intra-project combined assessment. If there is only one significant effect concluded on a receptor/receptor group, on a precautionary basis, this will be categorised as a significant intra-project combined effect. However, it will not be classified as a new significant effect, in addition to or separate from that identified in the relevant environmental factor chapter in the ES.

Inter-project cumulative effects

7.1.14 The approach to the assessment of inter-project cumulative effects will consider the deviation from the baseline conditions at common sensitive receptors as a result of changes brought about as a result of the Proposed Development in combination with one or more other existing development and/or approved development(s). The assessment of the inter-project cumulative effects will be based upon the residual (post-additional mitigation) effects that have been identified in the various environmental factor assessments for the Proposed Development, as well as available environmental information for the other existing development and/or approved developments.

7.1.15 In accordance with the Planning Inspectorate's Advice on Cumulative Effects Assessment **[Ref. 7-3]**, the identification of other existing development and/or approved developments will comprise two clear stages, as follows:

- **Stage 1**: establish a long list of other existing development and/or approved developments based on appropriate spatial and temporal limits.
- **Stage 2**: apply a clear rationale to establish a short list of other existing development and/or approved developments which, in combination with the Proposed Development, have the potential to result in a significant inter-project cumulative effect for inclusion within the assessment.

Stage 1: Long list methodology

7.1.16 In accordance with the Planning Inspectorate's Advice on Cumulative Effects Assessment **[Ref. 7-3]**, the first task in establishing the long list of relevant other existing development and/or approved development(s) is to determine the 'search area'. The 'search area' will be determined by affording

consideration to the Zone of Influence (ZoI) for each environmental factor assessed.

7.1.17 The ZoI for each environmental factor is defined as the spatial area over which an effect is likely to be experienced. The ZoI for each environmental factor will be identified based on the extent of the likely effects as identified as the study area in each of the individual environmental factor assessments, whilst also reflecting any additional area over which inter-project cumulative effects may occur for particular cumulative scenarios (e.g. sequential cumulative visual effects on users of linear routes).

7.1.18 The overall combined 'search area' for the long list of relevant other existing development and/or approved development(s) will be based on the largest ZoI in terms of distance.

7.1.19 Following the adoption of the ZoI, a planning application search will be undertaken to identify other existing development and/or approved developments within the ZoI, using the planning portals of Lincolnshire County Council and North Kesteven District Council and the Planning Inspectorate. However, it is recognised that Lincolnshire County Council and North Kesteven District Council, as the host local planning authorities, may be aware of additional proposals not yet fully in the public domain and hence comment is sought on any further developments that should, in the authority's opinion, be included in the inter-project cumulative effects assessment process.

7.1.20 Only the following types of other existing developments and/or approved developments will be considered for inclusion on the long list, as the Applicant considers that any development that does not fall within these types would not likely give rise to a significant inter-project cumulative effect:

- Employment developments;
- Residential developments of 10+ dwellings;
- Industrial developments;
- Minerals and waste applications;
- Nationally Significant Infrastructure Project (NSIP) developments[9];
- Transport infrastructure developments (advancing through Transport and Works Act Order procedures); and
- Energy infrastructure developments.

7.1.21 Furthermore, of the development types listed above, only those that meet one or more of the following criteria will be included on the long list (in accordance with the 'Tier 1' and 'Tier 2' descriptions in the Planning Inspectorate's Advice on Cumulative Effects Assessment **[Ref. 7-3]**):

[9] As defined by the Planning Act 2008 (as amended)

- Projects that are under construction but that will not be completed prior to the Proposed Development commencing (N.B. in accordance with the Planning Inspectorate's Advice on Cumulative Effects Assessment **[Ref. 7-3]**, other projects that are expected to be completed before construction of the Proposed Development, and the effects of those projects have been fully determined within their respective applications, are considered as part of the baseline);
- Projects with planning permission within the last five years[10] (whether under the Planning Act 2008 or other regimes), but not yet implemented;
- Submitted applications (whether under the Planning Act 2008 or other regimes), but not yet determined;
- All refusals subject to appeal procedures not yet determined; and
- Projects on the Planning Inspectorate's Programme of Projects where an EIA Scoping Report has been submitted, but for which an application has not yet been submitted.

7.1.22 The Applicant's interpretation of last bullet point above is that this solely relates to NSIPs. However, the Applicant will widen this particular criterion to include projects screened as EIA development under other regimes where an EIA Scoping Report has been submitted, but for which an application has not yet been submitted.

7.1.23 It should be noted that with reference to 'Tier 3' descriptions in the Planning Inspectorate's Advice on Cumulative Effects Assessment **[Ref. 7-3]**, the following other existing development and/or approved development(s) will not be considered for inclusion in the long list, as none of the below will have sufficient environmental assessment information freely and publicly available to inform the inter-project cumulative effects assessment, nor is there sufficient certainty on their delivery, nor are any of the below considered by the Applicant to be 'existing development and/or approved development':

- Projects on the Planning Inspectorate's Programme of Projects where an EIA Scoping Report has not been submitted;
- Projects that have been identified in the relevant Development Plan(s) (and emerging Development Plans); and
- Projects identified in other plans and programmes (as appropriate) which set the framework for future development consents/approvals, where such development is reasonably likely to come forward.

7.1.24 Only if the other existing development and/or approved developments meet the Stage 1 criteria will they then been taken forward to Stage 2. The long list will be kept under review, with the intention of agreeing the long list with Lincolnshire County Council and North Kesteven District Council prior to the

[10] A five-year period is considered a reasonable time period to capture all other existing development and/or approved developments that still have the potential to be built. Developments with planning permission older than five years will likely have been built or will not likely be built at all.

completion of the ES to allow for a robust assessment of inter-project cumulative effects.

Stage 2: Short list methodology

7.1.25 Following the formation of the long list, the eligible other existing development and/or approved developments identified require further assessment (Stage 2) to establish a short list of other existing development and/or approved developments which, in combination with the Proposed Development, have the potential to result in significant inter-project cumulative effects.

7.1.26 The criteria used to determine whether to include or exclude an existing development and/or approved development on the short list will reflect the process established by the Planning Inspectorate's Advice on Cumulative Effects Assessment **[Ref. 7-3]** and have regard to relevant policy and guidance documents and consultation with the appropriate statutory consultation bodies (particularly Lincolnshire County Council and North Kesteven District Council). The Planning Inspectorate's Advice on Cumulative Effects Assessment **[Ref. 7-3]** states that the criteria should address the following:

- "***Temporal scope**: The relative construction, operation and decommissioning programmes of the other existing and/or approved developments identified in the ZoI together with the NSIP programme, to establish whether there is overlap and any potential for interaction.*
- ***Scale and nature of development**: The scale and nature of the other existing and/or approved developments identified in the ZoI that are likely to interact with the proposed NSIP. Statutory definitions of major development and EIA screening thresholds may be of assistance when considering issues of scale.*
- ***Other factors**: For example, the nature and/or capacity of the receiving environment, which could make a significant cumulative effect with the other existing and/or approved developments more or less likely. Consider using a source-pathway-receptor approach to inform the assessment.*
- ***Documentation**: Matrix 1 in Appendix 1 may be used for the assessment shortlisting process and to provide a clear record of the applicant's decision-making for decision makers, stakeholders and members of the public."*

7.1.27 The Planning Inspectorate's Advice on Cumulative Effects Assessment **[Ref. 7-3]** suggests that professional judgement may also be used to supplement the threshold criteria and in order to avoid excluding other existing development and/or approved development that is:

- *"Below the threshold criteria limits but has characteristics likely to give rise to a significant effect; or*

- *Below the threshold criteria limits but could give rise to a cumulative effect by virtue of its proximity to the proposed NSIP [i.e. the Proposed Development].”*

7.1.28 The Planning Inspectorate’s Advice on Cumulative Effects Assessment **[Ref. 7-3]** also notes:

- “*Professional judgement could be applied to support the exclusion of other existing and/or approved development that exceeds the thresholds but may not give rise to evident effects. All the other existing and/or approved development considered should be documented and the reasons for inclusion or exclusion clearly stated*.”

7.1.29 Taking the above into consideration, the other existing development and/or approved developments on the long list will be reviewed against the following criteria to form the short list of other existing development and/or approved developments:

- **Criteria 1**: The other existing development and/or approved development has a construction, operational and/or decommissioning phase that is concurrent with any phase of the Proposed Development.
- **Criteria 2**: The other existing development and/or approved development and the Proposed Development share common sensitive receptors/resources which are assessed and described in the supporting environmental documentation and have the potential to be significantly affected by the combination of the other existing development and/or approved development and the Proposed Development.
- **Criteria 3**: The other existing development and/or approved development has sufficient environmental assessment information freely and publicly available to inform the inter-project cumulative effects assessment. The assessment of each existing development and/or approved development on the short list will be proportionate to the environmental assessment information available[11].

7.1.30 Where an existing development and/or approved development meets all of the above criteria, it will be included on the ‘short list’ and will be taken forward for further consideration in the assessment. The short list will be kept under review, with the intention of agreeing the short list with Lincolnshire County Council and North Kesteven District Council prior to the completion of the ES to allow for a robust assessment of inter-project cumulative effects.

7.1.31 Where developments are discounted from the short list, they will continue to be monitored to ensure that any changes to those projects are identified and

[11] In the unlikely event that a Tier 1 or 2 development, which is known will be progressed, but has insufficient environmental assessment information, a detailed inter-project cumulative effects assessment may not be possible. It may, however, still be prudent to consider the development in the inter-project cumulative effects assessment. The assessment may therefore take the form of listing the development and why it has not been considered in detail, or the potential inter-project cumulative effect could be discussed at a high level (qualitatively) using professional judgement.

their omission from the short list is reassessed prior to undertaking the inter-project cumulative effects assessment for the ES.

Stage 3: Information gathering

7.1.32 The other existing development and/or approved developments that form part of the short list will be subject to a review of environmental information, where available, including details of (but not limited to):

- Proposed design and location information;
- Proposed programme of construction, operation and decommissioning; and
- Environmental assessments that set out baseline data and effects arising from the other existing and/or approved development.

Stage 4: Assessment

7.1.33 There is no formal guidance on the criteria for determining significance of inter-project cumulative effects. The following principles will be considered when assessing the significance of inter-project cumulative effects, in accordance with the Planning Inspectorate's Advice on Cumulative Effects Assessment **[Ref. 7-3]** and in consideration of any mitigation measures required to avoid, prevent, reduce or, if possible, offset any identified significant adverse inter-project cumulative effects:

- The duration of effect (temporary or permanent);
- The extent of effect (the geographical area);
- The type of effect (whether additive or synergistic);
- The frequency of the effect;
- The value and resilience of the receptor affected; and
- The likely success of mitigation.

7.1.34 When considering the inter-project cumulative effects with other existing developments and/or approved developments, it will be assumed that standard and good practice mitigation measures will be applied to the developments (e.g., use of Construction Environmental Management Plans) and that such mitigation would be secured as part of any planning permission granted. As such, it is appropriate to rely on these mitigation measures when completing the inter-project cumulative effects assessment.

7.1.35 The Applicant does not consider it possible to assess all the inter-project cumulative effects of decommissioning activities as there is currently no mechanism to identify other existing development and/or approved developments that would be relevant at that time. However, where possible, an assessment will be completed. It is anticipated that further consideration of the potential inter-project cumulative effects of decommissioning will be a matter for the relevant consenting authority at the time.

7.2 Difficulties and uncertainties

7.2.1 The assessment of inter-project cumulative effects will be limited to publicly available information obtained from the relevant planning applications on the planning portals of Lincolnshire County Council and North Kesteven District Council and the Planning Inspectorate. For some of the identified other existing development and/or approved developments, relevant information for this assessment may not be available. Where this is the case, the inter-project cumulative effects assessment will be based upon assumptions and professional judgement, reliant on the review of mitigation measures proposed as part of the other existing development and/or approved developments rather than the Proposed Development.

7.3 Grid connection

7.3.1 The Applicant has been engaged with the National Energy System Operator Limited (NESO) on potential grid connections to allow export and import of electricity to and from the National Grid (refer to **Section 1.2**).

7.3.2 Regardless of whether the off-site grid connection falls within any of the three Tiers (referred to at **paragraphs 7.1.21** and **7.1.23** above) it is anticipated that the ES will identify an indicative off-site grid connection corridor (where sufficient information is available) and will include an assessment of environmental effects associated with the proposed off-site grid connection infrastructure. The findings of this assessment will be used to inform the inter-project cumulative effects assessment, ensuring that the potential inter-project cumulative effects of the Proposed Development in combination with the proposed off-site grid connection are considered. The assessment of the off-site grid connection will be undertaken at a level of detail proportionate to the information reasonably available to the Applicant at the time of preparation of the ES.

7.4 References

Ref. 7-1: The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. Online. Available at: https://www.legislation.gov.uk/uksi/2017/572/contents/made

Ref. 7-2: Institute of Environmental Management and Assessment (IEMA). (2011). *The State of Environmental Impact Assessment in the UK*. Online. Available at: https://s3.eu-west-2.amazonaws.com/iema.net/documents/knowledge/policy/impact-assessment/2011-State-of-EIA-IEMA.pdf

Ref. 7-3: Planning Inspectorate. (2026). *Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment*. Online. Available at: Nationally

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