

The Drovers Solar Farm

Appendix 2.1: EIA Scoping Opinion Request

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Glossary

Term	Description
Access Tracks	The tracks either existing or proposed, within the Site, which provide access around the Scheme.
Ancillary Buildings	The office, storage and plant buildings which may be located within the Solar PV Site.
Ancillary Infrastructure	Works that are ancillary to the Scheme, including enclosure and boundary treatment, security and monitoring infrastructure, landscaping and biodiversity measures including planting, drainage and irrigation works, signage, earthworks, and access including Permissive Paths.
Applicant	The Drovers Solar Farm Limited.
Associated Development	Development associated with the Scheme including but not limited to the BESS, Customer Substation, National Grid Substation, Grid Connection Infrastructure and Ancillary Infrastructure integral to the construction, operation, maintenance and decommissioning of the Scheme.
Baseline Conditions	The environment as it appears (or would appear) immediately prior to the implementation of the Scheme together with any known or foreseeable future changes that will take place before completion of the Scheme.
Battery Energy Storage System (BESS)	Battery Energy Storage System (BESS), is used to describe the battery storage installation to allow for the storage, importation, and exportation of energy to the National Grid. For the purposes of the Environmental Impact Assessment, it has been assumed battery technology will be adopted for the BESS.
Cable Circuit	An electrical conductor necessary to transmit electricity between two points within the Scheme and may include one or more auxiliary cables for the purpose of gathering monitoring data, earthing cables, cables for auxiliary supply, optical fibre and other types of communication cables, cables connecting to direct current boxes.
Cable Route Corridor	The route for the proposed underground cables connecting the Conversion Units to the BESS and the Customer Substation.



Cable Sealing End Compound (CSEC)	The infrastructure required to transition the 400kV overhead lines with the underground cables. The CSEC would have an Access Track with a security fence around it and it would be connected to the overhead line via a gantry or an anchor block solution.
Construction Hub	An area within the Site where deliveries will be set down, managed and redistributed throughout the Construction Phase.
Construction Phase	The period of constructing the Scheme including enabling and commissioning works.
Conversion Units	Conversion Units incorporate the inverters, transformers and switchgear and are required to manage the electricity generated by the PV Panels. These would either be standalone equipment, or they would be housed ('integrated') together within a container.
Cumulative Effects	<p>Effects upon the environment that result from the incremental impact of an action when added to other past, present or reasonably foreseeable actions.</p> <p>Each impact by itself may not be significant but can become a significant effect (in EIA terms) when combined with other impacts.</p>
Customer Substation	<p>The Scheme substation comprising electrical infrastructure such as the Transformers, Switchgear and metering equipment required to facilitate the export of electricity from the Scheme to the National Grid Substation. The Customer Substation will also provide Ancillary Buildings for staff welfare and storage facilities.</p> <p>The Customer Substation will convert the electricity transmitted along the Cable Route Corridor up to 400kV (kilovolt) for onward transmission to the National Grid Substation via the Grid Connection Cables.</p>
Decommissioning Phase	The process of decommissioning the Scheme including the removal of the Solar PV Array including PV Modules, Mounting Structures, Inverters and Transformers, the BESS and Customer Substation.
Development Consent Order (DCO)	Development consent is required pursuant to the Planning Act 2008 for Nationally Significant Infrastructure Projects. A development consent order is a statutory instrument containing powers that enable the applicant to carry out the construction, operation, maintenance and decommissioning of the Nationally Significant Infrastructure Project.



	Applications for DCOs are made to, and decided by, the relevant Secretary of State.
Development Consent Order (DCO) Application	The application for a Development Consent Order (DCO) to be submitted by the Applicant for the Scheme.
Electric Field	An electric field is the physical field that surrounds electrically charged particles and exerts force on all other charged particles in the field, either attracting or repelling them. Measured in volt per meter (Vm-1) or newton per coulomb (NC-1).
Electromagnetic field (EMF)	Property of space caused by the motion of an electric charge and is the product of mutual interaction between electric fields and magnetic fields. As such, these are produced in the surrounding area of anywhere there is an electric current.
Environmental effect	The consequence of an action (impact) upon the environment.
Environmental impact	The change in the environment from a development such as the removal of a hedgerow.
Environmental Impact Assessment (EIA)	A process, underpinned by legislation, by which information about environmental effects of a proposed development is collected, assessed and used to inform decision making. For certain projects, EIA is a statutory requirement.
Environmental Impact Assessment (EIA) Regulations	Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended) that give planning authorities a means of ensuring that they can take account of the environmental, economic and social implications of individual developments in their decisions on planning applications.
Environmental Impact Assessment (EIA) Scoping Report	The process of identifying the issues to consider within the PEIR/ES and establishing the scope of the assessment, is known as ‘scoping’. Although scoping is not a mandatory requirement under the EIA Regulations, it is recognised as a useful preliminary procedure which helps to identify the main effects that a Scheme is likely to have on the environment.
Fixed South Facing PV Arrays	Solar photovoltaic (PV) tables that face south and are mounted to fixed Mounting Structures in an east/west configuration.
Generating Station	The elements of the Scheme that generate the electricity output, namely: solar modules fitted to mounting structures; DC electrical cabling; Conversion Units including inverters,



	transformers, switchgear, and monitoring and control systems; and Grid Connection Infrastructure.
Green Infrastructure	A network of multi-functional green space and other green features, urban and rural, which can deliver quality of life and environmental benefits for communities.
Grid Connection Cables	The 400kV (kilovolt) cables connecting the Customer Substation to the Point of Connection.
Grid Connection Corridor	The proposed corridor for the Grid Connection Cables between the Customer Substation and the Point of Connection, which may be underground or overhead lines.
Grid Connection Infrastructure	Underground and/or overhead lines including new pylons between the National Grid Substation and the Point of Connection, including a Cable Sealing End Compound.
Ground mounted PV Modules	Solar photovoltaic (PV) modules attached to structures that are fixed to the ground which include Single Axis Tracker PV Arrays or Fixed South Facing PV Arrays.
High Voltage Cables/Cabling	Cables, which transmit electricity from the Conversion Units to the BESS and the Customer Substation.
Highway Works	Any works associated with the temporary or permanent amendments to the highway and/or highway verges to facilitate the Construction Phase, Operational Phase and Decommissioning Phase of the Scheme.
Inverter	Inverters convert the Direct Current (DC) electricity generated by the PV Panels into Alternating Current (AC), which allows the electricity generated to be exported to the national grid.
Jointing bay	Underground structures constructed at regular intervals along the cable route to join sections of the cable circuits and facilitate installation of the cable circuits into the buried ducts.
Low Voltage Cables/Cabling	Cables which transmit electricity from the PV Panels to the Conversion Units.
Magnetic field	A magnetic field is a vector field that describes the magnetic influence on moving electric charges, electric currents, and magnetic materials. The magnetic flux density of the field is measured in tesla (T), based on the SI unit kilogram per second squared per ampere (kgm 2A-1).



Mitigation	Measures including any process, activity, or design to avoid, reduce, or remedy for negative environmental impacts or effects of a development.
Proposed Mitigation and Enhancement Areas	The areas that are being proposed for mitigation and enhancement.
Mounting Structures	The metal frames onto which the PV Panels are attached.
National Grid Substation	The 400kV (kilovolt) substation operated by National Grid Electricity Transmission.
National Policy Statement (NPS)	National Policy Statements are produced by government in accordance with Part 2 of the Planning Act 2008. They comprise the government's central policy documents for the development of nationally significant infrastructure.
Nationally Significant Infrastructure Project (NSIP)	A NSIP is a large-scale development (as defined in sections 14-30A of the Planning Act 2008) such as certain new harbours, power generating stations (including wind farms), highways developments and electricity transmission lines, which require a type of consent known as 'development consent' which is governed by the Planning Act 2008.
On-site cables as earthing cables and optical fibre cables	The low or medium voltage cables within the Scheme, which transmit electricity between PV Panel to Conversion Units and from there to the Customer Substation and BESS. These cables consist of 33kV (kilovolt), 132kV and 400kV cables, as well as earthing cables and optical fibre cables.
Operational Phase	The period within which the Scheme is operational and may require maintenance activities, including equipment replacement, following the Construction Phase.
PA 2008	Planning Act 2008
Permissive Paths	New recreational permissive paths that the public may use during the Operational Phase subject to the terms of the DCO.
Photovoltaic (PV)	The process of converting sunlight to electrical energy.
Planning Inspectorate (PINS)	The Planning Inspectorate is an executive agency of the Ministry of Housing, Communities and Local Government of the United Kingdom Government with responsibility for making decisions and providing recommendations and advice on a range of land use planning-related issues across England and Wales.



Point of Connection (POC)	The National Grid Substation and associated connection into the 400kV overhead lines located at The Drovers Solar Farm, which the Scheme connects to, to transfer the energy generated to the national grid system.
Preliminary Environmental Information	<p>Preliminary Environmental Information is defined in the EIA Regulations as: <i>“information referred to in regulation 14(2) which –</i></p> <p><i>(a) has been compiled by the applicant; and</i></p> <p><i>(b) is reasonably required for the consultation bodies to develop and informed view of the likely significant environmental effects of the development (and of any Associated Development).”</i></p>
PV Panel	Solar photovoltaic panel designed to convert solar irradiance to electrical energy. The PV panel is attached to a Mounting Structure and is referred to as the Ground mounted PV Modules.
PV Tables	PV Modules mounted onto the Mounting Structure, forming tables, which are set out in rows either in an east/west or a north/south configuration.
Receptor	A component of the natural or man-made environment (including people) that is affected by an impact.
Scheme	<p>A Nationally Significant Infrastructure Project (NSIP) comprising a ground mounted solar photovoltaic generating station with a gross electrical capacity of over 50 megawatts, with Associated Development which would allow the generation, storage and export of electricity.</p> <p>The Scheme is known as “The Drovers Solar Farm”.</p>
Setting	The surroundings within which a heritage asset is experienced and any element which contributes to the understanding of its significance.
Single Axis Trackers	Mounting Structures in a north/south configuration, that allow the PV Table to rotate and track the movement of the sun.
Site	Area consisting of Solar PV Site and other Associated Development including the Customer Substation, National Grid Substation, Proposed Mitigation and Enhancement Areas, Grid Connection Infrastructure, Highway Works and Ancillary Infrastructure.



Solar PV Site	A term used to describe the land that accommodates the Ground mounted PV Modules and Conversion Units.
String Inverters	Inverters located throughout the Solar PV Site, mounted on the structures underneath the PV Modules and connected to a Transformer.
Study Area	The area to which a particular assessment or survey relates. The Study Area will vary depending on the nature of the technical assessment. Where relevant, these are defined within the relevant chapter of the Environmental Impact Assessment Scoping Report.
Switchgear	A combination of electrical disconnect switches, fuses or circuit breakers used to control, protect, and isolate electrical equipment.
Temporary Construction Compounds	Temporary laydown areas used during construction, comprising areas of hardstanding, car parking, areas to store materials and equipment, waste management, security infrastructure including fencing, lighting and cameras.
Transformers	Transformers increase and decrease the voltage of the electricity. There would be 33kV Transformers and 132kV Transformers within the Scheme.



1 Introduction

1.1 Overview

- 1.1.1 This Environmental Impact Assessment (EIA) Scoping Request (hereafter known as the 'Scoping Request') has been prepared on behalf of The Drovers Solar Farm Limited (the 'Applicant') for a solar photovoltaic (PV) electricity generating station, and associated development including Battery Energy Storage System (BESS), Ancillary Infrastructure, a Customer Substation and Grid Connection Infrastructure (including a new National Grid Substation). The Scheme would allow for the generation and export of over 50 megawatts (MW) Alternating Current (AC) of renewable energy, connecting into the National Electricity Transmission System (NETS) overhead line that passes through the Site.
- 1.1.2 As the Scheme would have a generating capacity in excess of 50MW, it is considered to be a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008 and therefore, requires a Development Consent Order (DCO) under the Planning Act 2008 [**Ref 1-1**].
- 1.1.3 The Scheme, known as 'The Drovers Solar Farm', will contribute to the reduction of carbon emissions and reliance on traditional fossil fuels by providing a renewable energy source to assist with the UK's energy transition. The Scheme also seeks to put Norfolk at the forefront of low carbon energy development, production and servicing, with the intention of bringing economic, community, and environmental benefits.
- 1.1.4 This Scoping Request has been prepared in accordance with Regulation 10(1) of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 [**Ref 1-2**] (the 'EIA Regulations'). In line with the requirements of Regulation 10(3) of the EIA Regulations, this request contains the following information to assist the Planning Inspectorate (PINS), as the relevant authority, adopt a Scoping Opinion:
- A plan sufficient to identify the land (**Figure 2-1**)
 - A description of the Scheme, including its location and technical capacity (Chapter 3)
 - An explanation of the likely significant effects of the Scheme on the environment (Chapters 6-18); and
 - Such other information or representations as the person making the request may wish to provide or make.
- 1.1.5 This Scoping Request has been prepared to provide an overview of the likely significant environmental effects that have been considered in scoping the EIA for the Scheme. It sets out the intended scope and the methodologies for assessments of the likely significant environmental effects to be reported in the Preliminary Environmental Information Report (PEIR) and Environmental Statement (ES), the latter of which will accompany the DCO Application. This Scoping Request also provides the justification and rationale for scoping out environmental topics or receptors where it is considered that significant effects are unlikely to arise as a result of the Scheme.
- 1.1.6 The Scoping Request has been prepared with reference to PINS Advice Note Seven: Environmental Impact Assessment: Process, Preliminary Environmental Information and



Environmental Statements [Ref 1-3] which contains guidance on EIA Scoping, and the NSIP Technical Advice Page for Scoping Solar Development¹.

1.2 Structure of the Scoping Report

1.2.1 This Scoping Request is structured as follows:

- Chapter 1: Introduces the Scoping Request
- Chapter 2: Provides a description of the Site and its context
- Chapter 3: Provides a description of the Scheme based upon current planning and design work, along with the anticipated construction process and timescales as is known at this stage
- Chapter 4: Presents an overview of the EIA process, EIA methodology and the manner in which the information will be provided and presented within the ES
- Chapter 5: Provides the scope of the PEIR and ES
- Chapters 6 - 18: Environmental topics which are to be scoped in and out the EIA; and
- Chapter 19: Summary.

1.3 EIA Consultant Team

1.3.1 The EIA Consultants who have contributed to the preparation of this Scoping Request are set out in **Table 1.1**.

Table 1.1 EIA Topics and Consultant Team

EIA Scoping Report	Organisation
Planning	DWD
EIA Coordination	LDA Design
Landscape and Visual	
Access and Highways	Velocity Transport Planning
Agriculture and Soils	Kernon Countryside Consultants

¹ Nationally Significant Infrastructure Projects: Technical Advice Page for Scoping Solar Development: <https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-technical-advice-page-for-scoping-solar-development> (published 20 September 2024)



Air Quality	Hoare Lea
Noise and Vibration	
Climate Change	Bureau Veritas
Cultural Heritage and Archaeology	GHC Archaeology & Heritage
Ecology and Biodiversity	Aspect Ecology
Glint and Glare (as part of Other Environmental Topics)	Pager Power
Health	Volterra Partners
Socio-economics	
Water Resources	Raincloud Consulting
Ground Conditions (as part of Other Environmental Topics)	
Other Environmental Topics: Electromagnetic Fields, Major Accidents and Disasters, Telecommunications, Utilities and Television Receptors, and Waste.	LDA Design

1.4 The Applicant

- 1.4.1 The Scheme is being developed by The Drovers Solar Farm Limited (the 'Applicant'), part of Island Green Power ('IGP'), which is a leading international developer of renewable energy projects, with a focus on utility-scale solar projects and battery storage systems. IGP focuses on the entire project lifecycle of development from land sourcing, obtaining planning consents and permits and achieving grid connection with operations across the UK, Europe, Australia and New Zealand.
- 1.4.2 Established in 2013, with the founders operating for over 25 years in the energy market, IGP's mission is to help countries increase their solar energy usage, making more renewable energy possible whilst drastically reducing carbon emissions. IGP are committed to responsible land use, working with the belief that development and commercial delivery of solar farms can be achieved in harmony with their surrounds.



- 1.4.3 With a track record in developing more than 1 Gigawatt of renewable assets, IGP over the past decade has been harnessing sunlight for clean, renewable energy. Recently, IGP has taken two NSIP solar projects – Cottam Solar Project and West Burton Solar Project - through the examination stage of the DCO process. Development consent was granted for Cottam Solar Project on 5 September 2024. Examination of the West Burton Solar Project closed on 8 May 2024 and a decision is pending.

1.5 Consenting Regime and Need for Environmental Impact Assessment

- 1.5.1 Under Section 14(1)(a) and 15(2) of the Planning Act 2008, the Scheme is defined as an NSIP, because it is an onshore generating station in England with a generating capacity exceeding 50MW that does not generate electricity from wind.
- 1.5.2 The EIA Regulations provide the legislative framework which specify which developments are required to undergo an EIA, and categorises development relevant to the NSIP planning process as either 'Schedule 1 development' or 'Schedule 2 development'. Those developments listed in Schedule 1 must be subject to EIA, while developments listed in Schedule 2 must only be subject to EIA if they are *considered "likely to have significant effects on the environment by virtue of factors such as its nature, size or location"*. The criteria on which this judgement must be made are set out in Schedule 3 of the EIA Regulations.
- 1.5.3 The Scheme falls under paragraph 3(a) of Schedule 2 to the EIA Regulations as it constitutes *"industrial installations for the production of electricity, steam and hot water..."*.
- 1.5.4 The Applicant considers that due to the Scheme's nature, size and location that it has the potential to have significant effects on the environment and therefore constitutes EIA Development. In accordance with Regulation 8(1)(b) of the EIA Regulations, the Applicant hereby provides notice that it will provide an Environmental Statement in support of the DCO Application.

1.6 Purpose of this Scoping Request

- 1.6.1 The process of identifying the issues to consider within the PEIR/ES and establishing the scope of the assessment, is known as 'Scoping'. Although scoping is not a mandatory requirement under the EIA Regulations, it is recognised as a useful preliminary procedure which helps to identify the main effects that a Scheme is likely to have on the environment.
- 1.6.2 This Scoping Request provides information on the proposed Site location, the Scheme, the likely significant effects on the environment, and any other such information that is considered relevant, including the proposed approach to assessment, in compliance with Regulation 10(3) of the EIA Regulations. The environmental topics which are proposed to be included in the EIA scope, and those which are not, are presented in Chapter 18 'Other Environmental Topics' of this Scoping Request, respectively.
- 1.6.3 Overall, and in line with best practice, this scoping exercise aims to achieve the following objectives:
- Establish the availability of existing baseline data



- Define a survey and assessment framework from which a comprehensive EIA spanning those environmental topics which are likely to experience significant environmental effects can be undertaken; and
- Invite consultees to comment on the proposed EIA, in terms of:
- The potential significant environmental effects which require assessment
- The assessment methodology for each environmental topic proposed to be scoped into the EIA process
- Sources of information
- Issues of perceived concern; and
- Any other areas which should be addressed in the EIA.

1.7 Legislative context and Planning Policy

Introduction

Net Zero Opportunities of the Power Sector

- 1.7.1 In June 2019 the Government raised the UK's ambition on tackling climate change by legislating for a net-zero greenhouse gas emissions target for the whole economy by 2050. Decarbonising the power sector is integral to achieving this goal and requires major investment in renewable energy, such as solar, which are supported by planning policy at a local and national level.
- 1.7.2 The National Infrastructure Commission (NIC), official advisor to the Government on infrastructure, has subsequently produced a report, 'Net Zero: Opportunities for the Power Sector' [Ref 1-4], in March 2020, which sets out the infrastructure required in order to meet the 2050 target, including the amount of new renewable energy development that would need to be deployed. The report states that a generation and capacity mix of significant solar, onshore wind and offshore wind is needed, with between 129-237 gigawatts ('GW') of renewable capacity to be in operation by 2050, including:
- 56-121 GW of solar
 - 18-27 GW of onshore wind; and
 - 54-86 GW of offshore wind.
- 1.7.3 The British Energy Security Strategy (April 2022) [Ref 1-5] expects a five-fold increase in solar deployment by 2035, with an ambition for up to 70 GW of solar installed by this date. Powering Up Britain: Energy Security Plan (March 2023) [Ref 1-6] reiterated the aim of achieving 70GW of solar by 2035. This generally aligns with modelling in the National Energy System Operator (NESO) report, Future Energy Scenarios [Ref 1-7], published in July 2023, which provides comparable statistics (although slightly less than) which shows a need for approximately 60 GW of solar being needed between 2030-2035 in the 'Leading the Way' scenario.
- 1.7.4 Although the above figures are high-level, they demonstrate the amount of new infrastructure that is required to meet the urgent need to decarbonise the energy sector in the UK. The scale of this need is such that it must be shared throughout the UK and in recognition that climate change is a national and global issue.



Primary Legislation

Planning Act 2008

- 1.7.5 The Scheme constitutes a NSIP, in accordance with the Planning Act 2008 (PA2008) [Ref 1-1], as it comprises:
- The construction or extension of a generating station (Part 3, Section 14(1)(a)); and
 - Is located in England, does not generate electricity from wind, is not an offshore generating station, and has a capacity of more than 50MW (Part 3, Section 15(2)).
- 1.7.6 Therefore, a DCO Application under the PA2008 is required which will be determined by the Secretary of State (SoS).

Environment Act 2021

- 1.7.7 The Environment Act 2021 (Commencement No. 3) Regulations 2022 ('2021 Act') [Ref 1-13] is the UK's new framework of environmental protection and requires the SoS to set at least one long term target in each of the four key priority areas: air quality; biodiversity; water; and waste. This will be achieved by a set of measures targeted at UK businesses and supply chains. The 2021 Act also targets four key areas for the recovery of habitats.
- 1.7.8 Of key relevance to the Scheme, is that from November 2025 it is expected that the statutory biodiversity net gain (BNG) requirements will begin to apply to NSIPs², meaning the Scheme will need to achieve a minimum of 10% BNG.

Net Zero Strategy: Build Back Greener

- 1.7.9 The Net Zero Strategy [Ref 1-8], published by Government on 19 October 2021, builds on the Government's commitments made in the Energy White Paper (2020) [Ref 1-9] and sets out the long-term strategy, policy and proposals to keep the UK on track for future carbon budgets as well as setting the vision for a decarbonised economy by 2050. Key policies in the Strategy relating to UK power generation include:

"By 2035 the UK will be powered entirely by clean electricity, subject to security of supply; [...]"

"40 GW of offshore wind by 2030, with more onshore, solar and other renewables – with a new approach to onshore and offshore electricity networks to incorporate new low carbon generation and demand in the most efficient manner that takes account of the needs of local communities [...]"

"Deployment of new flexibility measures including storage to help smooth out future price spikes."

² The Biodiversity Net Gain Statutory Instruments – explained: [The Biodiversity Net Gain Statutory Instruments – explained – Environment \(blog.gov.uk\)](https://www.blog.gov.uk/2023/09/27/the-biodiversity-net-gain-statutory-instruments-explained/)



National Planning Policy

National Policy Statements

- 1.7.10 The DCO Application must be determined in accordance with s104 of the PA2008. The SoS must decide the DCO Application in accordance with any relevant National Policy Statements (NPSs) (unless one of the limited exceptions apply) and have regard to any local impact report and any other matters which the SoS thinks are both important and relevant to their decision.
- 1.7.11 There are six energy NPSs, and EN-1 to EN-5 were revised in November 2023 and designated on 17 January 2024. The following energy NPSs are relevant to the Scheme:
- Overarching NPS for Energy (EN-1) [Ref 1-10]
 - NPS on Renewable Energy Infrastructure (EN-3) [Ref 1-11]; and
 - NPS for Electricity Networks Infrastructure (EN-5) [Ref 1-12].

Overarching National Policy Statement for Energy (EN-1)

- 1.7.12 The Overarching NPS for Energy (EN-1) sets out the national policy for delivering major energy infrastructure in England and Wales. NPS EN-1 has effect in combination with the relevant technology specific NPS, in this case Renewable Electricity Generation (EN-3). Together, EN-1 and EN-3 will provide the primary basis for decisions made by the SoS for the Scheme.
- 1.7.13 Part 3 of EN-1 identifies the need that exists for nationally significant energy infrastructure. With regards to decision making, paragraph 3.2.2 of EN-1 states:
- “We need a range of different types of energy infrastructure to deliver these objectives. This includes the infrastructure described within this NPS but also more nascent technologies, data, and innovative infrastructure projects consistent with these objectives”.*
- 1.7.14 Paragraph 3.2.3 states:
- “It is not the role of the planning system to deliver specific amounts or limit any form of infrastructure covered by this NPS. It is for industry to propose new energy infrastructure projects that they assess to be viable within the strategic framework set by government. This is the nature of a market-based energy system. With the exception of new coal or large-scale oil-fired electricity generation³, the government does not consider it appropriate for planning policy to set limits on different technologies but planning policy can be used to support the government’s ambitions in energy policy and other policy areas”.*
- 1.7.15 Paragraph 3.2.6 states:
- “The Secretary of State should assess all applications for development consent for the types of infrastructure covered by this NPS on the basis that the government has demonstrated that there is a need for those types of infrastructure which is urgent, as described for each of them in this Part”.*
- 1.7.16 As is explained in paragraph 3.2.7, the SoS has determined that substantial weight should be given to this need when considering application for a DCO under the PA2008.

³ Footnote 36 from EN-1: A further exception to this is EfW plants where the primary function is to treat waste and planning decision will be made on the demand for waste infrastructure. See EN-3 for further detail.



1.7.17 Paragraph 3.2.8 states:

“The Secretary of State is not required to consider separately the specific contribution of any individual project to satisfying the need established in this NPS”.

1.7.18 Section 3.3 of EN-1 establishes the need for new nationally significant electricity infrastructure. Paragraph 3.3.1 states:

“Electricity meets a significant proportion of our overall energy needs and our reliance on it will increase as we transition our energy system to deliver our net zero target. We need to ensure that there is sufficient electricity to always meet demand; with a margin to accommodate unexpectedly high demand and to mitigate risks such as unexpected plant closures and extreme weather events”.

1.7.19 Paragraphs 3.3.4 to 3.3.7 in sum sets out the need for different types of electricity infrastructure, identifying none of them will enable meeting of the objectives in isolation and the need for increased flexibility provided by new storage and interconnectors to reduce costs in support of an affordable supply. This section also discusses the flexibility of storage and interconnection, security of supply and the reduction in need for new network infrastructure.

1.7.20 Paragraph 3.3.12, in referencing decentralised and community energy systems notes the Government’s recognition that these technologies will not replace the need for new large-scale electricity infrastructure.

1.7.21 Paragraph 3.3.20 states:

“Wind and solar are the lowest cost ways of generating electricity, helping reduce costs and providing a clean and secure source of electricity supply (as they are not reliant on fuel for generation). Our analysis shows that a secure, reliable, affordable, net zero consistent system in 2050 is likely to be composed predominantly of wind and solar⁴”.

1.7.22 Paragraph 3.3.22 notes that renewable energy sources, such as solar, need to be complemented with technologies which supply electricity, or reduce demand, when the availability of intermittent renewable sources is low – for example when weather conditions are less favourable.

1.7.23 The need for electricity generating capacity is further demonstrated by Paragraph 3.3.57 as:

“Government has committed to reduce GHG emissions by 78 per cent by 2035 under carbon budget 6⁵. According to the Net Zero Strategy⁶ this means that by 2035, all our electricity will need to come from low carbon sources, subject to security of supply, whilst meeting a 40-60 per cent increase in demand”.

1.7.24 Paragraph 3.3.25 to 3.3.31 discusses the role of electricity storage, a key component of the Scheme. Paragraph 3.3.25 explains that storage has a key role to play in achieving net zero. Storage provides flexibility to the energy system, so that high volumes of low carbon power, heat and transport can be integrated.

⁴ Footnote 44 from EN-1: <https://www.gov.uk/government/publications/modelling-2050-electricity-system-analysis>

⁵ Footnote 61 taken from EN-1: <https://www.gov.uk/guidance/carbon-budgets#setting-of-the-sixth-carbon-budget-2033-2037>

⁶ Footnote 62 taken from EN-1: <https://www.gov.uk/government/publications/net-zero-strategy>



1.7.25 Paragraph 3.3.26 states that:

“Storage is needed to reduce the costs of the electricity system and increase reliability by storing surplus electricity in times of low demand to provide electricity when demand is higher.”

1.7.26 Paragraph 4.1.5 of EN-1 states that in considering any proposed development, and when weighing its adverse impacts against its benefits, the SoS should take into account:

“Its potential benefits including its contribution to meeting the need for energy infrastructure, job creation, reduction of geographical disparities, environmental enhancements, and any long-term or wider benefits

Its potential adverse impacts, including on the environment, and including any long-term and cumulative adverse impacts, as well as any measures to avoid, reduce, mitigate or compensate for any adverse impacts, following the mitigation hierarchy”.

1.7.27 The energy NPSs have taken account of the National Planning Policy Framework (NPPF), the Planning Practice Guidance (PPG) for England, and Planning Policy Wales (PPW) and Technical Advice Notes (TANs) for Wales, where appropriate⁷. Other matters that the SoS may consider both important and relevant to decision-making may include Development Plan documents or other documents in the Local Development Framework.

1.7.28 Part 4 of EN-1 relates to the critical national priority for low carbon infrastructure. The Government has committed to fully decarbonising the power system by 2035, subject to security of supply, to underpin its 2050 net zero ambitions. Paragraph 4.2.2 states that:

“Ensuring the UK is more energy independent, resilient and secure requires the smooth transition to abundant, low-carbon energy. The UK’s strategy to increase supply of low carbon energy is dependent on deployment of renewable and nuclear power generation, alongside hydrogen and CCUS.”

1.7.29 The Government has therefore concluded that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure.

1.7.30 Paragraph 4.2.5 notes the scope remains as set out in the PA2008 to the definition of what counts as nationally significant infrastructure, low carbon infrastructure for the purpose of the policy is set out, in part, as:

“For electricity generation, all onshore and offshore generation that does not involve fossil fuel combustion (that is, renewable generation, including anaerobic digestion and other plants that convert residual waste into energy, including combustion, provided they meet existing definitions of low carbon; and nuclear generation), as well as natural gas fired generation which is carbon capture ready

For electricity grid infrastructure, all power lines in scope of EN-5 including network reinforcement and upgrade works, and associated infrastructure such as substations. This is not limited to those associated specifically with a particular generation technology, as all new

⁷ Footnote 95 taken from EN-1: NPPF: See <https://www.gov.uk/government/collections/planning-practice-guidance>; PPG: Use of Planning Conditions: See <https://www.gov.uk/guidance/use-of-planning-conditions>; TANs: See <https://gov.wales/technicaladvisenotes>



grid projects will contribute towards greater efficiency in constructing, operating and connecting low carbon infrastructure to the National Electricity Transmission System

For other energy infrastructure, fuels, pipelines and storage infrastructure, which fits within the normal definition of “low carbon”, such as hydrogen distribution, and carbon dioxide distribution.”

1.7.31 It is therefore considered that The Drovers Solar Farm is low carbon infrastructure and so is considered CNP infrastructure.

1.7.32 The CNP policy applies following the normal consideration of the need case, the impacts of the project, and the application of the mitigation hierarchy. Paragraph 4.2.7 finishes by stating:

“As such, it is relevant during Secretary of State decision making and specifically in reference to any residual impacts that have been identified. It should therefore also be given consideration by the Examining Authority when it is making its recommendation to the Secretary of State”.

1.7.33 Section 4.3 of the NPS EN-1 is related to the requirement for assessment of likely significant environmental effects/considerations and reporting within an Environmental Statement for projects that are subject to the EIA Regulations⁸.

1.7.34 Paragraph 4.3.4 of the NPS states that:

“To consider the potential effects, including benefits, of a proposal for a project, the applicant must set out information on the likely significant environmental, social and economic effects of the development, and show how any likely significant negative effects would be avoided, reduced, mitigated or compensated for, following the mitigation hierarchy. This information could include matters such as employment, equality, biodiversity net gain, community cohesion, health and well-being”.

1.7.35 Paragraph 4.3.5 continues:

“For the purposes of this NPS and the technology specific NPSs the ES should cover the environmental, social and economic effects arising from pre-construction, construction, operation and decommissioning of the project”.

1.7.36 Paragraph 4.3.18 and 4.3.19 states that

“The Secretary of State should consider the worst-case impacts in its consideration of the application and consent, providing some flexibility in the consent to account for uncertainties in specific project details” and “The Secretary of State should consider how the accumulation of, and interrelationship between, effects might affect the environment, economy, or community as a whole, even though they may be acceptable when considered on an individual basis with mitigation measures in place”.

⁸ Footnote 102 taken from EN-1: The government has announced plans to bring forward legislation to replace the existing EU-generated systems of Environmental Impact Assessment and Strategic Environmental Assessment with a new system of Environmental Outcomes Reports. The new system will be brought forward through subsequent regulations following further consultation. Environmental assessment will still be required and, when introduced, relevant plans and projects will have to comply with such regulations. Until the new system is implemented, current legislation on environmental assessment continues to apply.



- 1.7.37 EN-1 sets out assessment principles and generic impacts that an Environmental Statement should address, and any specific considerations for applications. This includes a reference at paragraph 4.3.20 that the SoS should have regard to the ambitions, goals and targets set out in the Government's Environmental Improvement Plan 2023 for improving the natural environment and heritage. This includes having regard to the achievement of statutory targets set under the Environment Act 2021.

National Policy Statement on Renewable Energy Infrastructure (EN-3)

- 1.7.38 The NPS on Renewable Energy Infrastructure (EN-3), taken together with NPS EN-1, provides the primary basis for decisions by the Secretary of State on applications it receives for nationally significant renewable energy infrastructure.
- 1.7.39 The importance of generation of electricity from renewable sources is stated at Paragraph 1.1.2 of NPS EN-3:

“Electricity generation from renewable sources is an essential element of the transition to net zero and meeting our statutory targets for the sixth carbon budget (CB6). Our analysis suggests that demand for electricity is likely to increase significantly over the coming years and could more than double by 2050. This could require a fourfold increase in low carbon electricity generation, with most of this likely to come from renewables”.

- 1.7.40 EN-3 introduces a new section (Section 2.10 Solar Photovoltaic Generation) recognising that solar forms a key part of the government's strategy for low-cost decarbonisation of the energy sector. The government has committed to sustained growth in solar capacity to ensure that the UK is on a pathway that allows the net zero target to be met.
- 1.7.41 Paragraph 2.10.10 states that solar has an important role in delivering the Government's goals for greater energy independence. The British Energy Security Strategy⁹ states the government expects a fivefold increase in solar development by 2035 (up to 70GW).
- 1.7.42 Paragraph 2.10.13 states that solar farms are one of the most established renewable electricity technologies in the UK and the cheapest form of electricity generation.
- 1.7.43 Paragraphs from 2.10.19 – 2.10.48 of EN-3 sets out the following key considerations involved in the siting of a solar farm, in addition to considerations specific to individual projects:
- *“Irradiance and site topography*
 - *Network connection*
 - *Proximity of a site to dwellings*
 - *Agricultural land classification and land type*
 - *Accessibility*
 - *Public rights of way*
 - *Security and lighting”*

⁹ Footnote 79 taken from EN-3: 73 See <https://www.gov.uk/government/publications/britishenergy-security-strategy/british-energysecurity-strategy>



- 1.7.44 Paragraphs from 2.10.49 - 2.10.126 of EN-3 outlines the technical considerations for solar farms that relate to site capacity, site layout design and appearance, project lifetime, decommissioning and flexibility in the project details.
- 1.7.45 Paragraphs from 2.10.127 - 2.10.144 of EN-3 provides topic-specific requirements of how applicants should consider impacts within technical assessments, development of proposed mitigation measures and decision-making for solar development, for the following topics (where not listed above):
- *“Agricultural Land classification and land type*
 - *Biodiversity and ecological conservation*
 - *Landscape, visual and residential amenity*
 - *Glint and glare*
 - *Cultural heritage; and*
 - *Construction including traffic and transport noise and vibration”*

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

- 1.7.46 The NPS for Electricity Networks Infrastructure (EN-5) forms part of the suite of energy NPSs to be read in conjunction with the Overarching NPS for Energy (EN-1).
- 1.7.47 Paragraph 1.1.1 of EN-5 states:
- “The security and reliability of the UK’s current and future energy supply is highly dependent on having an electricity network which will enable the new electricity generation, storage, and interconnection infrastructure that our country needs to meet the rapid increase in electricity demand required to transition to net zero, while maintaining energy security”.
- 1.7.48 Paragraph 1.6.1 of NPS EN-5 is relevant to the Scheme as the policy applies to “transmission systems (the long-distance transfer of electricity through 400kV and 275kV lines), and distribution systems (lower voltage lines from 132kV to 230V from transmission substations to the end-user) which can either be carried on towers/monopoles, or undergrounded; and associated infrastructure, e.g. substations (the essential link between generation, transmission” and “the distribution systems that also allows circuits to be switched or voltage transformed to a useable level for the consumer) and converter stations to convert DC power to AC power and vice versa. These are particularly relevant to the conversion of long-distance offshore DC transmission to AC, when it arrives onshore for distribution”.
- 1.7.49 NPS EN-5 includes a section on ‘Environmental and Biodiversity Net Gain’ at Section 2.5, which states:
- “When planning and evaluating the proposed development’s contribution to environmental and biodiversity net gain, it will be important – for both the applicant and the Secretary of State – to supplement the generic guidance set out in EN-1 (Section 4.6) with recognition that the linear nature of electricity networks infrastructure can allow for excellent opportunities to:*
- *reconnect important habitats via green corridors, biodiversity stepping zones, and reestablishment of appropriate hedgerows; and/or*
 - *connect people to the environment, for instance via footpaths and cycleways constructed in tandem with environmental enhancements”.*



- 1.7.50 Section 2.9 of EN-5 concerns the relevant impacts which applicants must provide information on in addition to those impacts covered in NPS EN-1, being: Biodiversity and Geological Conservation; Landscape and Visual Impact; Undergrounding and subsea cables, Noise and Vibration, Electric and Magnetic Fields (EMFs) and Sulphur Hexafluoride.

National Planning Policy Framework

- 1.7.51 The revised National Planning Policy Framework ('NPPF') (December 2023) [Ref 1-14] sets out the UK government's planning policies for England and how these are expected to be applied.
- 1.7.52 In July 2024 the UK Government launched a consultation on planning reforms which will result in amendment to the NPPF. The consultation ran from 30 July 2024 and ended on 24 September 2024. A date for the adoption of a new NPPF is yet not set. Until such time as the new NPPF has been adopted, the NPPF 2023 remains the most recent version.
- 1.7.53 Section 2, Paragraph 7 of the NPPF states that at its core is the need for the planning system to contribute to the achievement of sustainable development – defined in high level terms as meeting the needs of the present without compromising the ability of future generations to meet their own needs.
- 1.7.54 So that sustainable development is pursued in a positive way, at the heart of the NPPF is a presumption in favour of sustainable development.
- 1.7.55 The NPPF is a document that will be important and relevant for the purposes of the SoS decision making. The NPPF also provides relevant context for individual assessment topics.
- 1.7.56 Section 14 'Meeting the challenge of climate change, flooding and coastal change' of the NPPF identifies that:
- "The planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure".*
- 1.7.57 In response to planning for climate change, Section 14, Paragraph 163 sets expectations of local planning authorities, when determining planning applications for renewable and low carbon development to not require applicants to demonstrate overall need for renewable or low carbon energy and approve the application if its impacts are (or can be made) acceptable.

1.7.58 Local Planning Policy

- 1.7.59 The Site is located within the administrative boundary of Breckland Council, and within the administrative area of Norfolk County Council, who are the host authorities.

Breckland Council Local Plan (September 2023)

- 1.7.60 The Breckland Local Plan was originally adopted on 28 November 2019, setting out the strategy for delivering the homes, jobs and infrastructure needed in the district between 2011 and 2036. Breckland Council (as the local planning authority (LPA)) completed a partial update of the Breckland Local Plan (the 'Local Plan') as required by Policy INF03. The updated Local Plan was adopted at Council on 21 September 2023 [Ref 1-16] and along with the Policies Map forms the Development Plan for Breckland.



- 1.7.61 The Local Plan sets the strategic planning priorities and context for the district. It is a key document that guides development in the district over the next 20 years until 2036. It includes spatial vision, objectives and key policies for the Breckland Plan area.
- 1.7.62 The Local Plan confirms that as a rural district, the Breckland Plan area is particularly suited to solar farms. With the Government's solar Photovoltaic (PV) strategy published in 2014, its aim was to create more financial certainty and investor confidence in order to realise the long-term potential for solar in the UK at large and scale. With no cap on capacity, it is the Government's ambition to see *"more ambitious deployment, perhaps approaching 20 Gigawatts (GW) early in the next decade"*.
- 1.7.63 Policy ENV10 (Renewable Energy Development) within the Breckland Local Plan [Ref 1-16] is the most relevant to the principle of large-scale solar development. This policy provides a policy framework to support proposals for new renewable energy and low carbon development, subject to consideration of the impact of the development and whether this can be made acceptable. Proposals will be considered having regard to the extent to which there are:
- *"i. adverse impacts on the local landscape, townscape or designated and non-designated heritage assets assessed in line with Policies ENV 05, ENV 07 and ENV 08 in the plan;*
 - *ii. adverse effects on residential amenity by virtue of outlook / overbearing impact, traffic generation, noise, vibration, overshadowing, glare or any other associated detrimental emissions, during construction, operation and decommissioning;*
 - *iii. an irreversible loss of the highest quality agricultural land;*
 - *iv. cumulative impacts of renewable energy development on an area; and*
 - *v. adverse impacts upon designated wildlife sites; nature conservation interests; and biodiversity, assessed in line with Policies ENV 02 and ENV 03 in the plan"*.
- 1.7.64 Policy ENV10 asserts that proposals for renewable energy development will be permitted where the impact is, or can be, acceptable. Applications will be expected to demonstrate that any adverse impacts can be mitigated.
- 1.7.65 Relating specifically to Solar Energy Development, Policy ENV10 sets that for the effective use of land, large scale solar farms will be focused on previously developed and agricultural land, this will be encouraged provided that it is not of high environmental value. Factors that the Council will need to consider where a proposal involves greenfield land include:
- "the proposed use of any agricultural land has been shown to be necessary and poorer quality land has been used in preference to higher quality land, where possible; and*
- that the proposal allows for continued agricultural use where applicable and/or encourages biodiversity improvements around arrays."*
- 1.7.66 Further, Policy ENV10 sets out when attributing weight to any harm, in addition to other relevant policies in the Local Plan, regard will be given to national policy and guidance, statutory duty and legislation which seeks protection and enhancement of the landscape; designated and non-statutory heritage assets.

Breckland Local Plan Review – Full Update

- 1.7.67 Alongside the partial review the Local Plan, in September 2022, the LPA agreed to undertake a review of the Breckland Local Plan 2019. The review is a full update of the Plan that will roll



forward the plan to 2046, including the allocation of new developments and reviewing other policies as necessary.

- 1.7.68 The LPA carried out public consultation on the Draft Plan (Regulation 18 Consultation – Draft Plan) between 3 June 2024 to 15 July 2024. This Draft Plan sets out the LPAs draft policies and growth strategy and provides an early opportunity for communities, business, landowners, developers, partners and stakeholders to comment on the Draft Plan. The Draft Plan will then move forward to the next version, known as the ‘Regulation 19’ or ‘Pre-submission’ version which will be subject to further consultation in early 2025 and prior to independent examination. Following examination, and upon adoption, this will supersede the Local Plan 2023.

Breckland Supplementary Planning Guidance

- 1.7.69 To aid the interpretation of policies within the development plan, and to provide additional guidance on specific topics, the LPA has adopted the following supplementary planning guidance which could be relevant to the proposed Scheme:
- Breckland Landscape and Settlement Character Assessment (April 2022) [Ref 1-17].
 - Norfolk County Council
- 1.7.70 Norfolk County Council are currently preparing a Norfolk Minerals and Waste Local Plan Review, to consolidate the three adopted Development Plan Documents (DPD) into one Local Plan, ensuring that the policies within them remain up-to date and to extend the plan period to end of 2036. The Plan was submitted to the Planning Inspectorate for independent examination in December 2023. The three DPDs comprise:
- Core Strategy and Minerals and Waste Development Management Policies DPD 2010-2026 (adopted September 2011)
 - Minerals Site Specific Allocations Development Plan Documents (DPD) (adopted October 2013, amendment adopted December 2017); and
 - Waste Site Specific Allocations Development Plan Document (DPD) (adopted October 2013).

1.8 Consideration of Alternatives

- 1.8.1 It is necessary to set out in the ES the reasonable alternatives for the Scheme that were considered, and the reasons for selecting the chosen design and location, in accordance with paragraph 2 of Schedule 4 to the EIA Regulations:

"A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects."

- 1.8.2 Regulation 14(2)(d) of the EIA Regulations also requires that the ES should include:

"A description of the reasonable alternatives studied by the applicant, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment".



- 1.8.3 NPS EN-1 confirms that while there is no general requirement to consider alternatives or to establish whether a development represents the best option, *“where there is a policy or legal requirement to consider alternatives, the applicant should describe the alternatives considered in compliance with these requirements”* (Paragraph 4.3.17 of NPS EN-1).
- 1.8.4 NPS EN-1 at 4.3.22 states that *“the consideration of alternatives in order to comply with policy requirements should be carried out in a proportionate manner”* and *“only alternatives that can meet the objectives of the proposed development need to be considered”*.
- 1.8.5 The consideration of alternatives will likely involve the analysis of different layouts for the Scheme, scales, technologies adopted, design parameters, the location of supporting infrastructure and Site selection process. The ES will include a description of the alternatives relevant to the Scheme that have been considered, as well as the justification for selecting the chosen option.
- 1.8.6 Initial site and context appraisals were undertaken in Spring and Summer 2024, with field work ongoing.
- 1.8.7 The appraisal was designed to provide a high-level strategic overview, which identified key constraints and barriers to development, as well as potential opportunities to deliver benefits or enhancements. The appraisal was based on a combination of desk-based appraisal of constraints, technical feasibility and site visits.
- 1.8.8 The technical topics included in the initial stage review have included (but are not limited to):
- Landscape
 - Ecology
 - Agricultural land
 - Cultural Heritage
 - Residential receptors (properties and settlements)
 - Transport and access
 - Flood risk; and
 - Planning policy, designations and history / activity.
- 1.8.9 The design and layout of the Scheme will be further developed and evolved throughout the co:design and consultation processes and following technical and environmental surveys. The ES will provide a detailed account of the refinement and design process, identifying how alternatives were considered in selecting the preferred option.
- 1.8.10 A ‘no development’ alternative would not deliver the additional electricity generation capacity associated with the Proposed Development and will therefore not be considered further.

1.9 Consultation

Introduction

- 1.9.1 Sections 42, 47 and 48 of the PA2008 [Ref 1-1] and Regulation 13 of the EIA Regulations [Ref 1-2] require that certain stakeholder groups and the local community must be consulted as part of the pre-application process. As part of this process a Preliminary Environmental Information Report (PEIR) will be produced and consulted upon.



- 1.9.2 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 that the EIA from the outset focuses on the environmental studies and to identify specific issues where significant environmental effects are likely, and where further investigation is required. Consultation, as an ongoing process, enables mitigation measures to be incorporated into the Scheme to limit adverse environmental effects and optimise environmental benefits.
- 1.9.3 Early and ongoing engagement with consultees will be important to influence the design process of the Scheme by seeking an appropriate level of feedback from consultees, to ensure that comments are considered in project design.

Scoping Consultation

- 1.9.4 PINS acting on behalf of the Secretary of State will consult on this Scoping Request in accordance with Regulation 10(6) of the EIA Regulations. Consultees include statutory consultation bodies, including environmental bodies (such as the Environment Agency, and Historic England) as well as relevant planning authorities. Comments received from consultees will be considered and included within the Scoping Opinion issued by PINS.
- 1.9.5 The Applicant has sought to engage with key stakeholders from an early stage to brief them on the Scheme, focus the environmental studies and to identify specific issues. Several meetings have been carried out with the following statutory consultees to introduce the Scheme and commence discussions on detailed matters relating to the Scheme:
- Norfolk County Council, Breckland Council, Borough Council of King's Lynn & West Norfolk (Officers and Members)
 - Castle Acre, Holme Hale, Little Dunham, and Swaffham (Parish Councils).
 - The Planning Inspectorate
 - Local Member of Parliament – MP for Ely and East Cambridgeshire
 - Historic England
 - Natural England
 - Logistics UK
 - Norfolk Wildlife Trust
 - Norfolk Farming & Wildlife Advisory Group
 - Norfolk Rivers Trust; and
 - Norfolk Biodiversity Partnership.
- 1.9.6 The Applicant will undertake on-going consultation with the host authorities, the stakeholders identified above and other relevant consultees and stakeholders, throughout the duration of the Scheme development and preparation of the ES.
- 1.9.7 This will include complying with the consultation requirements set out in the PA2008 and associated regulations and guidance. A Programme Document will be available on the Scheme's website, setting out the timetable for the development of the Scheme, including key milestones and dates where formal consultation is planned, once this has been agreed with the Planning Inspectorate.



- 1.9.8 In respect of the local communities likely to be affected by the Scheme, the Applicant has undertaken the first stage of (non-statutory) consultation in September and October 2024. The Applicant identified and engaged with a wide range of community interest groups as part of this process. This initial period of consultation has now concluded, and the Applicant is considering the feedback and responses received. The Applicant will continue to consult local communities, stakeholders and individual property owners as the Scheme is developed.

Statutory Consultation

- 1.9.9 A Statement of Community Consultation (SoCC) will be prepared in accordance with Section 47 of the PA2008. The SoCC will outline how the Applicant intends to consult with the local community on the Scheme.
- 1.9.10 The Applicant is required to consult the local authorities identified pursuant to section 43(1) of the PA2008 on the draft SoCC and they will have a period of at least 28 days, following receipt of the request, to comment on a draft SoCC prior to its publication for inspection by the public.
- 1.9.11 During the statutory consultation, consultation will also be undertaken with prescribed consultation bodies as well as affected landowners and persons with an interest in land, in accordance with Section 42 of the PA2008 and Regulation 13 of the EIA Regulations. The Applicant will also publicise the proposed DCO Application in accordance with Section 48 of the PA2008.
- 1.9.12 The Applicant will have regard to responses received during both non-statutory and statutory consultation in the design evolution of the Scheme in accordance with Section 49 of the PA2008. The consultation responses will be recorded in a Consultation Report which will be submitted as a part of the DCO Application.



2 Site Description

2.1 Introduction

- 2.1.1 The Site is located at OS grid reference X (Easting), Y (Northing) 579831, 312820 (approximate Site centre). The Scheme Location is provided at **Figure 2-1**.
- 2.1.2 The Site Boundary is provided at **Figure 2-2**.
- 2.1.3 For ease of reference throughout the EIA process, the Site is subdivided into a series of numbered fields, as provided at **Figure 2-3**.
- 2.1.4 The Site Boundary (see **Figure 2-2**) comprises approximately 1,133ha of land which consists of the Solar PV Site and other Associated Development including the Customer Substation, National Grid Substation, Proposed Mitigation and Enhancement Areas, Grid Connection Infrastructure, Highway Works and Ancillary Infrastructure.

2.2 The Site

- 2.2.1 The Site is located in a largely rural area on land to the north of Swaffham and south of Castle Acre in West Norfolk, and is wholly located within the administrative boundary of Breckland Council and within the administrative area of Norfolk County Council, who are the host authorities.
- 2.2.2 The land within the Site is predominately in agricultural use, being utilised in part for pig farming, chickens and other livestock, and in part for arable crop production across a series of agricultural fields bounded by grassland margins, hedgerows, tree belts and tracks. There are pockets of woodland within the Site, and several Marl pits (former pits for clay extraction for agricultural use) which have revegetated or formed small waterbodies.
- 2.2.3 The land at the Site is slightly sloping, ranging from 80m AOD in the south to 40m AOD in the north.
- 2.2.4 Agricultural farm tracks and a series of three 'Drovers', namely Fincham Drove, Petticoat Drove and Washpit Drove, (former routes/lanes for movement of livestock) extend between the fields.
- 2.2.5 There are several agricultural buildings within the Site, utilised for storage, which will be retained in situ.
- 2.2.6 An existing 400kV overhead power line (OHL) and associated transmission pylons crosses over the north-eastern part of the Site.

Wider Context

- 2.2.7 Residential dwellings of Keeper's Cottage and Finger Hill Cabin are located outside the Site boundary, and additional residential dwellings and St George Church are located adjacent to the boundaries of the Site along Low Road and South Acre Road, primarily associated with the village of South Acre. Isolated and clustered residential dwellings along Narford Lane and Narford Road are located in proximity to Narford and West Acre.



- 2.2.8 The Site's immediate surrounds are lightly settled, characterised by a settlement pattern of rural villages and scattered properties linked by relatively straight and winding rural lanes. Nearby settlements include the villages of West Acre approximately 1km to the north-west, South Acre to the north and Castle Acre approximately 1.2km to the north. The market town of Swaffham is located beyond the A47 to the south.

Roads

- 2.2.9 The Site is currently accessible from a number of existing agricultural field and track accesses taken from the Strategic Highway Network. River Road bisects the Site, routing in a general south-north direction. West Acre Road merges with Narford Lane along the south-western boundary of the Site, with Narford Lane, Low Road and South Acre Road in areas parallel to the Site boundary.
- 2.2.10 Castle Acre Road (A1065) runs in a general north-south direction, lying alongside the east of the Site. The A1065 connects Fakenham, Swaffham and Mundford. The A47, a strategic all-purpose highway linking Birmingham to Lowestoft, Suffolk, routes in a general east-west direction to the south of the Site.

Public Rights of Way (PRoW) and Trails

- 2.2.11 Restricted byways within the Site and wider landscape context connecting to local settlements primarily to the north, such as PRoW West Acre RB3 and RB7, South Acre RB1 and RB2, Swaffham RB2, Narborough RB7a and Sporle with Palgrave BR2.
- 2.2.12 National Trails and Promoted Routes within 1.5km of the Site include The Peddars Way and Norfolk Coastal Path, The Nar Valley Way, The Castle Acre Circular Walk and Rebellion Way cycling route.
- 2.2.13 Fincham Drove, Petticoat Drove and Washpit Drove, (former routes/lanes for movement of livestock) extend between the fields of the Site.

Airfields

- 2.2.14 No airfields immediately border the Site.
- 2.2.15 Royal Air Force (RAF) Marham is located approximately 4.9km south-west of the Site. Great Friars Thornes Farm Airstrip is located approximately 1.3km south-west of the Site.

Rivers

- 2.2.16 There are no Environmental Agency (EA) Main Rivers present within the Site. The nearest Main River to the Site is the River Nar, approximately 2.7km west of the Site. The River Nar, a tributary of the River Great Ouse, is also located to the north of the Site routing in a general west – east alignment from the Site. The River Nar rises near the village of Mileham before flowing approximately 41km through Castle Acre and Narborough, joining the Ouse at King's Lynn.
- 2.2.17 There are several small water features located within the Site.

Historic Designations

- 2.2.18 Historic environment designations are shown on **Figure 2-4**.
- 2.2.19 The Site is not subject to any statutory heritage designations.



- 2.2.20 In the surrounding area beyond the Site boundary, is located the Castle Acre Conservation Area and the Pentney/Narborough Conservation Area. A small part of the Castle Acre Conservation Area lies within the Site Boundary, but is excluded from the Solar PV Site to ensure that the setting of the Conservation Area is retained.
- 2.2.21 There are 27 Listed Buildings within 1km of the Site boundary. These Listed Buildings within 1km are mainly clustered around Castle Acre, South Acre and West Acre. The nearest Listed Building to the Site is the Grade I Church of St George (Reference: 1306357) located approximately 36m north of the Site.
- 2.2.22 There is one Registered Historic Park and Garden; Narford Hall (Ref:1000337) located within 1km of the Site.
- 2.2.23 There are four Scheduled Monuments within 1km of the Site, these being; West Acre Priory, and square barrow within the precinct (List Entry Number: 1008352) approximately 353m north, Double moated site of Old Hall, 250m north west of Church Farm (List Entry Number: 1015269) located approximately 301m north, Castle Acre Priory (List Entry Number: 1015870) approximately 450m north and Castle Acre Castle town defences and Bailey Gate (List Entry Number: 1017909) approximately 921 north of the Site.

Landscape

- 2.2.24 The Site is not within an Area of Outstanding Natural Beauty or within The Broads National Park.
- 2.2.25 There is no Ancient Woodland within the Site.
- 2.2.26 There is visible renewable energy generating infrastructure within the Site and the wider area, including existing solar development to the south west, and Future Biogas (an Anaerobic Digestion (AD) biogas plant), both to the south of Narford Lane. Singular wind turbines are located south-east of the Site north of Swaffham Existing overhead lines traverse along the north-eastern most boundary.

Ecology and Biodiversity

- 2.2.27 Ecological designations are shown on **Figure 2-5**.
- 2.2.28 The Site comprises predominantly mixed arable agricultural land with areas used for livestock production with grassland margins, woodland, dense scrub, surface water features and dry ditches, and linear hedgerows, hedgerows with trees and tree belts.

International and National Statutory Designated Sites

- 2.2.29 There are 3 international designated sites and 14 national designated sites within 10km of the Site. The 3 international designated sites are: Norfolk Valley Fens Special Area of Conservation (SAC), Breckland SAC and Special Protection Areas (SPA). The 14 national designated sites are: Leziate, Sugar and Derby Fens Site of Special Scientific Interest (SSSI), East Winch Common SSSI, Blackborough End Pit SSSI, East Winch Common SSSI, East Walton and Adcock's Common SSSI, Castle Acre Common SSSI, River Nar SSSI, Narborough Railway Embankment SSSI, Breckland Forest SSSI, Breckland Farmland SSSI, Gooderstone Warren SSSI, Field Barn Heaths Hilborough SSSI, Hooks Well Meadows Great Cressingham SSSI, and Great Cressingham Fen SSSI.



Locally Designated Sites

- 2.2.30 There are 15 non-statutory designated sites within 2km from the Site.

Water Resources

- 2.2.31 Flood risk and drainage designations are shown on **Figure 2-6**.
- 2.2.32 Marl pits (former pits for clay extraction for agricultural use) are located across the Site, which in some cases have revegetated and ponded.
- 2.2.33 The entirety of the Site is located in Flood Zone 1, which is an area classed as having a low risk from fluvial and tidal flooding (less than 1 in 1,000 annual probability).
- 2.2.34 The Site is predominantly located within an area of very low risk from surface water flooding with a limited number of extents of surface water flood risk between Low and High Risk (between 0.1% and more than 3.3% annual probability).

Air Quality

- 2.2.35 The Site is not located within a Local Authority with designated Air Quality Management Areas (AQMAs) or an AQMA boundary.

Agricultural Land

- 2.2.36 The Site is predominately characterised by agricultural fields in mixed arable use. Parts of the landholding are used for livestock production comprising outdoor pig and poultry production rearing units. Local field boundary patterns are defined largely by grassland margins, hedgerows, woodland and farm tracks.
- 2.2.37 Provisional Agricultural Land Classification (ALC) mapping published by Natural England indicates that the Site comprises of predominantly Grade 3 agricultural land, with areas of Grade 2 and Grade 4 agricultural land within some parts of the Site.

Ground Conditions

- 2.2.38 The Site predominantly comprises freely draining sandy Breckland soils with areas of shallow lime-rich soils over chalk or limestone and freely draining slightly acid sandy soils.
- 2.2.39 The superficial geology of the Site is characterised by the following:
- Lowestoft Formation - Sand and gravel
 - Lowestoft Formation – Diamicton; and
 - River Terrace Deposits - Sand and gravel
- 2.2.40 The bedrock geology of the Site is characterised by the following formations:
- Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation and Culver Chalk Formation – Chalk; and
 - Holywell Nodular Chalk Formation and New Pit Chalk Formation - Chalk.



- 2.2.41 The Site is predominantly underlain by an unproductive Aquifer (Superficial Drift) with areas of the Site underlain by Secondary (undifferentiated) and Secondary A Superficial Aquifers. The Site is underlain by a Principal Aquifer (Bedrock).
- 2.2.42 The Site is located within a Drinking Water Safeguard Zone (Surface Water) and the majority of the Site is within a Drinking Water Protected Area (Surface Water).
- 2.2.43 The Site is predominantly located within Source Protection (SPZ) Zone II (Outer Protection) with the far western extent of the Site located within Zone I (Inner Protection Zone). The Site is surrounded by SPZ in all directions.



3 Scheme Description

3.1 Overview

- 3.1.1 The Scheme comprises the construction, operation, maintenance, and decommissioning of a solar photovoltaic (PV) electricity generating station, and associated development including Battery Energy Storage System (BESS), Ancillary Infrastructure, a Customer Substation and Grid Connection Infrastructure (including a new National Grid Substation). The Scheme would allow for the generation and export of over 50 megawatts (MW) Alternating Current (AC) of renewable energy, connecting into the National Electricity Transmission System (NETS) overhead line that passes through the Site.
- 3.1.2 As the Scheme would have a generating capacity in excess of 50MW, it is considered to be a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008.

3.2 Components of the Scheme

Overview

- 3.2.1 The Project comprises the following principal components as the NSIP and Associated Development:
- PV Panels
 - Mounting structures (including both Single Axis Trackers and Fixed South Facing orientation)
 - Inverters
 - Transformers
 - Switchgear
 - Customer Substation and National Grid Substation, and associated electrical infrastructure such as the transformers, switchgear and metering equipment required to facilitate the export of electricity from the Scheme to the National Grid
 - Battery Energy Storage System (BESS)
 - Ancillary Infrastructure
 - Access Tracks
 - Highway Works
 - Cable Route Corridor – underground cabling connecting the Conversion Units to the BESS and the Customer Substation
 - Grid Connection Corridor - cabling connecting the Customer Substation to the Point of Connection, which may be underground or overhead lines
 - Grid Connection Infrastructure - Underground and/or overhead lines including new pylons between the National Grid Substation and the Point of Connection



- Green Infrastructure
- Proposed Mitigation and Enhancement Areas
- Construction Hub; and
- Temporary Construction compounds.

3.2.2 Further details for each of the key components are set out below.

PV Panels

- 3.2.3 Photovoltaic (PV) panels, are made up of cells, which convert the solar irradiance to electrical energy.
- 3.2.4 The PV panels will be attached to Mounting Structures, which form PV Tables and are arranged in rows, which collectively are referred to as Solar PV Arrays.
- 3.2.5 Each PV Panel will have a direct current (DC) generating capacity which will be converted to alternating current (AC). As detailed below, the Inverters are required to convert the DC electricity generated by the PV Panels, to AC.
- 3.2.6 There are currently two options for the Mounting Structures which are being considered and which are described below:
- Fixed South Facing PV Arrays; and
 - Single Axis Trackers.

Fixed South Facing PV Arrays

- 3.2.7 PV Tables that face south and are mounted to fixed Mounting Structures in an east/west configuration and would be installed between 15 and 35 degrees to the horizontal facing south to optimise daylight absorption. The PV Panel would have a maximum height of 3.5m.

Single Axis Trackers

- 3.2.8 PV Tables which are mounted to Mounting Structures will be orientated north/south and would operate between 60 degrees from the horizontal (facing east in the morning) moving toward 0 degrees (horizontal) at midday, and up to 60 degrees from the horizontal (facing west in the evening). The modules would track from east to west throughout the day and would return to their resting position 60 degrees (facing east) over night. The PV Panel would have a maximum height of 4.5m.



Image 3.1 Typical Fixed South Facing PV Arrays



Image 3.2 Typical Single Axis Trackers



Mounting Structures

- 3.2.9 The metal frames upon which the PV Panels will be mounted will be pile driven or screw mounted into the ground to a maximum depth of 3.5m, subject to ground conditions and further environmental assessment. The option to install concrete blocks as ballast may also be considered, avoiding the need for driven and screw anchored installation, therefore minimising ground disturbance. The mounting frames would likely be made of either anodised aluminium alloy or galvanised steel and would have a rough matt finish.



Conversion Unit

- 3.2.10 Conversion Unit is a collective term used for the combination of electrical components including inverters, transformers and switchgear, which are required to manage the electricity generated by the PV Panels. These components may be housed ('integrated') together within a container. A container would measure approximately 3.5m (H) x 5m (W) and 15m (L). An alternative option is for the individual electrical components to be housed in standalone cabinets, which are described below.
- 3.2.11 If the Conversion Unit is configured as standalone cabinets, the Conversion Unit compound would be surrounded by 3m high palisade fencing, with integrated gates for access. The compound will be levelled and covered in a layer of gravel, with the equipment mounted on a concrete base or monolith plinth with a depth of 1m.
- 3.2.12 The containers and / or cabinets are typically externally finished in keeping with the prevailing surrounding environment, often utilising a green or grey painted finish. The containers would typically be mounted on adjustable legs on an area of hardstanding.
- 3.2.13 The configuration of equipment within the Conversion Unit compounds will depend on the iterative design process as influenced by technical and environmental factors.

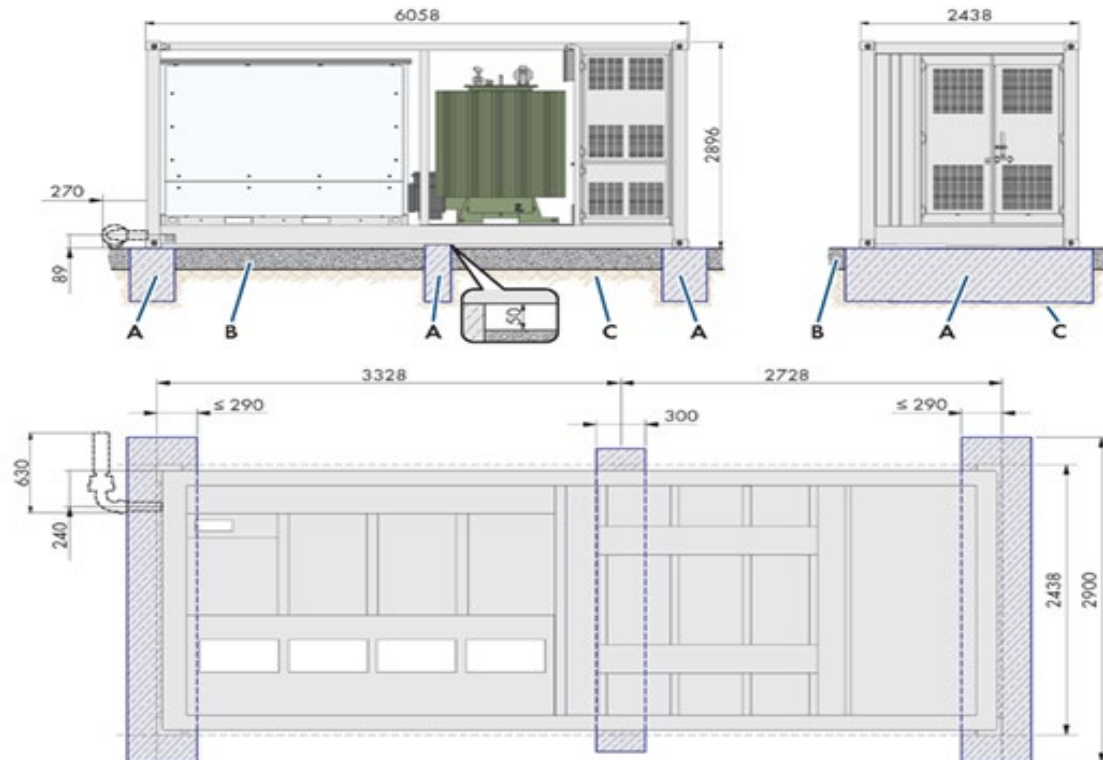
Image 3.3 Typical Conversion Unit





Image 3.4 Typical Conversion Unit details

SMA Solar Technology AG



Position	Designation
A	Strip foundation
B	Pea gravel ground
C	Solid ground, e.g., gravel

Inverters

- 3.2.14 Inverters are required to convert the Direct Current (DC) electricity collected by the PV Panels into Alternating Current (AC) which allows the electricity generated to be exported to the National Grid.
- 3.2.15 Inverters are sized to deal with the level of voltage and intensity, which is output from the PV Panels.
- 3.2.16 There are two options for inverters:
- String Inverters; and
 - Inverter located within a Conversion Unit compound.

String Inverters

- 3.2.17 String inverters are small enough to be mounted underneath or behind the PV Panels on the Mounting Structures and are typically 1.5m in length by 0.5m in depth by 1m.
- 3.2.18 Inverters located within a Conversion Unit compound



- 3.2.19 Inverters located within the Conversion Unit compound would either be standalone cabinets, or they would be housed ('integrated') within a container. The size of an inverter cabinet would be 6m x 2.4m, with a maximum height of 2.9m.

Transformers

- 3.2.20 Transformers are required to increase the voltage of electricity generated by the PV Panels before it reaches the Customer Substation.

Image 3.5 Typical Transformer



- 3.2.21 The size of a 33kV transformer would be 4m x 14m, with a maximum height of 4m.
- 3.2.22 The size of a 132kV transformer would have a maximum height of 7m.

Switchgears

- 3.2.23 Switchgears are the combination of electrical disconnect switches, fuses or circuit breakers used to control, protect and isolate electrical equipment. Switchgears are used both to de-energise equipment to allow work to be done and to clear faults downstream.
- 3.2.24 The size of a switchgear cabinet would be 5m x 9m, with a maximum height of 4m.

Customer Substation and Ancillary Buildings

- 3.2.25 There will be a Customer Substation (either 400/33KV or 400/132kV) located near the Point of Connection preferably located within the north-eastern extent of the Site. The Customer Substation will comprise electrical infrastructure such as the transformers, switchgear and metering equipment required to facilitate the export of electricity from the Scheme to the National Grid. The Customer Substation is also expected to include Ancillary Buildings which will include office space and welfare facilities as well as operational monitoring and



maintenance equipment. The indicative size of the Customer Substation compound is approximately 4ha, with an approximate height of 14m that allows for the associated electrical infrastructure, control buildings and office/storage buildings.

National Grid Substation and Grid Connection Infrastructure

- 3.2.26 A new National Grid Substation will be required to connect the Customer Substation to the National Grid. The National Grid Substation will monitor and manage the export and import of electricity between the National Grid and the Scheme and will be operated by National Grid Electricity Transmission plc. The National Grid Substation is assumed to have a maximum height of 15m and a footprint of approximately 4ha. The National Grid Substation is expected to include Ancillary Buildings and car parking. The National Grid Substation would be enclosed by a palisade fence in line with National Grid standards.
- 3.2.27 Grid Connection Infrastructure will be required between the National Grid Substation and the existing 400kV overhead lines. The Grid Connection Infrastructure could include underground and/or overhead lines including new pylons, or works to existing pylons, between the National Grid Substation and the Point of Connection. There may also be a requirement for a Cable Sealing End Compound (CSEC). The CSEC will include the infrastructure required to transition the 400kV overhead lines with the underground cables. The CSEC would have an Access Track with a security fence around it and be connected to the overhead line via a gantry or an anchor block solution (which is a concrete block in the ground). It is assumed at this stage in the Scheme that the maximum height of the CSEC will be 15m with a footprint of 0.5ha. Temporary works may also be required to facilitate the works required to connect the Grid Connection Infrastructure to the 400kV overhead lines.
- 3.2.28 The details of the National Grid Substation and Grid Connection Infrastructure will be refined throughout the development of the Scheme through PEIR and ES and ongoing engagement with National Grid Electricity Transmission plc.

Cable Circuits

- 3.2.29 Low voltage distribution cabling between PV Panels and the Conversion Unit compounds will typically be located above ground level, fixed to the Mounting Structure, and then underground between Mounting Structures and the Conversion Unit compound. High Voltage cables (33kV and potentially 132kV) are required between the Conversion Unit compounds, BESS and the Customer Substation. The dimensions of trenching will vary subject to underground cabling and the associated number of ducts they contain and will be dependent on the method of installation and ground conditions. There may be a requirement for horizontal directional drilling (HDD) within the Site for example to cross beneath existing buried utilities.
- 3.2.30 Communication cables will be required throughout the Solar Arrays to allow for monitoring during operation, such as the collection of data on solar irradiance from pyranometers. The communication cables would typically be installed within the same trench and alongside the electrical cables.

The Battery Energy Storage System (BESS)

- 3.2.31 The BESS is designed to provide peak generation and grid balancing services to the National Grid. It will allow excess electricity generated from the solar PV panels to be stored in the batteries and exported to the grid when required. Excess energy from the grid can also be imported to the batteries. The BESS will therefore provide flexibility and enhance grid reliability.



- 3.2.32 The BESS is likely to comprise batteries which would be housed in containers, which would measure 16 x 3m and 3.2m in height. The containers would be mounted on a reinforced concrete foundation slab or concrete piling, with a minimum clearance of 0.1m beneath the container and the hardstanding. The battery containers will be separated from each other and surrounding infrastructure by a minimum distance that complies with any relevant NFCC or NFPA guidelines at the time of detailed design.
- 3.2.33 The BESS compound is anticipated to be up to 10.5ha, the precise size and number of individual battery storage containers will depend upon the level of power capacity and duration of energy storage which will be refined throughout the PEIR and ES.
- 3.2.34 The containers are typically externally finished in keeping with the prevailing surrounding environment, often utilising a green or grey painted finish. The BESS compound would be surrounded by 3m high palisade fencing, with integrated gates for access.
- 3.2.35 The BESS would also include other apparatus such as ventilation / cooling systems, water storage and / or fire suppression systems, Access Tracks and hardstanding areas.

Image 3.6 Typical BESS Units



Electricity Export and Point of Connection to National Grid

- 3.2.36 The electricity generated by the Scheme is expected to be exported via a 400kV connection between the National Grid Substation and the Point of Connection into the existing 400kV overhead lines. The Grid Connection Corridor will include Grid Connection Infrastructure. The alignment and route of the Grid Connection Corridor will be dependent on the location of the National Grid Substation and the Point of Connection into the 400kV Overhead line within the Site. The route will be refined throughout the progression of the Scheme through PEIR and ES and ongoing engagement with National Grid Electricity Transmission plc.

Fencing, Security & Ancillary Infrastructure

- 3.2.37 A perimeter fence will enclose the operational area of the Scheme. The fence is likely to be a 'deer fence' (wooden or metal posts with a wire mesh) and up to 2.5m in height. Palisade



fencing up to 3m in height would be required around the perimeter of the Conversion Units, BESS, Customer Substation and National Grid Substation.

- 3.2.38 Pole mounted internal facing closed circuit television (CCTV) systems installed at a height of up to 3m are also likely to be deployed around the perimeter of the operational areas. Access gates will be of similar construction and height as the perimeter fencing. Clearances above ground or mammal gates will be included to permit the passage of wildlife.
- 3.2.39 CCTV cameras would use night-vision technology, which would be monitored remotely and avoid the need for night-time lighting (subject to that required for health and safety).
- 3.2.40 The lighting of the Customer Substation and National Grid Substation and BESS compound would be in accordance with health and safety requirements, particularly around any emergency exits where there would be lighting, similar to street lighting that operates from dusk. Otherwise, there would be low level lighting on specific operational units that would again operate from dusk. All lighting would seek to limit any impact on sensitive receptors.
- 3.2.41 Lighting sensors for security purposes will be implemented around the Customer Substation and National Grid Substation and BESS and other critical electrical infrastructure.
- 3.2.42 Lightning protection masts may be located within the Site which will be up to 6m.

Image 3.7 Typical Deer Fencing



Site Access

- 3.2.43 It is anticipated that a Construction Hub will be located within the Site as a point of delivery for materials. The proposed point of access from the highway will incorporate a security gate, which is set back from the highway to allow sufficient room for an articulated HGV to leave the highway before entering the Site. Vegetation works to the existing hedgerows may be required to vary the existing visibility splays.



- 3.2.44 Secondary points of access to the Solar PV Site may be required across the Site, the details of which will be confirmed once the general arrangement and layout of the Scheme is further developed.

Access Tracks

- 3.2.45 It is anticipated that onsite Access Tracks will follow the alignment of the existing agricultural tracks, where practicable. New internal Access Tracks are likely to be up to 6m wide, where passing bays are provided along the internal Access Tracks. The width of the carriageway for the main access point is likely to be up to 6.5m wide to facilitate two-way HGV traffic. The internal Access Tracks will likely be constructed of compacted stone with excavation kept to a minimum. Where drainage is required a ditch or a swale may be located downhill of the internal access track to control any potential for surface water run-off. Visibility splays may also be required.

Highway Works

- 3.2.46 In order to facilitate the traffic movements associated with the Construction Phase of the Scheme, there are areas of the Highway Network where improvements or changes may be required to accommodate construction traffic. The location for these works is shown on **Figure 2-2**, although the exact extent and nature of the Highway Works will be confirmed at ES stage, once the design has developed.

Green Infrastructure

- 3.2.47 The existing hedgerows, vegetation, woodland, trees, ditches, ponds, Marl pits and field margins will be retained within the layout of the Scheme where practicable, with the exception of removals and/or crossings required for new Access Tracks, perimeter fencing and Cable Circuits. Any accesses will be designed to use existing agricultural gateways/tracks between the fields where practicable and the width of any new accesses will be kept to a minimum where practicable.
- 3.2.48 Minimum offsets/buffers from the PV Tables or perimeter fencing, will be defined and incorporated within the design of the Scheme where practicable at PEIR stage and within the ES, with the exception of where Access Tracks, perimeter fencing and/or cable routes are required to cross an existing feature. These offsets/buffers will be used to deliver a combination of embedded mitigation and enhancement in the form of hedgerow planting and/or grass/wildflower planting. The buffers/offsets will be a minimum and for example may be increased to deliver further mitigation or enhancements and/or respond to root protection areas where required.

3.3 Development Capacity

- 3.3.1 PV panels generate electricity in DC form. PV Panels feed into Inverters which convert electricity to AC. Because the Inverter is separate from the PV Panels, the total capacity of a solar farm can be measured either in terms of the combined capacity of installed PV Panels (measured in DC) or in terms of combined capacity of installed Inverters (measured in AC).
- 3.3.2 Paragraph 2.10.51 of NPS EN-3 [Ref 1-11] confirms that for the purposes of determining the capacity thresholds in Section 15 of the PA2008, all forms of generation other than solar are currently assessed on an AC basis, while solar farms are assessed on their DC capacity. EN-3 states that for the purpose of Section 15 of the PA 2008, the maximum combined capacity



of the installed inverters (measured in AC) should be used for determining the solar capacity of a site. The capacity threshold for a NSIP is 50MW (AC) in England.

3.4 Construction

Construction Programme

- 3.4.1 The Construction Phase is anticipated to take place over up to 24 months. The final programme will be dependent on the detailed layout design and potential environmental constraints on the timing of construction activities, and will be detailed in the ES. However, the Scheme is anticipated to energise in Q4 2033, and it is therefore anticipated that the Construction Phase would commence would be Q3 2031.

Construction Activities

- Site preparation:
 - The establishment of the Construction Logistics Hub
 - Highway Works where required to upgrade, modify or improve existing highways
 - Delivery of construction materials, plant and equipment
 - The establishment of perimeter fencing
 - The establishment of temporary construction compound(s)
 - The upgrade of existing tracks and construction of new Access Tracks
 - The upgrade or construction of crossing points (bridges/culverts) over drainage ditches and below ground utility infrastructure (if needed and appropriate)
 - Marking out location of Mounting Structures; and
 - Advanced habitat creation and landscaping (if appropriate).
- Solar PV Site construction:
 - Delivery of Scheme components
 - Erection of Mounting Structures
 - Mounting of PV Panels
 - Installation of cable circuits; and
 - Installation of Conversion Units.
 - Construction of Customer Substation
 - Construction of the BESS
 - Construction of onsite electrical infrastructure to facilitate the export of generated electricity
 - Temporary works to existing 400kV overhead lines to facilitate grid connection works
 - Construction of National Grid Substation and Grid Connection Infrastructure; and
 - Testing and commissioning.



- 3.4.2 There will be Heavy Goods Vehicles (HGV) and Light Goods Vehicle (LGV) vehicle movements associated with deliveries and construction worker arrivals and departures. Typical construction vehicles will include excavators, ramming machines, cable layers, low loaders, crane and waste vehicles, trenchers, telehandlers, forklift trucks and tractors/trailers. HGV and LGV movements will be assessed in the PEIR and ES.
- 3.4.3 Construction activities are likely to be carried out Monday to Friday 07:00-18:00 and between 08:00 and 13:30 on Saturdays. However, some activities may be required outside of these times (such as the delivery of abnormal loads, concrete pours for foundations, nighttime working for cable construction works in public highways or HDD activities). Where possible, construction deliveries will be coordinated to avoid HGV movements during the traditional AM peak hour (08:00-09:00) and PM peak hour (17:00-18:00).

Construction Management

- 3.4.4 An outline Construction Environmental Management Plan (oCEMP) will be prepared to support the DCO Application. The oCEMP will set out the mitigation measures identified through the EIA process to be employed during the Construction Phase.
- 3.4.5 An outline Construction Traffic Management Plan (oCTMP) including details on construction logistics and construction worker travel will be prepared in support of the DCO Application that includes information to guide the delivery of material, plant, equipment, and staff during the Construction Phase.

3.5 Operation and Maintenance

- 3.5.1 The Operational Phase of the Scheme is proposed to be 60 years. During the Operational Phase of the Scheme, onsite activities would include routine servicing, maintenance activities, and the replacement of equipment such as PV Panels and BESS when required, as well as management of vegetation.
- 3.5.2 The components of the Scheme are anticipated to have the following approximate lifespans:
- PV Panels – 25 to 40 years; and
 - Batteries – 15 to 20 years.
- 3.5.3 It is therefore estimated that the PV Panels could require replacement up to two times, and the batteries up to four times, during the operation of the Scheme. The effects of maintenance and replacement activities are anticipated to be lesser than the Construction Phase and would be controlled and managed through appropriate management plans and by the requirements of the DCO.
- 3.5.4 There may be a level of HGV activity required to replace onsite equipment. The ES will include further details of the maintenance and replacement activities, and appropriate controls will be developed as part of the DCO. An Operational Environmental Management Plan (OEMP) would include control measures to ensure no significant impacts would arise during the maintenance and replacement activities. Outline versions of the OEMP and Landscape and Ecological Management Plan (oLEMP) will be provided with the DCO Application.
- 3.5.5 The land underneath and around the PV Tables would be sown and managed through a combination of sheep grazing, hay/silage production, wildflower grassland, in order to manage vegetation during the Operational Phase of the Scheme.



- 3.5.6 The management of the landscape and ecological features will be undertaken in accordance with a detailed Landscape and Ecological Management Plan (LEMP) that will be secured via a requirement of the DCO.
- 3.5.7 At this stage of the Scheme, it is anticipated that personnel will visit the Site from time to time to check the apparatus. No on-site staff will be required to operate the Scheme on a day-to-day basis. Movement within the Site will be by way of quad bike or small, farm utility vehicle. At times during operation, it will be required for additional staff to attend when necessary for replacement of solar and BESS infrastructure. The ES will confirm the likely operational traffic flows.

3.6 Decommissioning

- 3.6.1 During the Decommissioning Phase, all the solar infrastructure including PV Panels, Mounting Structures, above ground cabling, Conversion Units, fencing, Ancillary Infrastructure, BESS and the Customer Substation would be removed and recycled or disposed of in accordance with good practice following the waste hierarchy, with materials being reused or recycled whenever possible. All waste will be disposed of in accordance with the legislation at the time of decommissioning.
- 3.6.2 It is assumed that the National Grid Substation would remain in situ.
- 3.6.3 Any requirement to leave the Access Tracks in situ would be discussed and agreed with the landowner at the time of decommissioning and consented separately.
- 3.6.4 Decommissioning is anticipated to take approximately 12 to 24 months.
- 3.6.5 The Site would be reinstated in accordance with a Decommissioning Environmental Management Plan (DEMP). The DEMP will be subject to the approval of the local planning authorities.

3.7 Project Outcomes, Design Principles and Parameters

- 3.7.1 A series of Project Outcomes, Design Principles and Parameters are being developed for the Scheme as part of an iterative process based on environmental assessments and consultation with key stakeholders. The Design Principles and Parameters will be confirmed following the development of detailed design and construction plans.

3.8 Commitments Register

- 3.8.1 A Commitments Register has been prepared which sets out the measures which are likely to be required to ensure that good design objectives will be secured and implemented. This is to ensure that the likely significant effects arising from the Scheme are mitigated and monitored as far as possible.
- 3.8.2 The Commitments Register will be kept as a live document throughout the evolution of the Scheme, being updated as necessary at the PEIR and ES stages. It will be submitted with the DCO Application and updated as necessary during the Examination. It can then be used during the post-DCO consent phase as a tool to demonstrate compliance with commitments.



4 EIA Methodology

4.1 The EIA Process

- 4.1.1 EIA is the process of compiling, evaluating and presenting all the likely significant environmental effects of a project, prior to major decisions being made. It is born out of Directive 85/337/EC (as amended) [Ref 4-1] on the assessment of the effects of certain public and private projects on the environment. Following a series of amendments, a new Directive, EIA Directive 2014/52/EU [Ref 4-2] came into force on 15 May 2014. This Directive was transposed into English law, for the purposes of the Scheme, on 16th May 2017 through the EIA Regulations 2017 [Ref 4-3].
- 4.1.2 To ensure that the EIA Regulations continue to operate following the UK's withdrawal from the European Union, the EIA Regulations were amended under the Environmental Assessments and Miscellaneous Planning (Amendment) (EU Exit) Regulations 2018 (SI 2018/1232) [Ref 4-4] to replace references to EU Directives and legislation and to uphold international obligations through domestic legislation.
- 4.1.3 In general terms the main stages in the EIA are as follows:
- Baseline Conditions – collation and review of available data and undertake baseline surveys
 - Scoping – identification of likely significant issues to determine the scope of the EIA
 - Consultation – seek feedback from consultees and the public in relation to key environmental issues, methodology adopted and design approaches
 - Assessment Methodology – define methodologies using topic specific guidance and best practice techniques and assess the likely significant effects of the Scheme, identify and evaluate alternatives, provide feedback to the Scheme design team, incorporate any necessary mitigation measures and assess residual effects; and
 - Preparation of the Environmental Statement and non-technical summary.
- 4.1.4 The assessment process is designed to produce an environmentally sensitive development by considering and assessing the effects of the Scheme against existing environmental baseline conditions. To date, the EIA team has undertaken a review of both the environmental sensitivities within and surrounding the Site and within the relevant topic Study Areas to identify any potential environmental effects. Where the baseline environment has been informed by Site visits and environmental surveys, these have been detailed in the relevant topic section of this Scoping Request.
- 4.1.5 The EIA process will be undertaken in accordance with the EIA Regulations, guidance produced by PINS and the Institute of Environmental Management and Assessment (IEMA) and other environmental topic-specific guidance. The ES will set out details on the methodology and approach, along with the overall conclusions of the EIA process.
- 4.1.6 Development parameters will be determined and fixed for the purposes of the EIA through an iterative approach taking into account baseline environmental information, the evolving design and any associated technical requirements.



- 4.1.7 The EIA will assess the construction, operational and decommissioning phases of the Scheme.

4.2 Baseline Conditions

- 4.2.1 An important step in the EIA process is to establish a baseline against which to assess the effects of the Scheme. Information relating to the existing environmental baseline will be collected through field and desktop study, including:
- Online/digital resources
 - Data searches, e.g. Local Biological Record Centres, Historic Environment record, etc.
 - Baseline Site surveys; and
 - Available environmental information submitted in support of other planning applications for development in the vicinity.
- 4.2.2 For each environmental topic chapter, the methods of baseline data collection will be discussed with the relevant consultees.

4.3 EIA Scoping

- 4.3.1 Whilst every ES should provide a full factual description of the development, the emphasis of Schedule 4 of the EIA Regulations is on the ‘significant’ environmental effects to which a development is likely to give rise. Regulation 10(3) of the EIA Regulations require an EIA Scoping Request to include an explanation of the likely significant effects of the development on the environment. It isn’t the role of the EIA and ES to assess all potential effects of Scheme, which is further evidenced by Regulation 14(2)(b), which requires the ES to include a description of the likely significant effects of the Scheme on the environment.
- 4.3.2 Where relevant, the environmental topics set out within this Scoping Request provide an outline of the proposed approach to assessment and the potential environmental effects. The ES will provide an objective analysis of the likely significant environmental effects and highlight the key issues relevant to the decision-making process.
- 4.3.3 In accordance with the EIA Regulations, a cumulative assessment will also be undertaken. The approach to this assessment is outlined in more detail in Chapter 6 of this Scoping Request.
- 4.3.4 sets out a Scoping Table which includes all assumptions that underpins the reasoning to scope out aspects and matters from the EIA. Subsequent iterations will also be produced and submitted with the PEIR and the ES.
- 4.3.5 Upon receipt of the EIA Scoping Opinion, the points raised within the Scoping Opinion will be presented within a tabulated format. This table will be included within the ES and be used to sign-post stakeholders to the relevant section of the ES so to demonstrate how the points raised have been considered and addressed.

4.4 Consultation

- 4.4.1 Consultation with stakeholders and public bodies will be undertaken throughout the EIA process to gather feedback on the emerging Scheme proposals, baseline survey



methodologies, results and assessment methodology. Consultation with statutory consultees and stakeholders has already commenced as part of a co:design process to help inform the content of this Scoping Request. Further detail on stakeholders who have already been consulted can be found within the individual environmental chapters of this document.

4.5 EIA Methodology

EIA Assessment Scenarios

- 4.5.1 The EIA will assess the effects of the following scenarios:
- Construction Phase
 - Operational Phase; and
 - Decommissioning Phase.
- 4.5.2 The Operational Phase is proposed to be 60 years. Details on the anticipated construction programme and start of operation will be provided in the PEIR from the basis of technical assessments.
- 4.5.3 The ES will include within each of the environmental topics a description of the current baseline and the future baseline.
- 4.5.4 The 'future baseline' scenario will describe the changes from the baseline scenario as far as natural changes can be established.
- 4.5.5 The potential likely significant effects arising as a result of the Scheme will be assessed against these three baselines as follows:
- Construction Phase – Current and Future Baseline
 - Operational Phase – Future Baseline; and
 - Decommissioning Phase – Future Baseline.

Prediction of Likely Effects

- 4.5.6 When undertaking an EIA, environmental effects are classified as either permanent or temporary, as appropriate to the effect in question. Permanent effects are those which are irreversible (e.g., permanent land take.) The duration of temporary or reversible effects differs for each environmental topic depending on their own methodologies but can broadly be defined as:
- Short Term
 - Medium Term; and
 - Long Term.
- 4.5.7 In assessing the significance of likely effects identified through the EIA process, account will be taken as to whether effects are direct or indirect, secondary, cumulative, transboundary, short, medium or long term, permanent or temporary and neutral, positive or negative.



Determining Significance

- 4.5.8 The EIA will identify the likely '*significance*' of environmental effects (beneficial or adverse) arising from three phases (construction, operation and decommissioning) of the Scheme. The significance of residual effects will be determined by reference to the criteria set out for each environmental topic. The approach to assessing and assigning significance to an environmental effect is derived from a variety of sources including, in particular, the NPSs, NPPF, and relevant planning practice guidance, legislative requirements, topic specific guidelines, standards and codes of practice, the EIA Regulations, advice from statutory consultees and other stakeholders and the expert judgement of the team undertaking the EIA.
- 4.5.9 The likely effect that the Scheme may have on identified environmental receptors will be influenced by a combination of the sensitivity (or importance) of the receptor and the predicted magnitude of impact from the baseline conditions.
- 4.5.10 Assignment of environmental sensitivity of a receptor will generally depend on the vulnerability, recoverability and value/importance of the Receptor. The environmental sensitivity (or importance) will be determined using the following categories:
- High – high importance and rarity, international level and very limited potential for submission
 - Medium – high or medium importance and rarity, regional level and limited potential for substitution
 - Low – low or medium importance and rarity and local level; and
 - Negligible – very low importance or rarity and local level.
- 4.5.11 Where other categories of sensitivity have been used, this will be set out in the individual environmental topic assessment.
- 4.5.12 The categorisation of the magnitude of impact will take into account the following factors:
- Extent
 - Duration
 - Frequency; and
 - Reversibility.
- 4.5.13 Impacts will be defined as either beneficial or adverse. As a guide, magnitude of impact will generally be assigned using the categories below. Further details of the topic-specific methodologies adopted for the EIA, will be defined within the methodology section of each of the topic chapter:
- High:
 - Adverse: Loss of a resource and/or quality and integrity of a receptor; severe damage to key characteristics, features or elements; and
 - Beneficial: Large scale or major improvement of receptor quality; extensive restoration or enhancement, major improvement of attribute quality.
 - Medium:



- Adverse: Loss of resource, but not adversely affecting integrity; partial loss of and/or damage to key characteristics, features or elements; and
- Beneficial: Benefit to or addition of key characteristics, features or elements. An improvement to attribute quality.
- Low:
 - Adverse: Some measurable change in attributes, quality or vulnerability, minor loss of or alteration to one (possibly more) key characteristics, features or elements; and
 - Beneficial: Minor benefit to or addition of one (possibly more) key characteristics, features or elements, some beneficial impact on attribute or reduced risk of a negative impact occurring.
- Negligible:
 - Adverse: Very minor loss or detrimental alteration to one or more characteristics, features or elements
 - Beneficial: Very minor benefit to or positive addition of one or more characteristics, features or elements; and
 - No change: No loss or alteration to characteristics, features or elements, no observable impact in either direction.

4.5.14 The overall significance of the effect will be assigned by the interaction of both sensitivity of the Receptor and magnitude of impact. The level of significance will be determined in each of the environmental topic assessments and will consider relevant topic-specific legislation, planning policy and guidance.

4.5.15 Professional judgement will be used to assign the most appropriate option where the matrix offers more than one level of significance. The topic assessments will adopt this general approach to assigning significance, unless stated in the individual topic chapters.

Cumulative Effects Assessment

4.5.16 The Cumulative Effects Assessment (CEA) will be undertaken in accordance with PINS Advice on Cumulative Effects Assessment (September 2024) and will consider two types of cumulative effects:

4.5.17 In-combination effects - the inter-relationship between individual development effects, for example, noise, dust and visual on one particular receptor; and

4.5.18 Cumulative effects - multiple existing and/or approved developments generating additive effects which together have an increased effect on the same receptors.

In-combination effects

4.5.19 A separate chapter will be presented within the ES which will provide a summary of effect interactions between topics, setting out the inter-relationship arising as a result of direct effects from other environmental topics

4.5.20 The ES will set out a table demonstrating where multiple effects from the Scheme would combine to affect sensitive receptors, and which will explain what mitigation measures are proposed, and how such mitigation may have an in-combination effect across several topics.



Cumulative effects

- 4.5.21 Each topic chapter within the ES will set out how the particular topic area has considered and assessed the cumulative effects arising as a result of other existing or proposed development that will be set out in the long and short lists for the EIA.
- 4.5.22 The Cumulative Effects Assessment will adopt a four-staged approach, as set out in **Table 4.1** below.

Table 4.1 Cumulative Effects Assessment Approach

CEA Stage	Key Activities
Stage 1: Establish the long list of other existing and / or approved development	<p>Define and document the Zone of Influence (Zol) for each environmental aspect considered in the ES</p> <p>Identify a long list of developments in the vicinity of the Scheme utilising Matrix 1 of Annex 1 of the PINS advice on Cumulative Effects Assessment</p> <p>Undertake a desk-based review of available environmental information for the identified cumulative developments to inform the baseline, and keep this under review</p>
Stage 2: Establish a short list of other existing and / or approved development	<p>Develop and apply threshold criteria to the long list to establish the short list of projects to be included in the CEA, utilising Matrix 1 of Annex 1 of the PINS advice on Cumulative Effects Assessment</p> <p>Discuss and agree thresholds with Norfolk County Council</p>
Stage 3: Information gathering	<p>Information relating to each of the existing or approved developments on the short list is compiled (where available), including, but not limited to:</p> <ul style="list-style-type: none"> Proposed design and location Proposed programme of construction, operation and decommissioning Environmental assessments that set out baseline data, and effects arising from other existing and / or approved development <p>Information will be summarised and presented in tabular format, utilising Matrix 2 of Annex 2 of the PINS advice on Cumulative Effects Assessment</p>



Stage 4: Assessment	<p>A proportionate assessment of the cumulative effects of the Scheme with the other existing and / or proposed developments identified in Stage 1 to 3</p> <p>Identify any additional mitigation measures and set out the means of securing delivery of such measures, utilising Matrix 2 of Annex 2 of the PINS advice on Cumulative Effects Assessment</p>
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Stage 1: Establish the long list of other existing and / or approved development

4.5.23 PINS Advice on Cumulative Effects Assessment (September 2024) sets out the types of development that should be considered:

Tier 1 (Other existing and, or approved development)

- Under construction
- Permitted applications under the Planning Act or other regimes but not yet implemented
- Submitted applications under the Planning Act or other regimes but not yet determined; and
- All refusals subject to appeal procedures not yet determined.

Tier 2 (Other existing and, or approved development)

- Projects on the Planning Inspectorate's programme of projects

Tier 3 (Other existing and, or approved development)

- Projects on the Planning Inspectorate's programme of projects where a scoping report has not been submitted
- Identified in the relevant Development Plan and emerging Development Plans, with appropriate weight given as they near adoption, recognising that there will be limited information available on the relevant proposals; and
- Identified in other plans and programmes, as appropriate, which set the framework for future development consents or approvals, where such development is reasonably likely to come forward.

4.5.24 A decreasing level of detail is likely to be available from Tier 1 to Tier 3.

Stage 2: Establish a short list of other existing and / or approved development

4.5.25 Stage 2 of the CEA will be to review and apply a threshold criteria to the long list, in order to establish a short list of other existing and/or approved development to ensure that the cumulative assessment is proportionate, utilising Matrix 1 of Annex 1 of the PINS advice on Cumulative Effects Assessment. The criteria will ensure that only other existing and/or approved development which is likely to result in significant cumulative effects is taken forward to the assessment stage. The shortlist of existing and/or approved development will be consulted upon with statutory and non-statutory consultees during the EIA process.

4.5.26 The threshold criteria to be used will consider the following factors:



- Temporal Scope
- Scale and Nature of the Development; and
- Other factors such as, nature and capacity of the receiving environment, source-pathway-receptor approach, and professional judgment.

Stage 3: Information gathering

4.5.27 Environmental information will be gathered for short listed existing and/or approved development, where available, utilising Matrix 2 of Annex 2 of the PINS advice on Cumulative Effects Assessment, and including details of:

- Proposed design and location
- Proposed programme of construction, operation and decommissioning
- Environmental assessments that set out baseline data, and effects arising from other existing and / or approved development

Stage 4: Assessment

4.5.28 Technical disciplines will assess the cumulative effects of the Scheme with the other existing and / or approved development identified in Stage 1 to 3. The assessments will explain and record any time gaps in information, consider all tiers of developments where possible, and be documented in ES.

4.5.29 Some assessments may inherently be cumulative in which case no additional cumulative assessment of these aspects is required. However, separate consideration regarding the inter-relationship of effects on an individual Receptor may be needed.

4.5.30 In cases where significant cumulative effects between the Scheme and other existing and / or approved developments are identified, it may be necessary to proposed additional mitigation measures to be delivered either by the Applicant, or in collaboration with another developer, in which case collaboration and agreement will be sought, where possible.

4.5.31 No transboundary effects are anticipated to arise from the Scheme, but if any are identified they will be considered in accordance with PINS Advice '*Nationally Significant Infrastructure Projects: Advice on Transboundary Impacts and Process*' (20 September 2024).

Mitigation

4.5.32 Regulation 14(2) of the EIA Regulations requires that where significant effects are identified "*a description of any features of the proposed development, or measure envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects in the environment*" should be included in the ES.

4.5.33 Environmental effects remaining after mitigation measures have been incorporated are termed residual effects and these will be fully described in the ES.

4.5.34 Mitigation measures are developed as part of an iterative process and therefore will be developed throughout the EIA process in response to the findings of the initial assessments.

4.5.35 Measures will be identified in order to avoid, reduce and, if possible, offset significant adverse effects identified during the EIA process. Where possible, these measures will be incorporated into the form or design of the Scheme. Once these measures are incorporated into the design, they are termed 'embedded measures'.



- 4.5.36 Embedded measures relevant to the construction phase will be described within an outline Construction Environmental Management Plan (oCEMP), and within each technical chapter.
- 4.5.37 For the operational phase, such embedded measures will be represented in the design of the Scheme, and through control measures as part of the DCO such as an outline Operational Environmental Management Plan (oOEMP). Embedded measures will either be incorporated into the design from the outset or identified through the assessment process.
- 4.5.38 The ES will assess effects with embedded measures in place. Where significant adverse effects are identified after considering these embedded measures, 'additional mitigation measures' will be proposed. These will be taken into account in the assessment of residual effects.
- 4.5.39 A summary of all mitigation measures and how they will be secured, either inherently through the Scheme design, or through control documents, or requirements within the DCO, are set out in the Commitments Register, which will be kept under review as the Scheme progresses.

Monitoring

- 4.5.40 The EIA Regulations require *"the monitoring of any significant adverse effects on the environment of the Project"*. The ES will specify which effects, if any, will require monitoring.

4.6 Rochdale Envelope

- 4.6.1 EIA is the iterative process in which the assessment of environmental impacts is undertaken in parallel with the design process of the Project. The design and layout of the Scheme will evolve in response to the identification of specific constraints and opportunities. The comments made in response to this Scoping Request and the statutory consultation process will also influence the final design and layout of the Scheme.
- 4.6.2 Advice Note Nine 'Rochdale Envelope' [Ref 4-1] was published by the Planning Inspectorate (PINS) in July 2018 to address the degree of flexibility that would be considered appropriate to deal with uncertainties associated with applications for development consent.
- 4.6.3 In order to maintain flexibility in the design and layout, the Scheme will adopt the Rochdale Envelope approach by specifying parameter ranges which will be defined in the Project Description chapter of the ES. These parameters will be considered in detail by technical authors in the ES to ensure the realistic worst-case effects of the Scheme are assessed for each potential Receptor.

4.7 Environmental Statement

- 4.7.1 In accordance with Regulation 14(3) of and Schedule 4 to the EIA Regulations, the EIA process will be documented in an ES which will describe the Scheme, give full details of the EIA methodology and any technical methodologies and data used in support of the assessment; detail any mitigation and enhancement measures that have been employed; present the assessment of likely significant environmental effects and provide a schedule of proposed mitigation and monitoring arrangements. The ES will present the residual effects, and an assessment of the cumulative effects and impact interactions as described in each of the topic sections within this Scoping Request.
- 4.7.2 Subject to responses from statutory consultees on this Scoping Request, the ES will consist of the following Volumes:



Volume I: Main ES Text

4.7.3 This Volume will comprise the main ES text and will include the following:

- A description of the methodology and approach to EIA
- A detailed description of the Site
- A detailed description of the Scheme, including details of the construction, operational and decommissioning phases
- A description of the evolution of the design process, including a review of the main layout options and reasonable alternatives along with an indication of the main reasons for selecting the chosen option
- A detailed assessment methodology for each environmental topic scoped into the EIA
- A description of the current baseline environment and an outline of the likely evolution thereof without implementation of the development for each environmental topic
- An assessment of predicted environmental effects during the construction, operational and decommissioning phases
- A description of the mitigation measures proposed
- A description of any residual environmental effects
- The impact of the Scheme on climate and the vulnerability of the Scheme to climate change; and
- An assessment of cumulative effects.

Volume II: Technical Appendices

4.7.4 Volume II will include all technical data required to support the assessment conclusions set out in Volume I.

Volume III: Figures

4.7.5 Volume III will include all figures and plans required to support the assessment conclusions set out in Volume I.

Non-Technical Summary

4.7.6 A Non-Technical Summary (NTS) will be prepared which will provide a brief description of the Scheme, a broad summary using non-technical language of the likely significant effects, and mitigation measures identified to reduce or remove those effects.



5 Proposed Scope of the PEIR and ES

5.1 Introduction

- 5.1.1 Regulation 5 of the EIA Regulations sets out the requirements and scope of the EIA Process. This chapter of the EIA Scoping Request sets out how the EIA process and ES will consider those factors listed within Regulation 5.
- 5.1.2 Following a review of environmental surveys and preliminary appraisal work to date, it is proposed that the EIA needs to focus on the following environmental topics where there is potential for significant effects occur:
- Landscape and Visual (Chapter 6)
 - Ecology and Biodiversity (Chapter 7)
 - Cultural Heritage and Archaeology (Chapter 8)
 - Transport and Access (Chapter 9)
 - Noise and Vibration (Chapter 10)
 - Soils and Agriculture (Chapter 11)
 - Water Resources (Chapter 12)
 - Climate Change (Chapter 13)
 - Socio-economics and Human Health (Chapter 14)
 - Other Environmental Matters (including Air Quality, Glint and Glare Ground Conditions, Electromagnetic Fields, Major Accidents and Disasters, Telecommunications, Utilities and Television Receptors, and Waste) (Chapter 15); and
 - Cumulative Effects (Chapter 16).
- 5.1.3 It is proposed to combine Socio-Economics and Human Health into one chapter for the ES, although these are presented as separate chapters for the purposes of this Scoping Request.
- 5.1.4 The scope of these topics are referred to in greater detail in the following chapters of this Scoping Request.



6 Landscape and Visual

6.1 Introduction

- 6.1.1 This chapter sets out the scope and methodology for the assessment of likely significant effects arising from the Scheme on Landscape and Visual during the Construction, Operation and Decommissioning Phases.
- 6.1.2 The baseline conditions are established followed by the proposed assessment methodology, with the legislative and policy context and the likely potential effects which will be scoped into the Environmental Statement (ES).

6.2 Study Area

- 6.2.1 It is accepted practice within landscape and visual impact assessments (LVIAs) that the extent of the Study Area is defined by the potential visual envelope arising from the Scheme based upon the Zone of Theoretical Visibility (ZTV) mapping and fieldwork. On the basis of ZTV modelling in this case, a 3km Study Area from the Site Boundary is considered appropriate to cover the likely extent of effects which would be significant or material to the decision-making process (hereafter known as the 'Study Area'). The proposed 3km Study Area for the LVIA is shown on **Figure 6-1**. Additional details on ZTV studies are included within **[Appendix 6.3]**.
- 6.2.2 The ZTV illustrated in **Figure 6-1** is based on the parameters outlined within Chapter 3 of this EIA Scoping Report and the area of Solar PV Site, Associated Development and Customer Substation and National Grid Substation as shown in **Figure 2-2** of this EIA Scoping Report. The ZTV is modelled on the maximum height parameter of 15m for the proposed National Grid Substation, as a worst case scenario, with all other potential components of the Scheme having lower height parameters.
- 6.2.3 As the design of the Scheme progresses and evolves, the location of the different elements of the Scheme will be refined and the ZTV will be re-run as the basis for the LVIA within the Landscape and Visual chapter of the ES.

6.3 Baseline Conditions

Distances

- 6.3.1 Where distances are given in the assessment, these are approximate distances between the nearest part of the Site Boundary and the nearest part of the receptor in question, unless explicitly stated otherwise.

Assumptions and Limitations - Desk-study & Fieldwork

- 6.3.2 The baseline conditions of the Site and the surrounding landscape described in the subsequent sections has been informed by desk-study and fieldwork undertaken in May 2024 as part of the co-design process for the Scheme.



- 6.3.3 A ZTV study (**Figure 6-1**) has been produced and used as tool to inform the design and professional judgements made in this LVIA. The ZTV study has been modelled on the maximum development height parameters available at the time of assessment.

Landscape Character

National Landscape Character

- 6.3.4 At the national level, the character of England has been described and classified in the National Character Area (NCA) profiles published by Natural England [**Ref 6-1**]. The Site falls within NCA85 'The Brecks'.
- 6.3.5 The key characteristics, management and strategic environmental objectives of NCA 85 will inform the baseline description presented within the LVIA. However, due to the availability of more detailed assessments undertaken at the local level, effects on NCA 85 will not be assessed in detail within the LVIA.

Regional Landscape Character

- 6.3.6 At the regional level, the Norfolk and Suffolk Brecks Landscape Character Assessment (2013) [**Ref 6-2**] focuses on The Brecks.

“a unique landscape of heaths, conifer plantations and farmland on part of the chalk plateau in south-west Norfolk and north-west Suffolk”.

- 6.3.7 The Site is situated within an area characterised as 'Rolling Clay Farmland', which encompasses land to the north, northeast and south of Swaffham. This assessment will inform consideration of baseline landscape character within the LVIA, where relevant, but the landscape character types identified in the more comprehensive District scale landscape character assessments listed below will form the basis of the assessment of effects on landscape character for the ES.

Local Landscape Character

- 6.3.8 The Breckland Landscape and Settlement Character Assessment (2022) [**Ref 6-3**] describes and analyses the character of Breckland's landscape and settlements, drawing upon relevant information from older landscape character assessments outlined below, as well as expanding the assessment to cover existing settlements within the district.
- 6.3.9 The Breckland Landscape Character Assessment (2007) [**Ref 6-4**] is the primary document that assesses landscape character within the district. This assessment covers the Site and large parts of the 3km Study Area, to the south, east and northeast. The landscape character assessment was published in 2007 and identifies 6 no. Landscape Character Types (LCTs) across the district. Specifically, the Site is situated across two LCTs: (D) The Brecks – Heathland with Plantation and (E) Plateau Farmland.
- 6.3.10 The aforementioned LCTs are divided up into more area specific Landscape Character Areas (LCAs). With regard to the more specific LCAs, the Site is situated within parts of both (D1) Swaffham Heath and (E6) North Pickenham Plateau. Extracts relating to LCA D1 and E6 are included within [**Appendix 6.5**].
- 6.3.11 The 3km Study Area includes surrounding landscape areas which have been characterised within the King's Lynn and West Norfolk Borough Landscape Character Assessment, 2007 [**Ref 6-5**].



- 6.3.12 The following LCTs and LCAs are located within the 3km Study Area, as shown on Figure 6-3.

Breckland Landscape Character Assessment (2007) [Ref 6-4]

- (D) The Brecks – Heathland with Plantation LCT, specifically (D1) Swaffham Heath LCA (Site within)
- (E) Plateau Farmland LCT, specifically (E6) North Pickenham Plateau LCA (Site within)
- (F) Chalk Rivers LCT, specifically (F1) River Nar Valley LCA; and
- (B) Settled Tributary Farmland LCT, specifically (B5) River Wissey Tributary Farmland LCA and (B7) River Nar Tributary Farmland LCA
- King's Lynn and West Norfolk Borough Landscape Character Assessment (2007) [Ref 6-5]
- (E) The Fens LCT, specifically (E2) Saddlebow and Wormegay LCA
- (G) Farmland with Woodland and Wetland LCT, specifically (G3) Gayton and East Winch LCA
- (H) Settled Farmland with Plantations LCT, specifically (H2) Fincham LCA
- (I) Rolling Open Farmland LCT, specifically, (I9) Little Massingham and Castle Acre; and
- (J) Plateau Farmland LCT, specifically (J3) Great Massingham LCA

- 6.3.13 Whilst the above LCAs are located within the Study Area, it is considered that not all LCAs would experience effects as a result of the Scheme. Within the Study Area the local topography is varied, with the Site forming part of a plateau landscape contained by woodland and hedgerows, alongside the lower lying valley landscape of the River Nar to the north. It is proposed to scope some of the LCAs out of the main assessment when considering the baseline condition of the surrounding Site context and the limited visibility towards the Site from some LCAs, due to the local topography and presence of nearby mature landscape features. The LCAs that are proposed to be scoped out are below in this chapter within **Table 6.9**.

Views and Visual Amenity

- 6.3.14 In order to identify those groups of visual receptors that may be significantly affected by the Scheme, ZTV mapping, desk studies and site visits would be used. Representative viewpoints have been selected to inform the assessments within the LVIA and these will be agreed with Breckland Council and other relevant stakeholders. In addition, specific viewpoints may be identified where there are key promoted viewpoints within the Study Area, or illustrative viewpoints to *“demonstrate a particular effect or specific issues, which might, for example, be the restricted visibility at certain locations”* (Guidelines for Landscape and Visual Impact Assessment (GLVIA) 33, para 6.19) [Ref 6-6].
- 6.3.15 With the exception of specific viewpoints, each route, settlement or location will encompass a range of possible views, which might vary from no view of the Scheme to very clear, close views. Therefore, effects will be described in such a way as to identify where views towards the Scheme are likely to arise and what the scale, duration and extent of those views are likely to be. In some cases, this will be further informed by a nearby viewpoint and in others it will be informed with reference to the ZTV, aerial photography and site visits. Each of these individual effects are then considered together in order to carry out an assessment of the effects on the visual receptors along that route, or in that place.



Visual Receptor Groups

- 6.3.16 Visual effects will be assessed for groups of visual receptors within close proximity of each other that are judged to experience similar or a shared commonality of effects. These will be referred to as Visual Receptor Groups (VRGs) and may include different types of receptors. The VRGs will be defined within the ZTV and a refined Zone of Visual Influence (ZVI) or main area of visibility will be identified.
- 6.3.17 For those visual receptors located outside of the ZVI, there would be very limited or no visibility of the Scheme, such that the effects would be Negligible at most. Visual receptors located outside of the ZVI will not be taken forward for detailed assessment within the LVIA.
- 6.3.18 Visual receptors that would be assessed within the Landscape and Visual Chapter of the ES include:
- Local residents and visitors to settlements
 - Walkers and equestrians using Public Rights of Way (PRoW) and other promoted recreational routes
 - Cyclists using Sustrans national cycle routes (NCR's) and other promoted cycle routes
 - Visitors to local attractions/landmarks or public parks/recreational areas
 - Outdoor workers
 - Motorists using nearby roads
 - Passengers using railway connections; and
 - Workers at indoor places of work.

Representative Viewpoints

- 6.3.19 The Representative Viewpoints will be selected from publicly accessible locations to provide a proportionate range of views of the Scheme at different distances and in directions from the Site. The viewpoint locations will represent a wide range of receptors, providing a 'sample' of the potential effects from the locality, with locations purposefully selected to illustrate the range of visual effects; or specifically to ensure representation from an identified receptor. The viewpoints would be 'micro-sited' during the field surveys to represent the 'worst case scenario' or greatest extent of visibility for the particular viewpoint.
- 6.3.20 The LVIA will be accompanied by a number of visualisations undertaken in accordance with the Landscape Institute's Technical Guidance Note 06/19, Visual Representation of Development Proposals [Ref 6-7]. It is proposed that these would be prepared to the Type 3 specification and could be either photowires, where the maximum parameters of the Scheme are illustrated as outlines, with the screening effect of vegetation and built form taken into account, and/ or photomontages that would show an illustrative layout for the Scheme in a more photorealistic representation. The approach to visualisations would be clarified during consultation with the relevant local planning authorities (LPAs), including Breckland Council and King's Lynn and West Norfolk Council. At this stage, viewpoints selected to be visualised are subject to change based upon findings of additional site surveys and undertaking viewpoint photography. The proposed viewpoint locations and visualisation approach will also be agreed with the LPAs during consultation. The preliminary ZTV and proposed LVIA viewpoints are shown on **Figure 6-1** and within **Table 6.1**. The location of the proposed LVIA viewpoints considers comments and recommendations received during non-statutory consultation events



with stakeholders, specifically relating to the consideration of views from the Castle Acre Circular Walk and Rebellion Way cycling route.

Table 6.1 Preliminary LVIA Viewpoints

No.	Location	Receptors	Grid Reference	Approx Distance (m) and Direction to Site (N, E, S, W)
1	Castle Acre Castle	Walkers and Visitors to Castle Acre Castle	581883 315107	1.2km, northeast
2	Castle Acre Priory	Walkers and Visitors to Castle Acre Priory	581535 314958	0.83km, northeast
3	South Acre Road	PRoW users of The Peddars Way and Norfolk Coast Path promoted route and road users along South Acre Road	581177 313997	0km, adjacent to Site
4	Intersection between PRoW West Acre RB7 and South Acre RB2	Users of PRoW West Acre RB7 and South Acre RB2	578794 313713	0km, adjacent to Site
5	Narford Lane	Road Users and Visitors to Narford Hall	576880 313663	0km, adjacent to Site
6	Public Access Route north of West Acre	Users of Public Access Route	577433 315869	1.6km, north
7	Fincham Drove	Users of PRoW South Acre RB6, Fincham Drove and road users along River Road.	579708 311664	0km, adjacent to Site



8	Castleacre Road (A1065)	Users of PRow Swaffham RB55 and road users along Castleacre Road	581895 310821	0km, adjacent to Site
9	South Acre Road	PRow users of The Peddars Way and Norfolk Coast Path promoted route and road users along South Acre Road	583128 312143	1.26km, east
10	PRow West Acre RB3	Users of PRow West Acre RB3	578825 314791	0.3km, west
11	Church Green	Users of The Peddars Way Long Distance Trail and road users along Church Green	577992 315259	0.96km, northeast
12	Intersection between PRow Swaffham RB2 and Narborough RB7a	Users of PRow Swaffham RB2 and Narborough RB7a	578475 310836	1.1km, northeast
13	PRow Narford RB1	Users of PRow Narford RB1	576597 312358	0.93km, west

Key Transport Routes

6.3.21 The following key transport routes including A roads are located within the 3km Study Area and shown to have potential visibility on the ZTV study:

- A1065 Castle Acre Road (adjacent to eastern boundary of the Site); and
- A47.

Long Distance Recreational Trails and Promoted Local Routes

6.3.22 Long distance recreational trails and promoted local routes are shown on Figure 6-2. The Peddars Way and Norfolk Coast Path promoted route is situated partly adjacent to the northeastern corner of the Site, running along South Acre Road, at Bartholomew's Hills. This route runs north-south through the Study Area and continues southwards past Swaffham.

6.3.23 The Nar Valley Way Long Distance Trail runs east-west across the Study Area, approximately 0.6km north of the Site at Castle Acre.



- 6.3.24 The Castle Acre Circular Walk is a local circular route which partially runs through the north of the Site. The route is 10km in length and incorporates the Peddars Way and Norfolk Coast Path National Trail, Petticoat Drove and local PRow.
- 6.3.25 The Rebellion Way is a 373km cycling route throughout Norfolk. The route passes through the centre of the Site and surrounding settlements including Swaffham, South Acre and Castle Acre.

Accessible and Recreational Landscapes

- 6.3.26 The following accessible and recreational landscapes are located within the ZTV mapping for the 3km Study Area:
- Castle Acre Priory – approximately 0.7km, north
 - Castle Acre Common - approximately 0.4km, north
 - Castle Acre Castle – approximately 1.2km, northeast
 - Broadmeadow Common – approximately 2km, northeast
 - Emanuel's Common – approximately 2.26km northeast
 - Newton Common – approximately 2.3km northeast; and
 - Bradmoor Common – approximately 2.9km, northwest.

Designated landscapes

- 6.3.27 The Site is not located within any statutory or non-statutory landscape designations.

6.4 Assessment Methodology

Assessment Criteria

“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.”
(Guidelines for Landscape and Visual Impact Assessment (GLVIA) 3, para. 1.1) [Ref 6-6].

- 6.4.1 Paras. 2.20-2.22 of the same guidance [Ref 6-6] indicate that the two components (assessment of landscape effects, and assessment of visual effects) are *“related but very different considerations”*.
- 6.4.2 The assessment method for this LVIA draws upon the established GLVIA3 [Ref 6-6]; An Approach to Landscape Character Assessment (Natural England, 2014); Landscape Institute Technical Information Note (LI TIN) 05/2017 regarding townscape character [Ref 6-8]; LI TGN 02/2019 Residential Visual amenity assessment (RVAA) [Ref 6-9]; Landscape Institute’s Technical Guidance Notes 02-21: Assessing landscape value outside national designations [Ref 6-10]; LI Technical Guidance Note 06/19 Visual Representation of development proposals [Ref 6-7] and other recognised guidelines. Additional detail on assessment methodology is included within [Appendix 6.2].
- 6.4.3 The key terms used within this assessment are:
- Susceptibility and Value – which contribute to Sensitivity of the receptor



- Scale, Duration and Extent - which contribute to the Magnitude of effect; and
- Significance.

6.4.4 These terms are described in more detail below.

Sensitivity of Receptors

6.4.5 Susceptibility indicates the ability of a landscape or visual receptor to accommodate the Scheme “*without undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies.*” (GLVIA3, para. 5.40) [Ref 6-6].

Table 6.2 Susceptibility

High	Undue consequences are likely to arise from the Scheme.
Medium	Undue consequences may arise from the Scheme.
Low	Undue consequences are unlikely to arise from the Scheme.

6.4.6 Susceptibility of LCAs is influenced by their characteristics and is frequently considered (though often recorded as ‘sensitivity’ rather than susceptibility) within documented landscape character assessments and capacity studies.

6.4.7 Susceptibility of visual receptors is primarily a function of the expectations and occupation or activity of the receptors (GLVIA 3, para 6.32) [Ref 6-6].

6.4.8 Susceptibility of designated landscapes is influenced by the nature of the special qualities and purposes of designation and/or the valued elements, qualities or characteristics, indicating the degree to which these may be unduly affected by the development proposed.

6.4.9 Landscape Value is “*the relative value that is attached to different landscapes by society*” (GLVIA3, page 157) [Ref 6-6].

Table 6.3 Landscape Value

National/International	Designated landscapes which are nationally or internationally designated for their landscape value.
Local/District	Locally or regionally designated landscapes; also areas which documentary evidence and/or site observation indicates as being more valued than the surrounding area.
Community	‘Everyday’ landscape which is appreciated by the local community but has little or no wider recognition of its value.
Limited	Despoiled or degraded landscape with little or no evidence of being valued by the community.



- 6.4.10 Areas of landscape of greater than Community value may be considered to be ‘valued landscapes’ in the context of NPPF paragraph 180 [Ref 6-11].
- 6.4.11 For visual receptors, susceptibility and value are closely linked - the most valued views are also likely to be those where viewer’s expectations will be highest. The value attributed relates to the value of the view, e.g. a National Trail is nationally valued for access, not necessarily for the available views.
- 6.4.12 Sensitivity is assessed by combining the considerations of susceptibility and value described above. The differences in the tables below reflect a slightly greater emphasis on value in considering landscape receptors, and a greater emphasis on susceptibility in considering visual receptors.

Table 6.4 Sensitivity

Landscape Sensitivity		Susceptibility		
		High	Medium	Low
Value	National/International	High	High-Medium	Medium
	Local/District	High-Medium	Medium	Medium-Low
	Community	Medium	Medium-Low	Low
	Limited	Low	Low-Negligible	Negligible
Landscape Sensitivity		Susceptibility		
		High	Medium	Low
Value	National/International	High	High-Medium	Medium
	Local/District	High-Medium	High-Medium	Medium
	Community	High-Medium	Medium	Medium-Low
	Limited	Medium	Medium-Low	Low

Magnitude of Effect

- 6.4.13 Scale of effect is assessed for all landscape and visual receptors and identifies the degree of change which would arise from the Scheme.

Table 6.5 Scale

Large	Total or major alteration to key elements, features, qualities or characteristics, such that post development the baseline will be fundamentally changed.
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Medium	Partial alteration to key elements, features, qualities or characteristics, such that post development the baseline will be noticeably changed.
Small	Minor alteration to key elements, features, qualities or characteristics, such that post development the baseline will be largely unchanged despite discernible differences.
Negligible	Very minor alteration to key elements, features, qualities or characteristics, such that post development the baseline will be fundamentally unchanged with barely perceptible differences.

- 6.4.14 Duration of effect is assessed for all landscape and visual receptors and identifies the time period over which the change to the receptor as a result of the Scheme would arise.

Table 6.6 Duration

Permanent	The change is expected to be permanent and there is no intention for it to be reversed.
Long-term	The change is expected to be in place for 10-25 years and will be reversed, fully mitigated or no longer occurring beyond that timeframe.
Medium-term	The change is expected to be in place for 2-10 years and will be reversed, fully mitigated or no longer occurring beyond that timeframe.
Short-term	The change is expected to be in place for 0-2 years and will be reversed, fully mitigated or no longer occurring beyond that timeframe.

- 6.4.15 The effects identified for the Operational Phase of the Scheme would extend beyond the duration 'Long-term' described above. However, with the exception of the National Grid Substation, the Scheme remains temporary and would be removed at the end of its operational lifetime. Most effects therefore would be 'Semi-Permanent' (i.e. they would extend beyond being Long-term effects but are not Permanent) and the duration is assumed to be between Long-term and Permanent.
- 6.4.16 Medium or short term effects may be identified where mitigation planting is proposed or local factors will result in a reduced duration of effect (for example where maturing woodland will screen views in future). The effects arising from the Construction Phase of the Scheme will usually be short term.
- 6.4.17 The Operational Phase of the Scheme is proposed to be 60 years. During the Operational Phase of the Scheme, on-Site activities would include routine servicing, maintenance activities, and the replacement of equipment such as PV Panels and BESS when required, as well as management of vegetation.



- 6.4.18 Apart from the National Grid Substation, which is assumed to remain in situ, all of the other elements of the Scheme can be removed and the land returned to its original use. As such, effects for the Scheme are judged to be fully reversible and a semi-permanent duration is used for the operational timeframe for the LVIA.
- 6.4.19 Extent of effects is assessed for all receptors and indicates the geographic area over which the effects will be felt.

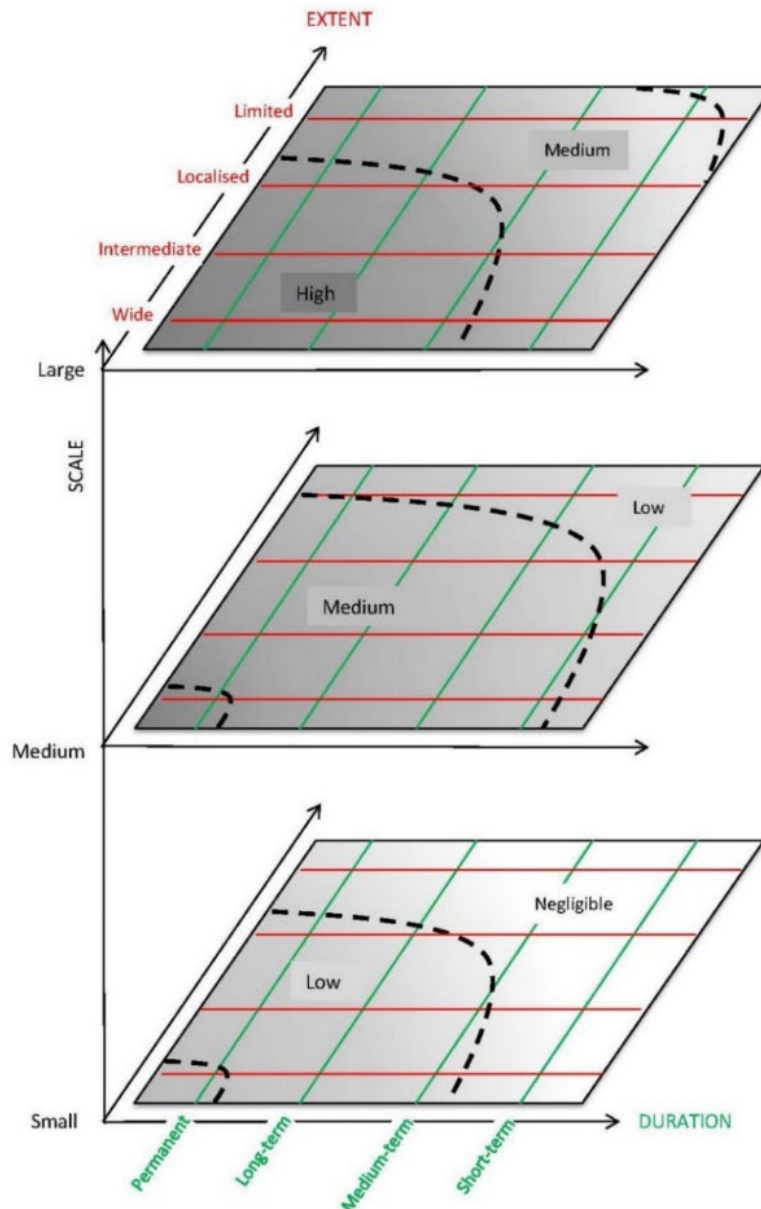
Table 6.7 Extent

Wide	Beyond 4km, or more than half of receptor.
Intermediate	Up to approx. 2-4km, or around half of receptor area.
Localised	Site and surroundings up to 2km, or part of receptor area (up to approx. 25%).
Limited	Site, or part of Site, or small part of a receptor area (< approx. 10%).

- 6.4.20 The Magnitude of impact is informed by combining the scale, duration and extent of effect. **Image 6.1** below illustrates the judgement process:



Image 6.1 Magnitude of Effect



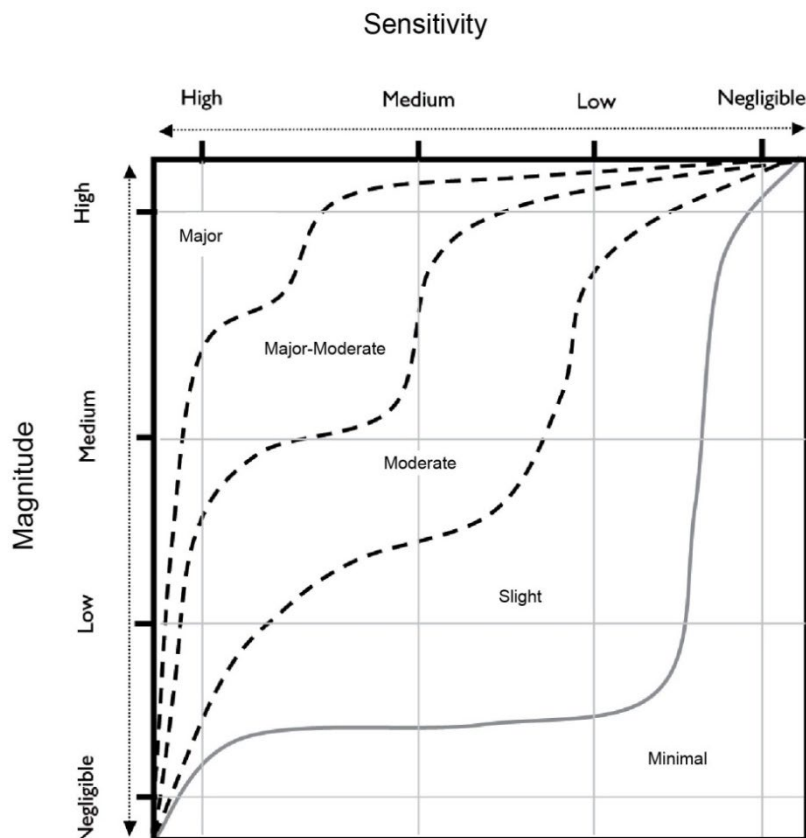
- 6.4.21 As can be seen from the diagram above, scale (shown as the layers of the diagram) is the primary factor in determining magnitude; most of each layer indicates that magnitude will typically be judged to be the same as scale, but may be higher if the effect is particularly widespread and long lasting, or lower if it is constrained in geographic extent or timescale. Where the scale of effect is judged to be Negligible the Magnitude is also assumed to be Negligible and no further judgement in relation to Magnitude is required.

Significance

- 6.4.22 Significance indicates the importance or gravity of the effect. The process of forming a judgement as to the degree of significance of the effect is based upon the assessments of magnitude of effects and sensitivity of the receptor to come to a professional judgement of how important this effect is. This judgement is illustrated by **Image 6.2** below:



Image 6.2 Significance



- 6.4.23 The significance ratings indicate a 'sliding scale' of the relative importance of effects, with Major being the most important and Minimal being the least. Effects which are Major or Major-Moderate are considered to be Significant and *"likely to influence the eventual decision"* whilst those that are Slight or below are judged Not Significant and *"of lesser concern"* (GLVIA3, para 3.35) [Ref 6-6]. Moderate effects are considered to be potentially significant and professional judgment is used to determine whether the effect in question is Significant or Not Significant, with analysis provided to justify the rating. An effect is likely to be assessed as Significant where the sensitivity of the receptor combined with magnitude of change results in a degree of effect that is towards the higher end of the Moderate range (illustrated in Diagram 2 above) and is therefore judged more *"likely to influence the eventual decision"* [Ref 6-6]. It should be noted that whilst an effect may be assessed as Significant, it does not necessarily mean that such an impact would be unacceptable or should necessarily be regarded as an "undue consequence" (GLVIA3, para 5.40) [Ref 6-6].
- 6.4.24 Where intermediate ratings are given, e.g. 'Moderate-Slight' this indicates an effect that is both less than Moderate and more than Slight, rather than one which varies across the range. In such cases, the higher rating will always be given first; this does not mean that the impact is closer to the higher rating but is done to facilitate the identification of the more significant effects (i.e. worse case) within tables. Intermediate judgements may also be used for judgements of Magnitude.

Positive / Adverse / Neutral effects

- 6.4.25 Effects are defined as adverse, neutral or positive. Neutral effects are those which overall are neither adverse nor positive but may incorporate a combination of both.



- 6.4.26 The decision regarding the significance of effect and the decision regarding whether an effect is beneficial or adverse are entirely separate. For example, a rating of Major and Positive would indicate an effect that was of great significance and on balance positive, but not necessarily that the proposals would be extremely beneficial.
- 6.4.27 Whether an effect is Positive, Neutral or Adverse is identified based on professional judgement. GLVIA 3rd edition indicates at paragraph 2.15 that this is a “*particularly challenging*” [Ref 6-6] aspect of assessment, particularly in the context of a changing landscape.

Residential Visual Amenity

- 6.4.28 There is no automatic legal ‘right to a view’, even in the case of significant impacts to residents’ outlook. However, this is balanced against situations where “*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*” [Ref 6-6].
- 6.4.29 A separate Residential Visual Amenity Assessment (RVAA) will be undertaken to consider the significance of effects on the private views from the surrounding properties and the acceptability of any effects on living conditions. The RVAA will be included as an appendix to the main LVIA.
- 6.4.30 The RVAA will be undertaken in accordance with the Landscape Institute’s, Technical Guidance Note 02/2019 [Ref 6-9]. The scope of residential properties to be included within the RVAA will initially be limited to within 800m distance of the Scheme. Beyond this distance, the Scheme may be visible but it is unlikely that it would result in any overbearing effects such that living conditions would be affected to an unacceptable degree.

Amenity and Recreation Assessment

- 6.4.31 An Amenity and Recreation Assessment (ARA) is a separate assessment to the LVIA. The ARA relates to the impacts on users of recreational resources comprising Public Rights of Way (PRoW) including public footpaths; bridleways; restricted byways; and Byways Open to All Traffic (BOAT); permissive footpaths; open access and common land; cycle routes, recreational facilities, nature reserves, parks and waterbodies used for recreation. The ARA will assess any physical changes (e.g. PRoW diversions or closures) and other environmental impacts including visual amenity, noise, traffic movements, dust and other emissions, traffic movements which may affect overall experience of the amenity and recreational resources.
- 6.4.32 **Figure 6-2** identifies a number of amenity and recreational resources in the surrounding context. These comprise a variety of PRoW, open access land, nature areas, cycle trails, walking routes and formal and informal recreation areas. The ARA will consider the effects to the amenity and recreation resource within the same 3km Study Area as the LVIA.
- 6.4.33 The ARA will be provided as separate appendix to the LVIA. There is no universally recognised guidance for the ARA, although the methodology will follow the principles of the LVIA methodology and will be informed by relevant policy and guidance, as well as the outcomes of relevant assessments such as transport and access, noise, air quality, and glint and glare.

Night-Time Effects and Lighting

- 6.4.34 During the Construction and Decommissioning Phases, the Scheme will require temporary lighting, which would be designed as far as reasonably practicable to minimise any light spill



and sky glow and will not be continuously lit. Lighting is likely to be limited to core construction working hours, with the exception of any security lighting that is likely to be sensor operated.

- 6.4.35 During the Operational Phase, the Scheme will generally remain unlit with the exception of the Customer and National Grid Substations with manually operated or motion-detection lighting utilised for operational and security purposes.
- 6.4.36 The lighting of the Customer Substation, National Grid Substation and BESS would be in accordance with Health and Safety requirements, particularly around any emergency exits. Otherwise, lighting sensors for security purposes will be implemented around the Customer Substation, National Grid Substation and ancillary buildings.
- 6.4.37 No visible lighting would be required along the perimeter fencing of the Solar PV Site and Infra-Red (IR) lighting would be provided by the security system to provide night vision functionality for the CCTV.
- 6.4.38 The lighting design would seek to limit any impacts on sensitive receptors through directional cowl, as secured through the Outline Operational Environmental Management Plan (oOEMP). A separate Lighting Impact Assessment (LIA) has therefore been scoped out of the LVIA chapter.

6.5 Overview of Legislation, Policy and Guidance

National Planning Policy

- 6.5.1 The Overarching National Policy Statement (NPS) EN-1 2023 [Ref 6-12] sets out the Government's policy for delivery of major energy infrastructure and will be the primary basis for decision making.
- 6.5.2 NPS EN-3 for renewable energy infrastructure [Ref 6-13], and NPS EN-5 for electricity networks infrastructure [Ref 6-14], together with EN-1 [Ref 6-12], are the primary decision-making policy document for the Secretary of State on nationally significant onshore renewable electricity generating stations in England and Wales and nationally significant offshore renewable electricity generating stations in waters in or adjacent to England.
- 6.5.3 Key relevant sections of the NPS in relation to LVIA are as follows:
 - EN-1: Section 5.10
 - EN-3: Paragraphs 2.10.40 - 2.10.45 and 2.10.93 – 2.10.101; and
 - EN-5: Paragraphs 2.9.7 – 2.9.25.
- 6.5.4 Additional detail on national planning policy is included within [Appendix 6.4].

National Planning Policy Framework (NPPF)

- 6.5.5 Relevant aspects of the National Planning Policy Framework (NPPF, December 2023) [Ref 6-11] will be addressed within the LVIA, including those relating to sustainable development (Section 2), design (Section 12), and the natural environment (Section 15).
- 6.5.6 Particular consideration will be given to section 15 of the NPPF [Ref 6-11] which covers both ecological and landscape matters.



- 6.5.7 The Site is not situated within or near to any internationally or nationally designated sites relevant to landscape and visual matters such as National Parks, the Broads and National Landscapes, as identified in paragraphs 182 – 184 of the NPPF [Ref 6-11].
- 6.5.8 Additional detail on relevant extracts of the NPPF are included within [Appendix 6.4].

Local Planning Policy

Breckland Local Plan (2023) [Ref 6-15]

- 6.5.9 Breckland Council adopted planning policy documents setting the strategic context for development in the Council. These include governing the decisions made on planning applications and which types of development are suitable for each area. The Breckland Local Plan was adopted on 21 September 2023. It is a key document that guides development in the Council over the next 20 years.
- 6.5.10 Policies that are considered relevant to landscape and visual matters within the Breckland Local Plan [Ref 6-15] are as follows:
- Policy ENV 01 - Green Infrastructure
 - Policy ENV 05 - Protection and Enhancement of the Landscape
 - Policy ENV 06 – Trees, hedgerows and Development
 - Policy ENV 10 – Renewable Energy Development; and
 - Policy COM 03 – Protection of Amenity.

Swaffham Neighbourhood Plan (2019)

- 6.5.11 The Site is partially situated within ‘Swaffham Neighbourhood Plan Area’ [Ref 6-16]. The neighbourhood plan policies relevant to this scoping chapter are as follows.
- Policy ENV4: Important public local views and vistas; and
 - Policy ENV5: Dark skies.

Guidance

- 6.5.12 The assessment method for this LVIA draws upon the established guidance documents set out at paragraph 6.4.2 above.
- 6.5.13 In addition, there are also a number of guidance documents that describe the existing landscape character within the study. Relevant baseline guidance documents are considered in Section 6.3.

6.6 Scope of Landscape and Visual Effects

- 6.6.1 The layout of the Scheme is subject to further refinement, based on the findings of further detailed Site surveys.
- 6.6.2 The potential visual effects that are likely to arise in relation to the Scheme’s principal components during the Construction, Operational and Decommissioning Phases are outlined within Chapter 3 of this EIA Scoping Report.



- 6.6.3 The layout and dimensions of the Scheme would be determined as part of the iterative design and assessment process for the EIA. All visual analysis and baseline assessment undertaken to date are based upon the maximum heights anticipated for the principal components, as outlined within Chapter 3 of this EIA Scoping Report.
- 6.6.4 The principal landscape and visual effects would occur during the 60 year operational lifetime of the Scheme. At the end of its lifespan, the Scheme would be decommissioned and the Site returned to its former use in accordance with an approved decommissioning plan, with the possible exception of the National Grid Substation remaining in situ. As such, all landscape and visual effects are judged to be reversible.
- 6.6.5 The Construction Phase and eventual Decommissioning Phase of the Scheme would involve short-term activities requiring the movement of vehicles, localised excavations and the installation/removal of containers and infrastructure using machinery. Elements of the Construction Phase and activities would also occur on a smaller scale during the Operation Phase when replacement activities are required as part of the maintenance procedures. Neither construction nor decommissioning activities would give rise to notable landscape character or visual effects over and above those of the Operational Phase of the Scheme.

6.7 Potential Effects

Construction and Decommissioning

- 6.7.1 The Construction Phase is anticipated to take place over up to 24 months. The final programme will be dependent on the detailed layout design and potential environmental constraints on the timing of construction activities, and will be detailed in the ES. Decommissioning is anticipated to take approximately 12 to 24 months.
- 6.7.2 The introduction of any development into a landscape adds a new feature which can affect the 'sense of place' in its near vicinity, but with distance, the existing characteristics reassert themselves. The effects during the Construction and Decommissioning Phases are likely to be short term and temporary and would be of notably lower magnitude than those on completion, although more likely to be perceived as adverse.
- 6.7.3 The landscape and visual effects during the construction and decommissioning stages would be managed through the Outline Construction and Environmental Management Plan (oCEMP), Outline Decommissioning Environmental Management Plan (oDEMP) and the Outline Landscape and Ecological Management Plan (oLEMP) secured through DCO requirements. Traffic movements including Abnormal Indivisible Loads (AIL) and Heavy Goods Vehicles (HGV), cranes and lifting equipment, plant and machinery, excavators, temporary lighting and highway works are likely to be visible during the Construction Phase and Decommissioning Phase, both within and at close proximity to the Site. Given the rural context of the Site and nearby sensitive visual receptors there is potential for significant effects during the Construction Phase and the Decommissioning Phase. As such, these potential effects will be scoped in for further assessment within the LVIA.

Operational Phase

- 6.7.4 Whilst the Scheme would be decommissioned at the end of the proposed 60-year Operational Phase, due to the length of the Operational Phase, effects once vegetation matures are considered to be of a Semi-permanent duration (i.e. they would extend beyond being Long-term effects but not be Permanent). Planting proposals would be designed to ensure that no removal is required during any maintenance or replacement activities.



- 6.7.5 During the early part of this Operational Phase, the effects are likely to be at their greatest. Over time, the scale of effects may reduce for receptors as on-site or offsite vegetation matures to gradually screen or filter views of the Scheme. The landscape features would be subject to ongoing management through a Landscape and Ecological Management Plan (LEMP) to ensure the screening effects of the on-site vegetation are achieved during the Operational Phase.

Effects on Landscape Character

- 6.7.6 The Operational Phase effects on landscape character consider how the introduction of new landscape elements physically alters the landform, landcover, landscape pattern, and perceptual attributes or how visibility of the Scheme changes the way in which landscape character is perceived.
- 6.7.7 The landscape character of the Site would generally change from agricultural land and pasture to a solar PV development comprising a number of new built elements as outlined within the Scheme description within Chapter 3 of this EIA Scoping Report. The effects on landscape character will be influenced by the physical and visual containment provided by the landform, woodlands and hedgerows together with any built form or intervening features in the local landscape. Mitigation measures will be identified and embedded through the iterative design and assessment process to reduce the identified effects.
- 6.7.8 There is potential for adverse effects upon those LCAs identified within the Study Area that are either situated within, adjacent to or would have views towards the Site (perceptual impacts) as illustrated by the ZTV in Figure 6-1. Potential landscape effects would be primarily associated with LCA D1 and E6, given that the Scheme is partially situated within their extents. It is notable that there is an existing solar PV development to the west of Narford Lane, approximately 0.6km west of the Site, which would temper adverse effects upon LCA D1 Swaffham Heath.
- 6.7.9 The masterplan and layout of the principal components is yet to be determined. However, the Scheme would seek to mitigate any effects by introducing additional areas of woodland, hedgerow and scrub in appropriate locations, in order to reinforce the existing wooded and vegetated context of the local landscape which would also serve to strengthen to the landscape fabric and green infrastructure connections running through the Site. It is anticipated that these elements will form embedded mitigation incorporated within the design of the Scheme.

Visual Amenities

- 6.7.10 The visual effects consider the changes in views arising from the Scheme in relation to visual receptors (or people) within the surrounding towns and villages, motorists using local roads, walkers using public footpaths, or equestrians using bridleways, etc.
- 6.7.11 With the exception of specific viewpoints, each route, settlement or location will encompass a range of possible views, which might vary from no view of the Scheme to very clear, close views. Therefore, effects will be described in such a way as to identify where views towards the Scheme are likely to arise and what the scale, duration and extent of those views are likely to be. In some cases, this will be further informed by a nearby viewpoint and in others it will be informed with reference to the ZTV, aerial photography and site visits. Each of these individual effects are then considered together in order to reach a judgement of the effects on the visual receptors along that route, or in that place.
- 6.7.12 **Figure 6-1** shows the preliminary ZTV for the Scheme's parameters. From outside of the Site Boundary, the predicted visibility of the Scheme is relatively limited. Visibility towards the Site



is well contained due to a combination of the local plateau and valley topography, the presence of scattered woodland blocks within and close to the Site and the well vegetated nature of local lanes and highways; all of which serve to filter views and restrict direct visibility into the centre of the Site. The ZTV and fieldwork has shown that the potential visual effects are likely to be experienced to varying degrees from:

- Public highways and transport routes within or adjacent to the Site such as Castle Acre Road, Narford Lane, South Acre Road, Fincham Drove, Petticoat Drove and Washpit Drove
- Local public footpaths within the Site and wider landscape context such as PRoW West Acre RB3 and RB7, South Acre RB1 and RB2, Swaffham RB2, Narborough RB7a and Sporle with Palgrave BR2
- National Trails and Promoted Routes within 1.5km of the Site such as The Peddars Way and Norfolk Coastal Path, The Nar Valley Way, The Castle Acre Circular Walk and Rebellion Way cycling route; and
- Other local accessible landscapes to the north and northeast of the Site such as Castle Acre Priory, Castle Acre Castle and Castle Acre Common.

- 6.7.13 Given the rural context of the Site and nearby sensitive visual receptors there is potential for likely significant effects during the Operational Phase. As such, potential Operational Phase effects will be scoped in for further assessment within the LVIA.

6.8 In-Combination and Cumulative Effects

In-Combination Effects

- 6.8.1 A separate chapter will be presented within the ES which will provide a summary of effect interactions between topics (in-combination effects), setting out the inter-relationship arising as a result of direct effects from other environmental topics. The effects concluded in the LVIA ES chapter will be considered in the preparation of this chapter, determining whether there are multiple effects from different topics on a shared receptor and which will explain what mitigation measures are proposed, and how such mitigation may have an in-combination effect across several topics.

Cumulative Effects

- 6.8.2 As part of the EIA process, the LVIA will undertake a cumulative assessment, which will consider the Scheme along with any other relevant cumulative developments (any including nearby solar farm proposals) identified as the assessment progresses. The approach and scope of developments to be included within the cumulative assessment will be agreed with relevant stakeholders, and in accordance relevant legislation and PINS advice.
- 6.8.3 High Grove Solar Farm has been identified as a nearby scheme which will be required to be considered within the cumulative assessment. Both the Scheme and High Grove Solar Farm have grid connection agreements to export the electricity they produce via new 400kV substations and are working with National Grid to identify the most suitable locations for these. At this stage, the substation for High Grove is expected to be sited near the overhead transmission line that passes through parts of the High Grove site to the east of Necton, while the substation for The Drovers Solar Farm will be sited near the existing 400kV overhead line that passes through the Site.



6.9 Issues Proposed to be Scoped In and Out

- 6.9.1 In summary, the potential impacts which are scoped in or scoped out of the LVIA ES Chapter are as follows.

Scoped In

- 6.9.2 This LVIA scoping chapter has identified a number of receptors which are likely to be affected in landscape and visual terms including through theoretical visibility mapping and field surveys.
- 6.9.3 The scope of the landscape and visual receptors assessed during the Construction Phase and Decommissioning Phase would be the same as those identified within the Operational Phase below. The effects during the Construction Phase and Decommissioning Phase are likely to be short term and temporary in nature. However, given the rural context of the Site and nearby sensitive visual receptors there is potential for significant effects during the Construction Phase and Decommissioning Phase. As such, these potential effects will be scoped in for further assessment.
- 6.9.4 The Applicant proposes to scope in the following landscape and visual receptors during the Construction, Operation and Decommissioning Phases of the Scheme as identified within **Table 6.8**.

Table 6.8 Summary of Landscape and Visual Impacts Proposed to be Scoped In

Type of Effect	Receptor	Explanation
Local Landscape Character	(B) Settled Tributary Farmland LCT; (B7) River Nar Tributary Farmland LCA	The preliminary ZTV (Figure 6-1) indicates potential visibility from parts of this LCA.
	(D) The Brecks – Heathland with plantation LCT; (D1) Swaffham Heath LCA	Site is located within and there would be direct effects on the fabric of this LCA.
	(E) Plateau Farmland LCT; (E6) North Pickenham Plateau LCA	The preliminary ZTV (Figure 6-1) indicates potential visibility from parts of this LCA.
	(F) Chalk Rivers LCT; (F1) River Nar Valley LCA	The preliminary ZTV (Figure 6-1) indicates potential visibility from parts of this LCA.
	(G) Farmland with Woodland and Wetland LCT; (G3) Gayton and East Winch LCA	The preliminary ZTV (Figure 6-1) indicates potential visibility from parts of this LCA.
	(I) Rolling Open Farmland LCT; (I9) Little Massingham and Castle Acre LCA	The preliminary ZTV (Figure 6-1) indicates potential visibility from parts of this LCA.



Type of Effect	Receptor	Explanation
Visual Effects	Visual Receptor Groups (VRGs) within the ZVI	VRGs will only be defined for areas with potential visibility of the Scheme.
	Key Transport Route - A1065 Castle Acre Road	The preliminary ZTV (Figure 6-1) indicates potential visibility from parts of this route.
	Key Transport Route - A47	The preliminary ZTV (Figure 6-1) indicates potential visibility from parts of this route.
	The Peddars Way and Norfolk Coast Path	The preliminary ZTV (Figure 6-1) indicates potential visibility from parts of this route.
	The Nar Valley Way	The preliminary ZTV (Figure 6-1) indicates potential visibility from parts of this route.
	The Castle Acre Circular Walk	The preliminary ZTV (Figure 6-1) indicates potential visibility from parts of this route.
	Rebellion Way Cycling Route	The preliminary ZTV (Figure 6-1) indicates potential visibility from parts of this route.
	Castle Acre Priory	The preliminary ZTV (Figure 6-1) indicates potential visibility from parts of the priory and its grounds.
	Castle Acre Common	The preliminary ZTV (Figure 6-1) indicates potential visibility from parts of the common.
	Castle Acre Castle	The preliminary ZTV (Figure 6-1) indicates potential visibility from parts of the castle and its grounds.
Landscape Designations	None identified	N/A



Type of Effect	Receptor	Explanation
Residential Visual Amenity Assessment (RVAA)	Residential properties within 800m distance of the Site Boundary.	Considered appropriate to cover all properties where visual effects have potential to be over the residential visual amenity threshold such that living conditions would be affected to an unacceptable degree. Further refinement or residential properties to be included within the RVAA will take place once parameters for the Scheme are established and likely visibility of the Scheme has been considered
Amenity Recreation Assessment and	Local PRoW located within the Site and those present within the ZVI	Potential for physical changes or other environmental impacts which may affect overall experience of the routes.
	The Peddars Way and Norfolk Coast Path	Potential for physical changes or other environmental impacts which may affect overall experience of the route.
	The Nar Valley Way	Potential for environmental impacts which may affect overall experience of the route.
	The Castle Acre Circular Walk	Potential for environmental impacts which may affect overall experience of the route.
	Castle Acre Priory	Potential for environmental impacts which may affect overall experience of the amenity and recreational resource.
	Castle Acre Common	Potential for environmental impacts which may affect overall experience of the amenity and recreational resource.
	Castle Acre Castle	Potential for environmental impacts which may affect overall experience of the



Type of Effect	Receptor	Explanation
		amenity and recreational resource.

Scoped Out

- 6.9.5** On review of the desk-based analysis, visibility mapping and fieldwork, the Applicant proposes to scope out the following landscape and visual receptors as detailed within **Table 6.9**

Table 6.9 Summary of Landscape and Visual Impacts Proposed to be Scoped Out

Type of Effect	Receptor	Explanation
National and Regional Landscape Character	National Character Areas and Suffolk Regional Landscape Character Areas	The more detailed local Landscape Character Areas will form the basis of the assessment of effects on landscape character, informed by the national and regional character assessments where relevant.
Local Landscape Character	(B) Settled Tributary Farmland LCT; (B5) River Wissey Tributary Farmland LCA	The preliminary ZTV (Figure 6-1) indicates little to no potential visibility from this LCA.
	(E) The Fens LCT; (E2) Saddlebow and Wormegay LCA	The preliminary ZTV (Figure 6-1) indicates little to no potential visibility from this LCA.
	(H) Settled Farmland with Plantations LCT; (H2) Fincham LCA	The preliminary ZTV (Figure 6-1) indicates little to no potential visibility from this LCA.
	(J) Plateau Farmland LCT; (J3) Great Massingham LCA	The preliminary ZTV (Figure 6-1) indicates little to no potential visibility from this LCA.
Visual Effects	Visual Receptor Groups (VRGs) located outside of the ZVI	VRGs will only be defined for areas with potential visibility of the Scheme.
	Broadmeadow Common	The preliminary ZTV (Figure 6-1) indicates little to no potential visibility from the common.



Type of Effect	Receptor	Explanation
	Emanuel's Common	The preliminary ZTV (Figure 6-1) indicates little to no potential visibility from the common.
	Newton Common	The preliminary ZTV (Figure 6-1) indicates little to no potential visibility from the common.
	Bradmoor Common	The preliminary ZTV (Figure 6-1) indicates little to no potential visibility from the common.
Landscape Designations	None identified	N/A
Residential Visual Amenity Assessment (RVAA)	Residential properties beyond 800m distance of the Site Boundary.	Beyond this distance, the Scheme may be visible but it is unlikely that it would result in any overbearing effects such that living conditions would be affected to an unacceptable degree.
Amenity and Recreation Assessment	Local PRow located outside of the ZVI, and those which are no longer used, accessible or identifiable on the ground.	Unlikely to experience environmental impacts which may affect overall experience of the amenity and recreational resource, due to lack of visibility, distance from the Scheme or lack of use.
	Broadmeadow Common	Unlikely to experience environmental impacts which may affect overall experience of the amenity and recreational resource, due to lack of visibility and distance from the Scheme.
	Emanuel's Common	Unlikely to experience environmental impacts which may affect overall experience of the amenity and recreational resource, due to lack of visibility and distance from the Scheme.
	Newton Common	Unlikely to experience environmental impacts which may affect overall experience of



Type of Effect	Receptor	Explanation
		the amenity and recreational resource, due to lack of visibility and distance from the Scheme.
	Bradmoor Common	Unlikely to experience environmental impacts which may affect overall experience of the amenity and recreational resource, due to lack of visibility and distance from the Scheme.
Night-Time Effects and Lighting	All	During the Operational Phase, the Solar PV Site will generally remain unlit with the exception of the Customer and National Grid Substations and manually operated and motion-detection lighting utilised for operational and security purposes. The LVIA proposes to scope out the night-time effects and lighting assessment.

6.10 Consultation

- 6.10.1 Formal consultation with respect to landscape and visual matters has not been undertaken with the host LPA prior to submission of this Scoping Request; however, it is intended that formal consultation would be undertaken with Breckland Council and King's Lynn and West Norfolk Council following receipt of the Scoping Opinion from the Planning Inspectorate, to refine the approach to the LVIA within the ES.
- 6.10.2 The Applicant is actively engaging with the developer of the adjacent High Grove Solar DCO scheme proposed to the south of The Drovers. It is intended that ongoing collaboration and information sharing between the two projects will ensure that both assessments are cognisant of each other and minimise likely significant effects arising in-combination insofar as possible.



7 Ecology and Biodiversity

7.1 Introduction

- 7.1.1 This chapter sets out the scope and methodology for the assessment of likely significant effects arising from the Scheme on Ecology and Biodiversity during construction, operation and decommissioning.
- 7.1.2 This chapter has had due consideration to the following biodiversity receptors:
- Statutory and non-statutory designations for nature conservation; and
 - Priority habitats and protected species within the Study Area.
- 7.1.3 The purpose of this chapter is to identify the scope of surveys and assessment to be progressed for Ecology and Biodiversity features and their relative significance in conjunction with the Scheme, to fully inform the Ecology Chapter of a forthcoming Environmental Statement (ES).

7.2 Study Area

- 7.2.1 The Study Area for scoping ecological receptors includes the Site itself, as well as an appropriate search radius from the Study Area to assess the presence of designated sites and their ecological sensitivity with regard to the receptor's Zone of Influence (ZOI). As such, internationally designated sites have been considered where these fall within a 25km search radius of the Study Area to catalogue Special Areas of Conservation (SAC), Special Protection Area (SPA) and Ramsar sites.
- 7.2.2 National statutory designations, including Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR) and Local Nature Reserves (LNR) have been scoped based on a 5km search radius. Local non-statutory designations, including County Wildlife Sites (CWS) and Roadside Nature Reserves (RNR), as well as notable habitats including Habitats of Principle Importance have been scoped within a 2km search radius.

7.3 Baseline Conditions

Site Overview and Ecological Context

- 7.3.1 The site is located in central west Norfolk on the northern edge of Swaffham and is surrounded predominantly by expansive farmland largely of an arable setting. The village of Sporle resides to the east, Castle Acre, South Acre, and West Acre to the north, and Pentney and Narborough to the west.
- 7.3.2 From a review of available survey information, aerial imagery, and the Multi-Agency Geographic Information for the Countryside (MAGIC) database, the site and its wider context include a well-connected network of hedgerow, treeline, and blocks / belts of woodland. The Site itself supports a number of ponds, with a greater number indicated off site, in the wider area. A limited extent of ditch is present on-site, with a greater quantum indicated in the wider off-site area, concentrated to the east around Great Palgrave. The limited extent of Grassland on-site is associated with the field margins and verges and does not present as being of



particular botanical interest. Other habitats within the site include standard trees of a young to mature and veteran age-class, discrete areas of dense and scattered scrub, ruderal / ephemeral vegetation, and disturbed bare ground associated with (at the time of survey), recent agricultural activities.

- 7.3.3 On site habitats considered to form important ecological features include the areas of woodland, hedgerow, tree line, ponds, and mature and veteran trees.
- 7.3.4 The most valuable local habitats and ecological features are identified below in relation to their designated standing. Of particular relevance in this regard, is the River Nar Site of Special Scientific Interest (SSSI) corridor and its associated tributaries, balancing ponds / lakes, and flood plain grasslands, as well as the extensive Breckland Special Protection Area (SPA) and its nearest relevant woodland components, which are sited approximately 0.9km to the north, and 2.7km to the southwest of the Site respectively.

Preliminary Ecological Insight to Solar Development

- 7.3.5 The Site's proposed areas of development closely mirror the arable footprint of each field, such that the vast majority of habitats of elevated ecological value (as identified above), barring minor areas of loss to facilitate access and underground cabling, shall be retained within appropriate buffers. The under array configurations are proposed for conversion from arable to wildflower grassland, though myriad other opportunities for habitat enhancement and creation exist, and the developing Scheme will be sensitively designed in light of ongoing Phase II faunal survey work. Accordingly, solar development at the Site presents a number of opportunities to broadly strengthen the ecological value of the Site.

Desktop Study Methodology

- 7.3.6 A desk study exercise, collating data from Norfolk Biodiversity Information Service (NBIS) and the Multi-Agency Geographic Information for the Countryside (MAGIC) database, has been undertaken. The information obtained has been reviewed in conjunction with the site-specific baseline habitat and (where available) species data to inform appropriate scoping under EIA guidelines, and where relevant, to identify further survey areas within the Study Area.

Habitat and Faunal Survey Methodology

- 7.3.7 A proportion of the Site, referred to as the 'Survey Area' reflects the potential development footprint on-site, and is the area of site subject to Phase 1 Habitat survey. The Survey Area was initially surveyed during April 2024, covering fields F1 – F35, with field F36 surveyed later in July 2024 based on Phase 1 Habitat Survey methodology [Ref 7-1], whereby the habitats present are identified and mapped, together with an assessment of the species composition of each habitat. This technique provides an inventory of the basic habitat types present and allows identification of areas of greater potential which require further survey. Any such areas identified can then be examined in more detail through Phase 2 surveys.
- 7.3.8 Habitats have been classified in accordance with the UK Habitat Classification system, version 2.0 [Ref 7-2]. Their condition is assessed in accordance with the methodology set out in guidance associated with the Statutory Biodiversity Metric [Ref 7-3], as well as using professional judgement.

Ecological Designations

- 7.3.9 The statutory ecological designations, including those of an international and national level importance, with their respective orientation and distance from the Survey Area are



summarised in **Table 7.1**, below, and shown at **Figure 7-1**. **Table 7.1** also includes a brief account of qualifying features. The potential for the proposals to result in adverse effects on such designations will be fully considered as part of the EIA process.

Table 7.1 Statutory Designations Identified within the Vicinity of The Site

Statutory Designation	Nearest Distance and Orientation	Qualifying Feature/Reasons for Notification
River Nar SSSI	0.9km North	Habitat (Chalk River) and associated wetland assemblage; including of relevance Lapwing <i>Vanellus vanellus</i> .
Castle Acre Common SSSI	1.4km North	Habitat (Unimproved Grassland) and associated wetland assemblage; including of relevance Lapwing.
Breckland SPA	2.7km South West	Annex 1 (Birds Directive) species; <ul style="list-style-type: none"> • Stone Curlew <i>Burhinus oedicnemus</i>, • Nightjar <i>Caprimulgus europaeus</i>, and • Woodlark <i>Lullura arborea</i>.
Breckland Forest SSSI	2.7km South West	Annex 1 (Habitats Directive) species; <ul style="list-style-type: none"> • Nightjar and Woodlark.
Narborough Railway Embankment SSSI	2.8km	Habitat (Calcareous Grassland), including associated floral and invertebrate assemblage
Norfolk Valley Fens SAC	3.7km North West	Habitats
East Walton and Adcock's Common SSSI	3.7km North West	Habitats and Fauna (Invertebrates only)
Breckland SAC	8.5km South	Habitats and Annexe II Great Crested Newt (GCN) <i>Triturus cristatus</i> .
Roydon Common Ramsar	12.4km North West	Habitats and Fauna (Invertebrates only)



Statutory Designation	Nearest Distance and Orientation	Qualifying Feature/Reasons for Notification
Roydon Common & Dersingham Bog SAC	12.4km North West	Habitats
Dersingham Bog Ramsar	18.5km North West	Habitats and Fauna (Invertebrates only)
River Wensum SAC	12.8km North East	Habitats and Fauna (Invertebrates only)
The Wash SPA	21.7km North West	Wintering Waterfowl
The Wash & North Norfolk Coast SAC	21.7km North West	Habitats and Fauna (Annexe II species; <ul style="list-style-type: none"> Harbour Seal <i>Phoca vitulina</i> and Otter <i>Lutra lutra</i>.

7.3.10 The non-statutory designations and their respective orientation and distance from the Study Area are set out below in **Table 7.2** and shown at **Figure 7-1**.

Table 7.2 Non-Statutory Designations

Non-Statutory Designation	Nearest Distance and Orientation
River Road U33086 RNR	Site adjacent – situated between development parcels along the River Road, as shown in Figure 7-1 .
River Road U22086 RNR	0.05km North
Land Adjacent to the River Nar CWS	0.6km North
Priory Meadow CWS	1km North
Lake West of Castle Acre CWS	1.1km North
Mill House Lake CWS	1.1km North
Land Adjacent to the River Nar CWS	1.2km North
Castle Acre Castle CWS	1.5km North East
Priory Road U22074 RNR	1.3km North



Non-Statutory Designation	Nearest Distance and Orientation
Mill House CWS	1.3km North
Narford Lake CWS	1.5km North West
The Carr CWS	1.5km North West
Castle Acre Castle CWS	1.6km North East
Lynn Road Disused Railway CWS	1.6km South
Walton Road C65 RNR	1.8km North

Ecological Habitats (Including Habitats of Principle Importance for Nature Conservations)

- 7.3.11 The survey area itself is dominated by intensively managed arable fields, a minority of which are on rotation for pig grazing. Several veteran trees are present within the field boundary vegetation. Veteran trees are defined as irreplaceable habitats. Other priority habitats and important ecological features present within the survey area are formed by lowland mixed deciduous woodland, hedgerows and ponds (see **Figure 7.2**), all of which will be fully considered as part of the proposals.

Fauna (Protected Species)

- 7.3.12 The desk study information includes a number of records of individual species from within and adjacent to the survey area (i.e. the Scheme footprint constituting field 1 to 36 of **Figure 7-2**). Where appropriate, available records have been used to inform the survey approach and assessment, whilst consideration regarding individual faunal species groups is set out below. Further phase II protected species survey work is currently being undertaken and/or is programmed for the 2025 survey season, as detailed below in **Table 7.3**.

Table 7.3 Phase II Protected Species Survey Programme

Phase II	Survey Programme	Rationale and Supporting Guidance
Bat Activity Survey – Remote Detector Surveys	2024: Monthly Static Deployments from May to October. 2025: Monthly Static Deployments from April to October.	To allow for appropriate seasonal coverage and sufficient data collection. [Ref 7-4].
Bat Activity Survey –	2024: Night-time Bat Walkover Transects Conducted Once per	



Phase II	Survey Programme	Rationale and Supporting Guidance
Night-time Bat Walkover Survey	Season (Spring, Summer and Autumn). 2025: Transects to be Undertaken Once per Season (Spring, Summer and Autumn).	
Great Crested Newt - Environmental DNA survey	eDNA surveys undertaken on 24 th and 25 th June 2024.	To determine presence / absence of GCN within the Scheme footprint, including within 250m of this boundary (i.e. the Survey Area). See Figure 7-3 . [Ref 7-5]
Badger Survey	Survey undertaken in April 2024, to be updated accordingly subject to Scheme design in 2025.	To allow for appropriate seasonal coverage and sufficient data collection. [Ref 7-6]
Breeding Bird Survey	2024: Surveys conducted between April and July of fields F1 – F35. 2025: Site-wide surveys to be conducted between March and July.	To allow for appropriate seasonal coverage and sufficient data collection. [Ref 7-7]
Wintering Bird Survey	Surveys to be conducted between October 2024 and March 2025.	To allow for appropriate seasonal coverage and sufficient data collection. [Ref 7-8]
Reptile Survey	Surveys to be conducted between April and May 2025.	To allow for appropriate seasonal coverage and sufficient data collection. [Ref 7-9]

Bats

- 7.3.13 No records for bats were returned for the survey area. Given the size and nature of the Site, it clearly provides potential opportunities for bat species. There are few structures present that could provide potential for roosting bats, however there are several suitable trees present that could be used by this group. Opportunities for foraging and commuting activity are also present. As such, specific bat activity survey work (including static detector deployment and



walked activity transect surveys in line with standard guidance [Ref 7-4] is currently in progress at the Site.

Badger *Meles meles*

- 7.3.14 Several records of Badger have been identified in the Study Area, whilst the habitats present provide suitable opportunities for this species. Survey work undertaken during 2024 includes specific Badger surveys across suitable habitats, the results of which will be fully considered as part of the DCO application process.

Other Mammals

- 7.3.15 Other notable mammalian records returned for the survey area include Brown Hare *Lepus europaeus* (Priority Species) (re-recorded on-site in April 2024), and a single record for Hedgehog *Erinaceus europaeus* dating from 2020. Consideration will be given to the potential for the Scheme to result in adverse effects on other mammal species.

Birds

- 7.3.16 Several records for Priority and Red-list bird species have been returned from within the survey area and the habitats present on Site clearly provide opportunities for birds. Specific breeding bird survey work has been undertaken across the Site during 2024, whilst further specific wintering bird survey work is scheduled to be undertaken during winter 2024/2025. This will ensure the appropriate survey data is available to inform the Scheme design and EIA process.

Reptiles

- 7.3.17 No background records of reptiles have been returned for the survey area however suitable habitats are present, predominantly associated with the field margins of the Site. Accordingly, and to ensure this group is appropriately considered, specific reptile survey work is currently scheduled to be undertaken during the appropriate seasonal period in 2025 as detailed above in **Table 7.3**.

Amphibians

- 7.3.18 No records of for amphibian species were returned for the survey area, however several ponds are present within the Site and 250m of the survey area boundary, which offer potential for amphibians such as Great Crested Newt (GCN). Accordingly, an Environmental (e)DNA presence/likely absence survey for GCN was conducted in June 2024, whereby water samples were collected from the relevant and suitable waterbodies (unless dry at the time of survey) within 250m of the Survey Area (I.E Development Footprint). All sample ponds returned negative results indicating that GCN is unlikely to be present. Accordingly, further consideration and assessment regarding GCN can be scoped out however evidence will be presented within the DCO submission documents.

Invertebrates

- 7.3.19 No records were returned for the survey area. Habitats of potential invertebrate interest are restricted throughout much of the Site due to the open, arable (and likely intensively managed) nature of the fields; such that significant opportunities are limited to the field boundary vegetation (including a number of mature and veteran trees). Further consideration of any potential effects will be considered within the relevant DCO submission documents.



Further Survey Work

- 7.3.20 Following the initial extended phase 1 habitat survey undertaken across the Site during 2024, along with review of the relevant desk study information, potential for use of the Site by several faunal species groups has been identified within the survey area.
- 7.3.21 Accordingly, and to ensure the Scheme is informed appropriately, further phase II protected species survey work and assessment will be ongoing, and/or, is to be undertaken as outlined in **Table 7.3** above, the results of which will be considered fully as part of the EIA process, and presented in the ES chapter.

7.4 Assessment Methodology

- 7.4.1 The assessment of potential impacts on Ecology and Biodiversity receptors will be undertaken following current best practice provided by the Chartered Institute of Ecology and Environmental Management (CIEEM) [Ref 7-10].
- 7.4.2 Ecological features present within the survey area that have the potential to be affected by the Scheme will be placed within their relative biodiversity value and geographic context. This will identify those features that require further assessment and consideration.
- 7.4.3 The assessment of the significance of predicted impacts on ecological features is based on both the 'importance' of a feature ('sensitivity' in EIA terms) and the nature and magnitude of the impact that the Scheme is likely to have. Impacts may be direct (e.g., the loss of species or habitats), or indirect (e.g. effects due to noise, dust or disturbance). The impact assessment process will involve:
- Identifying and characterising impacts
 - Incorporating measures to avoid and mitigate (reduce) these impacts (e.g. by maximising existing habitat retention, implementing sensitive lighting, implementing works exclusion areas to safeguard important ecological features, and protected species licensing where necessary)
 - Assessing the significance of any residual effects after mitigation
 - Identifying appropriate compensation measures to offset significant residual effects (e.g. through habitat creation, or bespoke as requirement for protected species requirements, if required); and
 - Identifying opportunities for ecological enhancement.
- 7.4.4 The assessment will include consideration of potential impacts (direct, indirect, secondary, cumulative and residual) on each ecological feature determined as important from all phases of the Scheme. The assessment will describe in detail the impacts that are likely to be significant with significant effects defined as those which either supports or undermines the biodiversity conservation objectives for important ecological features. Where a negative effect has been identified, which cannot be fully satisfied through avoidance or mitigation, proportionate compensatory measures will be proposed. Impacts will be assessed against the following characteristics as set out in CIEEM [Ref 7-10], and reproduced below:
- Positive - a change that improves the quality of the environment e.g. by increasing species diversity, extending habitat or improving water quality. This may also include halting or slowing an existing decline in the quality of the environment



- Negative - a change which reduces the quality of the environment e.g. destruction of habitat, removal of foraging habitat, habitat fragmentation, pollution
- Extent - the spatial or geographical area over which the impact/effect may occur under a suitably representative range of conditions (e.g. noise transmission under water)
- Magnitude - refers to size, amount, intensity and volume. It should be quantified if possible and expressed in absolute or relative terms e.g. the amount of habitat lost, percentage change to habitat area, percentage decline in a species population
- Duration - defined in relation to ecological characteristics (such as the lifecycle of a species) as well as human timeframes, with consideration given to the duration of activities and their resulting effects; and
- Timing – the timing of an activity (e.g. seasonal considerations to life-stages), Frequency - the number of times an activity occurs, and the implications arising from the repetition of potentially disturbing effects. Reversibility – The likelihood of reversing impacts within a given time-scale subject to the sensitivity of the receptor, and the reasonable actions Available to achieve this.

7.5 Overview of Legislation, Policy and Guidance

- 7.5.1 The Ecology and Biodiversity assessment will be informed by the following legislation, policy and guidance.

Key Legislation (See Appendix 7.1)

- The Wildlife and Countryside Act 1981 (as amended)
- The Protection of Badgers Act 1992
- The Wild Mammals (Protection) Act 1996
- The Hedgerows Regulations 1997
- Countryside and Rights of Way (CROW) Act for England and Wales 2000
- The Natural Environment and Rural Communities Act 2006
- The Conservation of Habitats and Species Regulations 2017 (as amended); and
- The Town and Country Planning Act (1990) as amended, including specifically recently inserted schedule 14 (the Environment Act 2021).

National Planning Policy

- The National Planning Policy Framework (NPPF) [Ref 7-11]
- Overarching National Planning Statement for Energy (EN-1) [Ref 7-12]
- National Planning Statement for Renewable Energy Infrastructure (EN-3) [Ref 7-13]; and
- National Planning statement for Electricity Networks Infrastructure (EN-5) [Ref 7-14].



Local Planning Policy.

- Breckland Local Plan (Adopted September 2023) and relevant policies ENV01, ENV02, ENV06, and ENV10 [Ref 7-15].

7.6 Overview of Assessment of Significance

- 7.6.1 All receptors will be subject to detailed assessment of significance based on an appropriate geographical context, defined by their biodiversity value, social community or economic value, and their legal protection status. The geographical scale of reference at which ecological receptors are assigned value is provided within **Table 7.4** below.

Table 7.4 Receptor Significance

Designation	Receptor Significance
International	Statutory internationally important sites; SPAs, SACs and Ramsar sites supporting an internationally important population of a species or species assemblage.
National	Statutory nationally important sites; SSSIs and NNRs supporting a nationally important population of a species or species assemblage.
Regional (Statutory or Non-Statutory)	Statutory LNRs or non-statutory supporting locally important populations of a species or species assemblage.
County	Non-statutory sites supporting a species population or species assemblage of importance at the County to Local level, or, habitats of elevated local bearing.
District	
Local (Parish or Neighbourhood)	

- 7.6.2 Where necessary, as determined by the scoping process, a ZOI will be considered in relation to impacts on ecological receptors, including anticipated outcomes over the long-term.

7.7 Potential Effects

- 7.7.1 Potential effects on ecological receptors arising from development impacts include:
- Disturbance and deterioration of designations as a result of construction, operation and decommissioning activities
 - Habitat loss, fragmentation and deterioration as a result of construction activities such as the construction of the Customer Substation, National Grid Substation, and BESS resulting in a loss or reduction in habitat



- Potential increase in species diversity and habitats through biodiversity improvements, management of habitats, and enhancement of field boundaries, hedges, woodlands and waterbodies; and
- Disturbance to species through construction, operation and decommissioning activities, potentially through disturbance from additional noise and vibration, or light (expected to be extremely limited).

7.8 Issues Proposed to be Scoped In and Out

7.8.1 The ecological receptors to be scoped into further assessment are listed in **Table 7.5** below.

Table 7.5 Ecological Receptors Scoped In

Receptor	Reason for Scoping In
Statutory Designations: <ul style="list-style-type: none">• Breckland SPA	Potentially significant disturbance effects arising from construction, operation and decommissioning.
Non-Statutory Designations: <ul style="list-style-type: none">• River Road U33086 RNR• River Road U22086 RNR	Potentially significant habitat loss and deterioration arising from construction and decommissioning
Site Specific: <ul style="list-style-type: none">• Habitats and Associated Flora• Bats• Badger• Breeding Birds• Wintering Birds• Reptiles	Potentially significant effects arising from habitat loss, deterioration, and / or disturbance of protected / notable species, arising from construction, operation and decommissioning.

7.8.2 The ecological receptors to be scoped out of further assessment are listed in **Table 7.6** below.

Table 7.6 Ecological Receptors Scoped Out

Receptor	Reason for Scoping Out
Statutory Designations: <ul style="list-style-type: none">• River Nar SSSI• Castle Acre Common SSSI• Breckland Forest SSSI• Narborough Railway Embankment SSSI• Norfolk Valley Fens SAC	All designations are located in excess of 900m from the site, whilst there is also an absence of pollution pathways (such as watercourses). Therefore construction, operation and decommissioning activities are unlikely to have a significant effect.



Receptor	Reason for Scoping Out
<ul style="list-style-type: none"> East Walton and Adcock's Common SSSI Breckland SAC Roydon Common Ramsar Roydon Common & Dersingham Bog SAC Dersingham Bog Ramsar River Wensum SAC The Wash SPA The Wash & North Norfolk Coast SAC 	
<p>Non-Statutory Designations:</p> <ul style="list-style-type: none"> Land Adjacent to the River Nar CWS Priory Meadow CWS Lake West of Castle Acre CWS Mill House Lake CWS Land Adjacent to the River Nar CWS Castle Acre Castle CWS Priory Road U22074 RNR Mill House CWS Narford Lake CWS The Carr CWS Castle Acre Castle CWS Lynn Road Disused Railway CWS Walton Road C65 RNR 	Distance from Site and absence of pollution pathways / negligible risk of recreational pressure.
<p>Site-specific:</p> <ul style="list-style-type: none"> Great Crested Newt 	Specific Great Crested Newt eDNA Survey work undertaken indicates Great Crested Newt are likely absent from all ponds within 250m of the survey area, including ponds within the survey area itself.
Otter and Water Vole	Absence of suitable habitat to support these species within the Survey Area.



7.9 In-Combination and Cumulative Effects

In-Combination Effects

- 7.9.1 A separate chapter will be presented within the ES which will provide a summary of effect interactions between topics (in-combination effects), setting out the inter-relationship arising as a result of direct effects from other environmental topics. The effects concluded in the Ecology and Biodiversity ES chapter will be considered in the preparation of this chapter, determining whether there are multiple effects from different topics on a shared receptor and which will explain what mitigation measures are proposed, and how such mitigation may have an in-combination effect across several topics.

Cumulative Effects

- 7.9.2 Where full mitigation and compensation for ecological receptors cannot be delivered on site, such that there are residual effects, the nature and significance of these effects will be considered in combination with other identified proposed and consented projects and plans.
- 7.9.3 There is the potential for Ecology and Biodiversity effects as a result of the Scheme to be experienced cumulatively with other nearby developments. A full list of nearby developments that have the potential for in-combination effects with the Scheme will be presented in the ES and assessed where relevant.
- 7.9.4 The Applicant is actively engaging with the developer of the adjacent High Grove Solar DCO scheme proposed to the south of The Drovers. It is intended that ongoing collaboration and information sharing between the two projects will ensure that both assessments are cognisant of each other and minimise likely significant effects arising in-combination insofar as possible.

7.10 Consultation

- 7.10.1 Consultation has not been undertaken to date. As part of the assessment process, it is proposed to undertake consultation with Natural England regarding the survey work and mitigation measures, and in relation to ecological designations and protected species. Consultation throughout the Scheme design process is proposed with Norfolk County Council, and Breckland Council.



8 Cultural Heritage and Archaeology

8.1 Introduction

- 8.1.1 This chapter sets out the scope and methodology for the assessment of likely significant effects arising from the Scheme on Cultural Heritage (comprising built heritage, archaeology and the historic landscape) during the Construction, Operation and Decommissioning Phases.
- 8.1.2 The purpose of the assessment is to identify and characterise heritage assets, both designated and non-designated, and consider the nature and scale of potential for likely significant effects and how these will be put forward within the Cultural Heritage chapter of the Environmental Statement (ES).

8.2 Study Area

- 8.2.1 Good practice guidance does not suggest a specific radius for assessing the effects resulting from a proposed development on the historic environment, and therefore professional judgement has been used. It is reasonably common practice for a 1km search area to be employed in evidence to support planning applications, however, given the scale of the Scheme a wider Study Area is proposed in order to ensure a rigorous approach, with a wider area for higher grade assets, which have a higher sensitivity. A flexible approach will be adopted for heritage assets located beyond these extents, where necessary, in consideration of their physical and historical relationships with other monuments and the wider landscape.
- 8.2.2 The Cultural Heritage Study Area will extend to 5km from the Solar PV Site boundary for higher grade heritage assets (i.e. World Heritage Sites, Scheduled Monuments, Grade I and Grade II*); 2km for remaining designated heritage assets (i.e. Grade II and Conservation Areas); and 1km for non-designated heritage assets and Historic Environment Record (HER) entries. The Study Area has been determined from the Solar PV Site, this will be reviewed as appropriate for the preparation of the PEIR/ES.

8.3 Baseline Conditions

- 8.3.1 In line with section 5.9 of National Policy Statement EN-1 [Ref 8-1], sections 2.10.107-2.10.119 of NPS EN-3 [Ref 8-2], section 2.9.25 of NPS EN-5 [Ref 8-3] and professional guidance (Chartered Institute for Archaeologists (CIfA) 2020 [Ref 8-4]; Historic England (HE) 2017 [Ref 8-5]), the following information sources have been consulted to inform this assessment of the baseline within the Study Area and will be consulted to inform the Cultural Heritage chapter of the ES :
- Norfolk Historic Environment Record (NHER)
 - National Heritage List for England (NHLE)
 - The local authority website (www.breckland.gov.uk) for information on Conservation Areas
 - Relevant and accessible archives along with online repositories for historical maps, LiDAR data, aerial photographs, plans and relevant documentary sources, including published and unpublished documentary sources



- The Regional Archaeological Research Framework for Norfolk includes 'Research and Archaeology Revisited: A Revised Framework for the East of England' (Medlycott 2011 [Ref 8-6])
- Site Visit
- Walkover surveys undertaken during the Summer of 2024 in sunny, dry conditions to provide an assessment of the character of the Site and appraise the likely significant effects of the Scheme on heritage assets.
- Archaeological field evaluation; and
- A geophysical survey was conducted in the Summer of 2024 by Headland Archaeology [Ref 8-7] to inform the initial appraisal. Several fields could not be surveyed at the time due to the presence of livestock. Final results of the completed Geophysical Survey will be set out in the ES. This Scoping Request is informed by results obtained as of the end of September 2024.

8.3.2 Additional surveys will be undertaken to inform the baseline for the ES. An Aerial Photographic Assessment and LiDAR Survey has been commissioned. Consultation with NHES is currently underway with regards to the need for and scope of any intrusive evaluation (archaeological trial trenching). Results of both will be utilised in further assessment work as part of the EIA.

Designated Heritage Assets

8.3.3 There are no designated heritage assets within the Site.

8.3.4 Within the respective 5km and 2km Study Areas surrounding the Site there are 151 designated heritage assets, comprising three Scheduled Monuments, nineteen Grade I Listed Buildings, seven Grade II* Listed Buildings, one hundred and eight Grade II Listed Buildings, one Grade II Registered Park and Garden within a 2km radius, and three Conservation Areas. The details of the designated heritage assets are listed in a gazetteer in [Appendix 8.1] and locations within the Study Area are illustrated on **Figure 8-1**.

8.3.5 There are numerous designated heritage assets and archaeological monuments of medieval origin focused within and immediately surrounding the settlement of Castle Acre, to the north-east of the Site. This includes the remains of Castle Acre Castle, a Scheduled Monument and Grade I Listed building (NHLE 1171480, 1017909; c.1.3km north-east of the Site). The castle originated as an 11th century unfortified house built by William de Warrene. The house was converted into a shell keep in the mid 12th century and was abandoned by the 14th century. The bailey gate of the castle is 13th century in origin and is also a Grade I listed building (NHLE 1077681).

8.3.6 The substantial remains of Castle Acre Priory (NHLE 1015870), a Scheduled Monument with Grade I listed elements (NHLE 1342389), is situated c.950m north-east of the Site. This Cluniac priory was founded in 1089 by the son of the founder of Castle Acre Castle and was dissolved in 1537, although the surviving parts largely date to the 12th century, including an impressive Romanesque façade and claustral buildings.

8.3.7 Between Castle Acre Castle and Castle Acre Priory is the Church of St James, a Grade I Listed Building (NHLE 1342386) situated c.1.4km north-east of the Site. To the south-west of Castle Acre Priory is a second Grade I listed church, St George's (NHLE 1306357), situated within South Acre c.400m north of the Site. The oldest parts (the nave and font) of this building are Norman in date.



- 8.3.8 Also situated within the village of South Acre is the Scheduled Monument of a double moated site at Old Hall (NHLE 1015269). There are numerous Grade II listed buildings situated within the neighbouring villages of Castle Acre and South Acre, both of which are Conservation Areas, including South Acre Hall (NHLE 1077277, c.85m from the Site).
- 8.3.9 West Acre, as the name suggests, is situated approximately 2.4km west of South Acre and incorporates the Scheduled Monument of West Acre Priory, and square barrow within the precinct (NHLE 1008352). The square barrow is encompassed by the later priory precinct and comprises a well-preserved earthwork relating to a Middle Bronze Age funerary monument. The priory is medieval in origin and forms one of the larger monastic complexes in the county. Multiple listed buildings are situated in and around the former priory precinct including two designated as Grade I (the Priory Gatehouse (NHLE 1077660) and Church of All Saints (NHLE 1342409)).
- 8.3.10 An 18th century landscape park designated as a Grade II Registered Park and Garden, is situated c.380m west of the Study Area (NHLE 1000337). The park forms the grounds of Narford Hall, a Grade I listed building (NHLE 1342564), the construction of which was started by Sir Andrew Fountaine in 1702, and was completed by his son, of the same name, following his death in 1706.
- 8.3.11 Little Palgrave Hall, a 17th century farmhouse designated as a Grade II Listed Building (NHLE 1169833) is situated c.1.5km east of the Study Area. It is part of a historic farmstead with the hall, comprising the farmhouse, situated to the south of a regular U-plan arrangement of agricultural buildings surrounding a central courtyard.

Non-Designated Heritage Assets

- 8.3.12 In accordance with Planning Practice Guidance (2021) [Ref 8-8] and Local Heritage Listing: Identifying and Conserving Local Heritage, HE Advice Note 7 (HE 2021a) [Ref 8-9], non-designated heritage assets can only be identified by planning bodies when they justifiably have a degree of heritage significance and their status as non-designated heritage assets is made clear through their inclusion in local heritage lists, local & neighbourhood plans, Conservation Area appraisals and decision making on planning applications. At present, there are no non-designated heritage assets that are positively identified by either Breckland Council or King's Lynn and West Norfolk Council within a 1km radius of the Study Area. As non-designated heritage assets can be identified during the planning process it is proposed to undertake consultation with Breckland Council and King's Lynn and West Norfolk Council to confirm whether they consider any historic features within or surrounding the Site to be non-designated heritage assets.

Archaeological and Historical Context of the Study Area

- 8.3.13 The Historic Environment Record (HER) contains 145 records within a 1km search area, consisting of 136 'monuments' and nine 'events'. The details of all HER records are listed in a gazetteer in [Appendix 8.2] and locations within the Study Area are illustrated on Figure 8-2 and Figure 8-3.
- 8.3.14 Limited prehistoric activity has been recorded within the Site itself, most notably relating to three concentrations of 'pot-boilers' thought to represent burnt mounds situated in a cluster towards its centre (within Fields 16 and 23). Burnt mounds are prehistoric monuments relatively common across the UK and Ireland and are usually represented by spreads of stones that have been fractured from intense and repeated exposure to fire, commonly found associated with large vats or troughs where water would have been heated. These monuments are generally artefact poor, but radiocarbon dating indicates that they were formed in the



Neolithic to Iron Age periods, with the majority dating to the Bronze Age. Interpretations of burnt mounds are numerous and include brewing or cooking, sweat lodges or saunas and industrial processing.

- 8.3.15 There are several HER entries relating to prehistoric findspots primarily recovered during metal-detecting and fieldwalking within and in the immediate environs of the Site, including pottery, lithics and metal items dating from the Neolithic to the Iron Age. Of note is a hoard of four Bronze Age copper alloy rivetted rapier blades, recovered in 1939 at the southern boundary of the Site. However, it is possible that the recorded location of this hoard is inaccurate, and may have been identified further south, within Swaffham Parish.
- 8.3.16 Across the wider 1km Study Area, there are scattered Prehistoric finds and features dating from the Palaeolithic to the Iron Age, with a large proportion relating to Bronze Age activity including up to ten barrows.
- 8.3.17 The projected route of the Fen Causeway, a Roman road thought to have prehistoric origins, is recorded by the HER as extending into the western part of the Site followed by the current route of Fincham Drove. A second Roman road, the Peddars Way, is purported to extend c.1km to the east of the Site on a perpendicular alignment (orientated north-west to south-east) to the Fen Causeway.
- 8.3.18 Early medieval artefacts have been recovered during fieldwalking and metal-detecting within the Site itself and throughout the 1km Study Area. The most extensive evidence of early medieval activity relates to a cemetery c.1km north of the Site situated within a Bronze Age barrow. Excavations prior to gravel extraction identified that it was re-used as a burial ground for a considerable time throughout the Saxon period and may have been used to inter the remains of executed criminals or others who were denied more formal Christian burial elsewhere. A second early medieval inhumation cemetery may be located c.1km north-east of the Site, where metal-detecting recovered a notable group of Early Saxon finds from a relatively small area, including brooch fragments, a strap fitting, wrist clasp, copper alloy rings and the copper alloy handle from a stave-built bucket (MNF69676).
- 8.3.19 Around the time of the Conquest (AD 1066), the Site would have been situated in the hinterland between several settlements, all of which would presumably have been established either by the Late Saxon period or very soon following the invasion, including Swaffham to the south, Palgrave to the east and Castle Acre, South Acre, Cuthorpe and Narford to the north. Further, there are several known deserted medieval villages (DMV) in the surrounding area. Of most interest is Stow DMV which incorporates the site of St Guthlac's Chapel, located c.180m from the southern boundary of the Site. The Site does not appear to have been heavily utilised in this period, although the HER records a small number of findspots recovered from within its boundaries. Post-medieval activity from the Site itself is similarly sparse.
- 8.3.20 In the 20th century, the study site was used as the location for a World War Two bombing decoy designed to divert enemy bombers away from the real airfield, situated at Marham c.7.5km to the west. No evidence of this monument survives at surface level but the HER entry records that the site's bunker remains, although does not elaborate on the source of this information.

Geophysical Survey Interim Results

- 8.3.21 The interim results of the geophysical survey are included in this chapter of the Scoping Request at **[Appendix 8.3]** with an interpretive plot produced for fields surveyed during the Summer of 2024, this illustrated on **Figure 4**. Although no evidence of the potential burnt mounds within the Site were identified by the geophysical survey, there were several anomalies present that may be representative of other Prehistoric activity. A double ring-



ditched feature positioned within a square enclosure was identified in Field 15, which could be morphologically consistent with a Bronze Age date, although further evidence would be required to confirm this. A large polygonal enclosure identified to the north of Fincham Drove within Field 9 is also of likely prehistoric date and potentially dates to the Bronze Age. There were also several anomalies identified in Fields 8, 9, 10, 15, 18, 23, 27 and 32 that could potentially relate to Iron Age and/or Roman activity representing settlement and stock enclosures.

- 8.3.22 The purported route of the Fen Causeway (followed by Fincham Drove) crosses the Site, and the geophysical survey identified a possible area of activity to the north (Field 9) closely aligned to the driveway, which may suggest a Roman date for these features.
- 8.3.23 No anomalies of clearly medieval origin have been identified by the geophysical survey undertaken so far and there is no evidence to suggest that the Study Area contains any particularly intensive activity during this period.
- 8.3.24 There are several recorded post-medieval quarry pits recorded by documentary sources as being located throughout the study site, which were confirmed by the geophysical survey.

Assessment Methodology

- 8.3.25 The assessment of potential development impacts on the historic environment will be undertaken as part of the ES using the general methodology outlined in Chapter 4 of this report and with the following topic specific methodology applied.

Receptor Sensitivity

- 8.3.26 The sensitivity of a receptor refers to its importance, namely its environmental value/attributes. The value of a heritage asset (its heritage significance) is guided by its designated status but is derived also from its heritage interest which may be archaeological, architectural, artistic or historic (NPPF Annex 2, Glossary). Each identified heritage asset can be assigned a value in accordance with the criteria set out in **Table 8.1**. Using professional judgement and the results of consultation, heritage assets are also assessed on an individual basis and regional variations and individual qualities are taken into account where applicable.

Table 8.1 Criteria for the Assessment of the Value of Heritage Assets

Value	Designation
Very High (International)	<ul style="list-style-type: none">World Heritage Sites
High (National)	<ul style="list-style-type: none">Scheduled MonumentsGrade I and II* Listed BuildingsGrade I and II* Registered Parks and GardensRegistered BattlefieldsArchaeological sites of schedulable quality and significance
Medium (Regional)	<ul style="list-style-type: none">Grade II Listed BuildingsGrade II Registered Parks and Gardens



	<ul style="list-style-type: none"> • Conservation Areas • Archaeological sites that can be shown to have demonstrable regional importance
Low (Local)	<ul style="list-style-type: none"> • Locally listed buildings • Archaeological sites that can be shown to have demonstrable local importance • Assets where the significance is limited by poor preservation and poor survival of contextual associations

Magnitude of Impacts

- 8.3.27 Once the value of heritage assets with the potential to be impacted by the development are assessed, the next step will be to appraise the magnitude of any possible impacts arising from the Scheme. Impacts can potentially be caused during the Construction and Operational Phases of the development (which are further discussed herein) and can be direct (affecting the physical fabric of a heritage asset) or indirect (affecting the significance of a heritage asset through the contribution made by its setting).

Table 8.2 Criteria for Assessing the Magnitude of Development Impacts on Cultural Heritage

Impact Magnitude	Example
Major	<p>Total or substantial loss of the significance of a heritage asset.</p> <p>Substantial harm to a heritage asset's setting, such that the significance of the asset would be totally lost or substantially reduced (e.g. the significance of a designated heritage asset would be reduced to such a degree that its designation would be questionable or the significance of a non-designated heritage asset would be reduced to such a degree that its categorisation as a heritage asset would be questionable.</p>
Moderate	<p>Partial loss or alteration of the significance of a heritage asset.</p> <p>Considerable harm to a heritage asset's setting, such that the asset's significance would be materially affected/considerably devalued, but not totally or substantially lost.</p> <p>This equates to less than substantial harm in terms of the NPPF.</p>



Minor	<p>Slight loss of the significance of a heritage asset. This could include the removal of fabric that forms part of the heritage asset, but that is not integral to its significance (e.g. the demolition of later extensions/additions of little intrinsic value).</p> <p>Some harm to the heritage asset's setting, but not to a degree that it would materially compromise the significance of the heritage asset.</p> <p>Perceivable level of harm, but insubstantial relative to the overall interest of the heritage asset.</p>
Negligible	<p>A very slight change to a heritage asset. This could include a change to a part of a heritage asset that does not materially contribute to its significance.</p> <p>Very minor change to a heritage asset's setting such that there is a slight impact but not materially affecting the heritage asset's significance.</p>

- 8.3.28 In order to determine the significance of effects, the predicted magnitude of change is combined with the sensitivity (value) of the receptor (heritage asset) as set out in **Table 8.3**, below.
- 8.3.29 The matrix is not intended to 'mechanise' judgement of the significance of effect but acts as a check to ensure that judgements regarding value, magnitude of impact and significance of effect are reasonable and balanced in order to allow for professional judgement.
- 8.3.30 In some cases, the matrix allows a choice of significance of effect when a magnitude of impact and a value are combined. In these cases, the individual attributes of a specific asset, along with any relevant site specific factors and consideration of other influencing elements, will be taken into account when considered which is the most appropriate significance of effect to apply.
- 8.3.31 Based on professional judgement, a 'significant' effect in terms of the EIA process is considered to be one of Moderate significance or above.

**Table 8.3 Criteria for Assessing the Significance of Development Impacts on Cultural Heritage**

		Magnitude of Impact			
		Major	Moderate	Minor	Negligible
Value of Heritage Asset	Very High	Major	Major	Moderate	Neutral
	High	Major	Major/moderate	Moderate	Neutral
	Medium	Major	Moderate	Minor	Neutral
	Low	Moderate/Minor	Minor	Neutral	Neutral

- 8.3.32 The ES will assess effects with embedded measures in place. Where significant adverse effects are identified after considering these embedded measures, additional mitigation measures' will be proposed. These will be taken into account in the assessment of residual effects.

8.4 Overview of Legislation, Policy and Guidance

- 8.4.1 This section identifies the relevant legislation, planning policy, and guidance which underpin the assessment methodology for cultural heritage and which have informed the scope of the assessment.

Legislation

- Ancient Monuments and Archaeological Areas Act (AMAAA) 1979
- Infrastructure Planning (Decisions) Regulations 2010
- Planning (Listed Buildings and Conservation Areas) Act (P(LBCA)) 1990
- Town and Country Planning Act (TCPA) 1990
- Planning Act 2008
- Levelling-Up and Regeneration Act (LuRA) 2023; and
- Hedgerow Regulations 1997; and
- National Planning Policy

- 8.4.2 The Overarching National Policy Statement (NPS) for Energy (EN-1) (2023) [Ref 8-1] sets out the government's policy for the delivery of major energy infrastructure and, in conjunction with relevant technology-specific National Policy Statements, forms the primary policy for Secretary of State decision making for such developments. Part 5 of EN-1 details the policies on the assessment of common impacts across the range of energy technologies, with Section 5.9, entitled 'Historic Environment', specifying the predominant policy concerning impacts of major energy infrastructure on the historic environment, including guidance on the assessment and mitigation of these impacts. This section requires applicants to assess the significance of any



heritage assets with the potential to be affected and provides advice on the means of reducing any impact, which should be considered throughout the design process.

8.4.3 EN-1 further recognises that the Secretary of State should take into account the positive role that large-scale renewable projects play in the mitigation of climate change, the delivery of energy security and the urgency of meeting the net zero target, stating that this public benefit must be weighed against any loss or harm to the significance of a designated heritage asset (Section 5.9.32 to 5.9.33).

8.4.4 The relevant technology-specific NPS for the Scheme comprises the National Policy Statement for Renewable Energy Infrastructure (EN-3) [Ref 8-2]. Section 2.10.107-110 of EN-3 details government policy on developments for Solar Photovoltaic Generation and incorporates specific considerations in regard to cultural heritage:

“The impacts of solar PV developments on the historic environment will require expert assessment in most cases and may have effect both above and below ground. Above ground impacts may include the effects on the setting of Listed Buildings and other designated heritage assets as well as on Historic Landscape Character. Below ground impacts, although generally limited, may include direct impacts on archaeological deposits through ground disturbance associated with trenching, cabling, foundations, fencing, temporary haul routes etc. Equally, solar PV developments may have a positive effect, for example archaeological assets may be protected by a solar PV farm as the site is removed from regular ploughing and shoes or low-level piling is stipulated.”

8.4.5 National Policy Statement for Electricity Networks Infrastructure (EN-5) [Ref 8-3] details government policy on electricity infrastructure. With regards to cultural heritage the document largely refers to policies set out in EN-1 and EN3 but recognises the potential impacts upon the setting of designated heritage assets from overhead cables and direct impacts from undergrounding (paragraph 2.9.25).

8.4.6 The National Planning Policy Framework (NPPF) [Ref 8-10] sets out the Government's planning policies for England, with the key objective of ensuring the delivery of sustainable development. Section 16 of the NPPF, entitled 'Conserving and enhancing the historic environment', establishes policies in relation to the historic environment. Paragraphs 200 and 201 establish the importance of assessing the significance, including any contribution made by their setting, of heritage assets with the potential to be impacted by development and seeks to conserve England's heritage assets in a manner appropriate to their significance. Paragraphs 205 to 209 ascertain that heritage assets can be harmed or lost through alteration, destruction or development within their setting, with the level of this harm ranging from less than substantial through to substantial.

Planning Policy Guidance

8.4.7 The Planning Practice Guidance [Ref 8-8] is a web-based resource which is to be used in conjunction with the NPPF. The relevant section is entitled 'Conserving and enhancing the historic environment'. The guidance given in this section sets out the best practice to applying government policy in the NPPF.

Local Planning Policy

8.4.8 The Breckland Council Local Development Plan (adopted September 2023) [Ref 8-11] comprises various documents which are used in addressing planning applications within the district, four of which are relevant to the Scope of this assessment:

- Policy ENV 06 Trees, Hedgerows and Development



- Policy ENV 07 Designated Heritage Assets
- Policy ENV 08 Non-Designated Heritage Assets; and
- Policy ENV 10 Renewable Energy Development.

8.4.9 The strategy for the protection of the historic environment is laid out in the above policies; the key points of which are summarised as follows:

- Proposals that may affect the significance of a designated or non-designated heritage asset will be required to provide proportionate evidence to the asset's importance, sufficient to identify its significance and the contribution to this made by its setting
- Developments should seek to conserve and, wherever possible, enhance the significance, architectural and historic character, appearance and setting of heritage assets
- Proposals should identify assets of archaeological significance and an archaeological evaluation will be required for development sites that are known or thought to have the potential to hold archaeological interest. The archaeological resource within a development site should be preserved either in situ or in record according to its significance; and
- Development requiring the loss of a protected hedgerow (as defined by the Hedgerow Regulations 1997) will only be permitted where it would allow for a substantially improved overall approach to the design that would outweigh this loss.

8.4.10 The Site straddles three parishes: the majority is within South Acre, with the western section within Narford and a small area within the south-eastern corner within Sporle with Palgrave. There are no Neighbourhood Plans for any of these Parishes at time of writing, although the Parish of Sporle with Palgrave is in the process of developing a Neighbourhood Plan (application to designate a neighbourhood area was submitted in January 2024).

Professional Guidance

8.4.11 Historic England and the Chartered Institute for Archaeologists have published a suite of professional guidance of relevance to the Scope of this assessment, summarised as:

- Standard and Guidance for Historic Environment Desk-based Assessment (Chartered Institute for Archaeologists (CIfA) 2020), which provides guidelines and recommendations for best practice in undertaking archaeological desk-based research and assessment
- Historic Environment Good Practice Advice in Planning Note 2: Managing Significance in Decision Taking in the Historic Environment (Historic England 2015) [Ref 8-12] outlines a seven-stage process for the assembly and analysis of relevant information relating to heritage assets potentially affected by a proposed development. It emphasises the importance of understanding the significance of heritage assets with the potential to be impacted by development
- Historic Environment Good Practice Advice in Planning Note 3 (Second Edition): The Setting of Heritage Assets (HE 2017) [Ref 8-5] recognises that whilst setting is not a heritage asset, *"Its importance lies in what it contributes to the significance of the heritage asset or to the ability to appreciate that significance"* (para. 9)
- Historic England Advice Note 12: Statements of Heritage Significance: Analysing Significance in Heritage Assets. (Historic England 2019) [Ref 8-13], brings together all of



the above guidance in an analysis of an appropriate approach for applicants for heritage and other consents in providing an understanding of the significance of heritage assets in line with NPPF; and

- Historic England Advice Note 15: Commercial Renewable Energy Development and the Historic Environment. (Historic England 2021) [Ref 8-14] addresses the above guidance in the context of commercial renewable energy proposals.

8.5 Overview of Receptor Sensitivity

- 8.5.1 At the time of writing this Scoping Request, walkover surveys have confirmed that parts of the Site fall within the setting of at least ten designated heritage assets, including two Scheduled Monuments (Castle Acre Castle and Castle Acre Priory); four Grade I Listed Buildings (Castle Acre Castle, Castle Acre Priory, Church of St James and Church of St George); one Grade II Listed Building (Little Palgrave Hall); one Grade II Registered Park and Garden (Narford Hall); and two Conservation Areas (Castle Acre and South Acre). Further designated heritage assets potentially affected by the Scheme may also be identified as part of the ES, and as such, the above should not be considered an exhaustive list.
- 8.5.2 Castle Acre Castle (Scheduled Monument (NHLE 1017909) with Grade I Listed elements (NHLE 1171480)) is located c.1.7km to the north-east of the Site. It is considered to be of High Value due to it being a relatively well-preserved example of a Shell Keep castle. Where surviving, these monuments hold all three heritage interests: archaeological interest for their potential to yield evidence of past human activities; architectural interest as both great feats of engineering and places of high aesthetic value; and historical interest in their nature as physical remnants of key historic events. Castle Acre Castle is also significant in its association with the de Warenne family, who were heavily involved in the Conquest of 1066 and continued to be prominent local figures in the centuries following.
- 8.5.3 Castle Acre Priory (Scheduled Monument (NHLE 1015870) with Grade I Listed elements (NHLE 1342389)) (located c.1.2km north of the Site) is also considered to be of High Value, vested in its architectural interest as a building with impressive appearance and scale, which is a factor of its intentional design as a collection of buildings with undeniably high aesthetic value; historic interest as a medieval priory and in its association with the de Warenne family; and archaeological interest in the surviving below ground elements that have the potential to further elucidate our understanding of this monument.
- 8.5.4 The setting of both the Castle and Priory is formed by the village of Castle Acre itself, which has largely retained the street layout of the planned Norman town. The two structures have been intangibly linked from their shared founding by the de Warenne family in the 11th century throughout their subsequent development to the present day, and their retained physical and visual connection remains an important element of both monuments' setting. The wider setting of both encapsulates the surrounding countryside, which serves as a visual representation behind some of the reasonings behind both monuments' intentional design and siting at this location, aiding their aesthetic value.
- 8.5.5 The Churches of St James (NHLE 1342386) (c.1.4km north-east of the Site) and St George (NHLE 1306357) (c.490m north of the Site), both Grade I Listed Buildings, can be said to hold all three heritage interests as much restored churches of medieval origin. The important elements of both churches' settings are formed by the historic plots in which they are sited, their village locations and the rural environs of the wider parishes that they have and continue to serve.



- 8.5.6 Little Palgrave Hall (a Grade II Listed Building (NHLE 1169833) (c.1.5km east of the Site) appears to have been designed along utilitarian lines, although the combination of its 17th century form with the later 18th to 19th century façade have made it an aesthetically pleasing and elegant country house. Externally, it is a good example of the rural vernacular architectural style of the local area, which informs its significance. It is positioned within the Norfolk countryside and much of the topography of this area comprises gently undulating fields, with Little Palgrave Hall positioned at a high point in the landscape. This rural setting serves to enhance the agricultural nature of the listed farmhouse and enhance its traditional character.
- 8.5.7 Narford Hall (Grade II Registered Park and Garden (NHLE 1000337) (c.400m west of the Site) holds significance in its illustration of early landscape design and association with the renowned 18th century architect, Colen Campbell, a pioneering figure in the establishment of Georgian design. The current layout of the registered park predominantly represents its transition to a landscape park in the 18th and 19th centuries and remains a good illustration of the changing fashions of the period in the shift towards a more naturalistic, romantic aesthetic. This interest is furthered by its physical and historic association with the Grade I listed Narford Hall, a 17th century grand country residence (c.1.5km north-west of the Site). The enclosed nature of the park's borders combined with the relatively level topography greatly restrict views from and to this heritage asset and where afforded, these tend to be short, channelled views of particular elements of the listed building and its park. The surrounding landscape of Narford Hall park comprises agricultural land predominantly used for arable farming.
- 8.5.8 Castle Acre (c.1.5km north-east of the Site) and South Acre (c.400m north of the Site) are neighbouring villages, the historic cores of which are designated as Conservation Areas. Although a settlement is known to have existed at Castle Acre from at least the Roman period, it is Castle Acre's medieval phase from which its significance is principally drawn. It is nationally recognised for the importance of the two ruinous medieval complexes that bookend the settlement (the castle and the priory) and holds historic interest in the largely preserved layout of the 12th century town, formed by the de Warenne family. Castle Acre Conservation Area can also be said to hold architectural interest in the high proportion of historic buildings that make up its fabric.
- 8.5.9 The significance of South Acre Conservation Area is predominantly vested in its architectural interest, and specifically the group of historic buildings that comprise the village centre. There is also archaeological interest inherent both in the village as a much-shrunken settlement of medieval origin and in its focal point, the Grade I Listed Church of St George. Both Castle Acre and South Acre are sited in the steep-sided valley of the River Nar, and the setting is dominated by farmland, mostly arable with some smaller areas of pasture.
- 8.5.10 The Site has been assessed as having potential to contain archaeological remains specifically relating to the Prehistoric, Roman and Modern periods. The significance of any such remains would be vested in their evidential value and their relative importance linked to their potential to add to national and regional research agendas. Available evidence at this time would suggest that any surviving remains would make only limited contributions to regional research objectives and as such their significance is likely to be of no more than local importance.

8.6 Potential likely significant effects

- 8.6.1 It is considered that there is the potential for likely significant effects upon the historic environment resulting from the Scheme, which may include:



- Direct impacts upon archaeological features and deposits resulting in their partial/total loss; and
- Indirect impacts on the significance of designated heritage assets through changes to their settings.

8.6.2 At this scoping stage, embedded mitigation within the design of the Proposed Development is limited to the assumption that effects on the settings of heritage assets will be mitigated through the incorporation of appropriate set backs, buffers and landscaping, and any significant impacts upon buried archaeology may be mitigated through the option to install concrete blocks as ballast, avoiding the need for driven and screw anchored installation, therefore minimising ground disturbance.

8.6.3 Due to this, an assessment of the Scheme's potential impacts on below ground archaeological remains and built heritage during its construction and operation, including a consideration of cumulative and in-combination effects, will be scoped into the ES.

Construction Phase

8.6.4 The baseline data included in the chapter above combined with the interim results of the geophysical survey have demonstrated the potential for the study site to contain previously unrecorded archaeological remains. Construction of the Scheme will involve the installation of the Mounting Structures and Associated Development (Customer Substation, Battery Energy Storage System (BESS), Grid Connection Infrastructure) as well as trenches for cabling and the establishment of Access Tracks and Temporary Construction Compounds, all of which could potentially affect the Site's archaeological resource. A suitable evaluation, to be agreed in consultation with the Norfolk Historic Environment Service, will, if required, be undertaken to determine the character and significance of any such remains present. Suitable mitigation measures will be embedded into the design of the Scheme in response to this.

8.6.5 There are no designated heritage assets within the Site, therefore, will be no direct impact upon any designated heritage asset. Any potential impacts to the settings of designated heritage assets during the Construction Phase would be temporary and at a negligible magnitude. Any such impacts are not considered significant, and it is proposed that designated heritage assets can be scoped out of the ES.

Operational Phase

8.6.6 There are potential impacts on designated heritage assets within the Study Area during the Operational Phase of the Scheme, which will be fully appraised by the ES. These impacts lie in the contribution that the setting of designated heritage assets makes to their setting and could include changes in land use altering the character of heritage landscapes and the surrounding environs of heritage assets, visual intrusion affecting the dominance/prominence of heritage assets within their settings, glare and shadowing caused by the reflection of sunlight off solar arrays and noise pollution.

8.6.7 Any negative impacts upon buried archaeology will have been mitigated during the Construction Phase, either through embedded mitigation such as buffers, set backs and the use of concrete blocks instead of piled or screwed foundations, or through archaeological excavation. The Operational Phase, including maintenance/repair will, therefore, have no negative impact upon buried archaeology.

8.6.8 Impacts to buried archaeology during the Operational Phase will be beneficial in protecting below ground assets from damage caused by construction. These benefits will be assessed within the ES.



Decommissioning Phase

- 8.6.9 There will be embedded mitigation in the outline Decommissioning Environmental Management Plan (oDEMP) that will ensure protections put in place during the Construction Phase and Operational Phase will apply during the Decommissioning Phase. It is considered that there are no further likely significant effects that would arise from the Decommissioning Phase of the Scheme than those that arise during the Construction Phase, as the infrastructure is removed, and the Site returned to the landowner. The Decommissioning Phase will, therefore, be scoped out of assessment.

Cumulative and In-Combination Effects

- 8.6.10 The ES will consider potential cumulative and in-combination effects upon designated and non-designated heritage assets and below ground archaeological remains.
- 8.6.11 The Applicant is actively engaging with the developer of the adjacent High Grove Solar DCO scheme (which is currently at the pre-application stage) proposed to the south of The Drovers. It is intended that ongoing collaboration and information sharing between the two projects will ensure that both assessments are cognisant of each other and minimise likely significant effects arising in-combination as far as reasonably practicable.

8.7 Issues Proposed to be Scoped In and Out

- 8.7.1 **Table 8.4** below presents a summary of the aspects to be scoped in or out of the ES.

**Table 8.4 Cultural Heritage and Archaeology Scoping Summary**

Aspect	Construction	Operation	Decommissioning	Surveys Required
Direct impacts to below ground archaeology	Scoped in	Scoped in	Scoped out	Desk Based Assessment Geophysical Survey Aerial Photographic and LiDAR Survey Possible Trial Trench Evaluation
Indirect impacts to designated heritage assets	Scoped out	Scoped in	Scoped out	Setting assessments
Indirect impacts to non-designated heritage assets	Scoped out	Scoped in (Should any be identified)	Scoped out	Setting assessments

8.8 Consultation

- 8.8.1 To date consultation has taken place with NCCHES. It is intended that formal consultation will be undertaken with Breckland Council and Kings Lynn and West Norfolk Council following receipt of the Scoping Opinion from the Planning Inspectorate.
- 8.8.2 Consultation will be ongoing throughout the evolution of the Scheme design with Historic England, the Norfolk County Council Historic Environment Service (NCCHES) and the Local Planning Authority's Conservation Officer, as assessment progresses.



9 Transport and Access

9.1 Introduction

- 9.1.1 This chapter sets out the scope and methodology for the assessment of likely significant effects arising from the Scheme on Transport and Access during construction, operation and decommissioning.
- 9.1.2 The baseline conditions are first established through a desktop review followed by the proposed assessment methodology for the assessment of likely significant effects. The potential impacts are then presented which form the basis of the identification of the effects proposed to be scoped in and out of the Environmental Statement (ES). The consultation undertaken to date and proposed further consultation is then set out.

9.2 Study Area

- 9.2.1 The Transport and Access Study Area (referred to hereafter as the 'Study Area') encompasses the extent of the road network that will be utilised to facilitate traffic movements associated with the Construction, Operational, and Decommissioning Phases of the Scheme, indicatively shown in **Figure 9-1**. This includes the Strategic Road Network (SRN) approaches, local roads providing access to the Scheme, and any areas where improvements or changes may be required to accommodate construction traffic (the Highway Works).
- 9.2.2 The potential access routes forming the Study Area have been identified for assessment as part of the initial scoping process and are discussed further below based on the feasible access routes to the Site. The assessment of the access route options, and Study Area will be clearly set out once developed in consultation with Norfolk County Council (NCC) as the local highway authority, National Highways (NH) and other local stakeholders.

9.3 Baseline Conditions

Highway Network

- 9.3.1 The majority of the equipment required to construct, operate and maintain the Scheme is likely to be imported into the UK from abroad and as such will most likely arrive at an appropriately located port. As the details of exactly where the equipment will arrive are not yet known, it is assumed that it would be transported from the relevant port via the SRN to the Site.
- 9.3.2 On that basis, an initial feasibility exercise has been undertaken to determine potential access routes along the Local Road Network (LRN) to the Site from the SRN.
- 9.3.3 Approximately 2km to the south of the Site, the A47 forms part of the SRN, with NH as Highway Authority. It is a dual carriageway with a speed limit of 70mph, aligned in an east-west orientation to the south of the Site. The A47 provides strategic connections to Norwich approximately 48km to the east and King's Lynn approximately 40km to the west.
- 9.3.4 The A1065 is a single carriageway road that runs in a north-south alignment along the Site's eastern boundary. It has varying speed limits, with 30mph sections through built-up areas and



national speed limit (60mph) in rural stretches. Within the vicinity of the Site boundary, the A1065 is subject to a 60mph speed limit.

- 9.3.5 The A1065 connects Swaffham to Fakenham in the north and forms a key junction with the A47 via the Fakenham Road interchange. The A1065 serves as an important link for local and regional traffic movements.
- 9.3.6 West Acre Road is a single carriageway road running from Swaffham in a north westerly direction before becoming Narford Lane. It forms a priority junction with Lynn Road in the south. It has a varying speed limit, with 30mph restrictions towards the southern end, transitioning to the national speed limit (60mph) as it progresses northward through the Site boundary up to Narford Road further north.
- 9.3.7 Narford Road is a single carriageway road subject to the national speed limit (60mph). It forms a priority junction with the A47 to the west of the Site and connects north to Low Road and subsequently River Road, before joining back onto the A1065 in the east via South Acre Road.
- 9.3.8 To access the Site from the SRN, three routes have been identified as follows:
- Route A: Access to/from the south from the A47, via the A1065
 - Route B: Access to/from the north via A1065; and
 - Route C: Access to/from the A47, from the west via Narford Road, Low Road, South Acre Road and A1065.
- 9.3.9 The proposed access routes to the Scheme from the SRN are shown at **Figure 9-1**.

Walking and Cycling Network

- 9.3.10 Due to the rural nature of the Site, there is a limited provision of footways alongside the carriageways of the roads within the vicinity Study Area.
- 9.3.11 There are no designated sections of the National Cycle Network within the Study Area, though there are some recreational cycle routes that include:
- The Peddars Way: A 46-mile route from Knettishall Heath, Suffolk to Holme-Next-The-Sea, Norfolk. It follows an ancient Roman road and is largely cyclable; and
 - The Rebellion Way: A 232-mile cycling adventure around Norfolk, utilising quiet back roads, byways, cycle paths and bridleways.
- 9.3.12 There are a number of PRowWs that pass alongside the boundaries between the individual fields parcels that make up the Site, described in the Landscape and Visual Impact (LVIA) section of this Scoping Request, and shown on **Figure 6-2**.
- 9.3.13 It is anticipated that equestrian users would utilise the existing PRowW and bridleway network, as well as some of the local roads within the vicinity of the Scheme. The established PRowW and bridleways represent existing suitable routes tailored for equestrian use.

Baseline Surveys

- 9.3.14 Baseline transport conditions will be reported within the ES and the Transport Assessment that will accompany the DCO Application, using survey data collected and Annual Average Daily Traffic (AADT) data for nearby roads. The scope of surveys is subject to engagement with consultees.



- 9.3.15 The baseline survey data will be undertaken through a series of Automatic Traffic Counts (ATC), which will record vehicle speeds, vehicle mix and total flow over a 24-hour period over seven days.
- 9.3.16 The location of the proposed extent of the ATC surveys will be agreed with NCC and NH prior to the ES assessment, which are likely to comprise the extent of the construction access routes to the Scheme.
- 9.3.17 Personal injury collision data will be obtained from NCC for all of the proposed construction access routes to determine whether there are any existing collision trends or highway safety issues on the local network that could be affected by the Scheme.
- 9.3.18 To further inform the suitability of the identified routes, Ordnance Survey (OS) 'Mastermap' data has been obtained and topographical survey data will be collected to refine the swept path analysis of the proposed construction access routes for the anticipated vehicles. Further details on this analysis, including an overview of the different types of vehicles expected, will be provided within the ES.

9.4 Assessment Methodology

Guidance

- 9.4.1 The Environmental Assessment of Traffic and Movement (EATM) Guidance produced by the Institute of Environmental Management and Assessment (IEMA, 2023, hereafter called the 'IEMA Guidance') has informed the assessment methodology [Ref 9-1].

Assessment Process

- 9.4.2 The methodology utilised within the assessment and stages followed can be summarised as follows:
- Initial consultation with the relevant highway authorities and emergency services, including NH, Breckland Council (BC) and NCC
 - Procure and process baseline traffic data, arranging additional surveys where necessary in collaboration with key stakeholders and consultees
 - Vehicle route feasibility assessments will be undertaken for vehicles for the construction, operational and decommissioning equipment and staff, including detailed observations of each of the proposed route options and identifying any sensitive receptors or constraints along the length of the routes. The main route assessments will primarily comprise the LRN from the SRN to the Scheme. However, a high-level assessment of the potential impact on the SRN will be provided in the PEIR once further details regarding construction timelines, vehicle traffic volumes and vehicle types are known including associated construction requirements
 - Department for Transport ('DfT') Trip End Model Presentation Program (TEMPO) Growth Factors [Ref 9-2] will be used to develop and assess the construction years, with an emphasis placed on assessing the peak construction year, the details of which will be set out within the ES



- In consultation with the relevant stakeholders, route options would be explored and developed further to determine the feasibility of each route and whether they are acceptable or require further refinement
- An initial assessment of traffic generation from the Scheme on the LRN, including routes between the different areas of the Scheme, will be undertaken alongside an initial assessment of effects
- Once this traffic assessment is complete, the assessment will be refined to reflect any changes in the design of the Scheme or consultation feedback, followed by an additional assessment of the effects. At this stage, the requirement for additional surveys or localised assessments, including junction capacity modelling, will be determined
- Following the outcomes of the additional assessments, there will be further consultation with key stakeholders and consultees
- Mitigation measures will be developed, both embedded and any additional mitigation, as appropriate, to mitigate any likely significant effects and residual impacts or concerns raised during consultation; and
- The assessment will be further refined to reflect this consultation feedback, with appropriate updates made to the assessment, as well as assessment of the cumulative effects of other developments within the area.

9.4.3 The ES will describe and assess the likely significant effects associated with any Highway Works. It is assumed network changes would be reinstated post-construction and decommissioning, with baseline conditions restored, unless it was identified as a benefit to the local area that could be retained. The assessment will consider potential effects from any permanent improvements.

9.4.4 The assessment will be undertaken primarily through a desktop-based assessment, which will be supported by a series of site visits that will be utilised to validate the findings of any vehicle routing strategy that is developed. It is proposed that traffic count locations will be identified and shared with stakeholders for review and comment prior to the undertaking of the traffic surveys.

9.5 Overview of Assessment of Significance

Assessment Scenarios

9.5.1 The assessment will comprise an assessment of the daily Scheme traffic in the peak construction year against:

- Baseline (2024) daily flows; and
- Future baseline peak construction year (without Scheme traffic).

9.5.2 The peak construction year is to be confirmed and presented within the ES once further information about the construction programme is known.

Determining Significance of Effect

9.5.3 Categories of receptor sensitivity have been defined from the principles set out in the IEMA Guidance guidelines and include the following:



- Particular groups or locations which may be sensitive to changes in traffic conditions;
- The list of affected groups and special interests set out in the IEMA Guidance; and
- The identification of links or locations where it is felt that specific environmental problems may occur noting that such locations would include collision clusters, conservation areas, hospitals, links with high pedestrian flows etc. [Ref 9-1].

9.5.4 As per the IEMA Guidance [Ref 9-1], the following sensitive receptors will be considered within the assessment:

- Non-motorised users
- Public right of way users
- Motorists and freight vehicles
- Public transport users; and
- Emergency services.

9.5.5 Any nearby Sites of Special Scientific Interest (SSSI) and Local Wildlife Sites (LWS) are also identified as sensitive receptors as they may be impacted by any construction traffic associated with the Scheme when navigating the LRN.

9.5.6 The roads and access routes identified within the Study Area will then be classified by receptor sensitivity, as shown within **Table 9.1**. These roads and access routes are referred to as 'links'. Their classification and sensitivity is determined based on proximity and connectivity to the identified sensitive receptors like SSSIs and LWS in accordance with the IEMA Guidance.

Table 9.1 Receptor Sensitivity Assessment Criteria

Receptor Sensitivity	Assessment Criteria for Determining the Sensitivity of the Receptor
High	<p>Sensitivity to traffic such as:</p> <ul style="list-style-type: none">• Schools, colleges and other educational institutions• Retirement/care homes for the elderly or infirm• Roads used by pedestrians with no footways• Accident clusters at a regional scale
Medium	<p>Sensitivity to traffic such as:</p> <ul style="list-style-type: none">• Hospitals, surgeries and clinics• Parks and recreation areas• Shopping areas• Public Rights of Way (PROWs)/Bridleways at road crossings• Roads used by pedestrians with narrow footways



Receptor Sensitivity	Assessment Criteria for Determining the Sensitivity of the Receptor
	<ul style="list-style-type: none">• Accident clusters at a local scale
Low	<p>Some sensitivity to traffic such as:</p> <ul style="list-style-type: none">• Open space• Tourist/visitor attractions• Historical buildings• Churches• PROWs/Bridleways away from road crossings• Roads used by pedestrians with standard footways• Residential areas

9.5.7 The determination of the magnitude of the impacts will be undertaken by establishing the parameters of the associated traffic that may cause an effect and then quantifying these effects.

9.5.8 The significance of the effect will be concluded following assessment against the thresholds defined in the IEMA Guidance. The criteria for determining the magnitude of impacts depends upon the effect being assessed. **Table 9.2** sets out the assessment criteria for determining the magnitude of change for each effect.

Table 9.2 Magnitude of Change Assessment Criteria

Potential Impact	Assessment Criteria for Determining the Magnitude of Change
Severance	<p>The IEMA Guidance sets out a range of indicators for determining the magnitude of severance effects. It suggests changes in traffic flows and associated magnitude of impacts as:</p> <ul style="list-style-type: none">• <30% - negligible magnitude of change;• 30% - 60% - small magnitude of change;• 60% - 90% - medium magnitude of change; and• >90% - large magnitude of change
Driver Delay	<p>The IEMA Guidance does not provide set thresholds for determining when a change in driver delay is likely to be significant and instead refer to any junction capacity assessments that may be undertaken, alongside professional judgement.</p> <p>As there is unlikely to be any junction modelling undertaken for the DCO Application (given the anticipated levels of trip generation being low during the peak hours), it is proposed to use professional judgement and the overall changes in traffic flows with reference to the typical IEMA Guidance thresholds (<30% is negligible, 30-60% is small, 60-</p>



Potential Impact	Assessment Criteria for Determining the Magnitude of Change
	90% is medium and >90% is large), to determine whether there is likely to be any significant changes to driver delay.
Pedestrian Delay	<p>The IEMA Guidance recommends the use of professional judgement to determine whether pedestrian delay is significant across individual links, taking into consideration the varying characteristics of local conditions within the Study Area. For the purposes of this assessment, the following thresholds related to changes in total traffic are applied alongside professional judgement and interpretations of the local conditions:</p> <ul style="list-style-type: none"> • 0-30% - negligible magnitude of change • 30% - 60% - small magnitude of change • 60% - 90% - medium magnitude of change; and • greater than 90% - large magnitude of change.
Non-motorised User Amenity	<p>The IEMA Guidance notes that a tentative threshold for determining significance of changes in non-motorised user amenity is when traffic flows are halved/doubled (which would lead to a high impact). A change of less than a quarter would represent a low impact and a change more than a quarter would present a medium impact. However, the guidance notes that any changes should be considered with professional judgement in light of the local conditions.</p> <p>It is proposed to use these thresholds alongside professional judgement taking into consideration the likely demand and provisions for non-motorised users across the links.</p>
Fear and Intimidation	<p>The IEMA Guidance refers to an assessment for the 'degree of hazard' in Table 3-1 of the guidance to assess fear and intimidation. Each road link in the Study Area will be assessed to determine the values of these parameters using traffic data. These values will then be compared to the thresholds defined in Table 3.1 to determine the degree of hazard score, from 0 up to 30.</p> <p>In determining the degree of hazard, the assessment will apply a score based on three parameters:</p> <p>Average daily vehicle flows - This covers the total volume of all vehicles across an 18-hour period from a road link. Higher volumes indicate a greater hazard.</p> <p>Total HGV flows - The total volume of heavy goods vehicles (HGVs) over an 18-hour day. A higher HGV volume represents a greater perceived hazard.</p> <p>Average speeds - The mean speed of vehicles on the road link. Higher speeds are associated with greater hazard.</p>



Potential Impact	Assessment Criteria for Determining the Magnitude of Change
	<p>Once calculated, the total hazard score will be presented to determine the level of fear and intimidation, as follows:</p> <ul style="list-style-type: none"> • 0-20 - Small • 21-40 - Moderate • 41-70 - Great • 71+ - Extreme <p>A comparison of the degree of hazard will be undertaken for the peak construction year with/without the construction flows and against the baseline traffic flows to determine any changes.</p> <p>Step changes are defined as increases in average daily traffic or heavy vehicle flow compared to baseline. A low step change is an increase of <400 vehicles/day or <500 heavy vehicles/day. A medium step change is an increase of >400 vehicles/day or >500 heavy vehicles/day. A high step change is two increases in separate flow thresholds from baseline.</p> <ul style="list-style-type: none"> • The magnitude of impact will then be determined as follows: • Negligible - no step change from baseline • Low - one step change from baseline (<400 daily vehicle trip increase) • Medium - one step change from baseline (>400 daily vehicle trip increase) • High - two step changes from baseline
Road Safety	<p>The IEMA Guidance suggests that the magnitude of Road Safety impacts will be related to identifying collision clusters and collision rates through a detailed review of baseline characteristics to determine road safety sensitivity. However, it does not provide any defined thresholds. Instead, the IEMA Guidance advises that professional judgement will be needed to assess the implications of local circumstances, or factors which may elevate or lessen risks of accidents occurring. In addition, the IEMA Guidance refers to the use of a Stage 1 Road Safety Audit to determine the suitability of any Transport and Access related works that are proposed.</p>
Hazardous and Large Loads	<p>The IEMA Guidance does not set specific thresholds for the consideration of Hazardous and Large loads, only that professional judgment should be utilised based on the frequency and nature of any Hazardous and/or Large loads.</p>

- 9.5.9 It is noted throughout the IEMA Guidance that the assessment of environmental effects arising from road traffic is not an exact science and a degree of professional judgement is required in all instances. This is particularly the case for the assessments of effects on non-motorised users where local characteristics need to be fully considered.



Significance of Effects

- 9.5.10 In order to provide a consistent and comparable assessment of the degree of significance for each, **Table 9.3** presents a framework which is based on the magnitude of change compared to the sensitivity of receptor.

Table 9.3 Significance of Effect Matrix

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

- 9.5.11 For the purposes of this assessment, only those effects which are identified as 'Moderate' and 'Major' are considered significant and would require the consideration of further mitigation measures to reduce the effects to a lower level.

9.6 Overview of Legislation, Policy and Guidance

Legislation

- 9.6.1 While there is no legislation specifically relevant to the assessment of traffic and transport in relation to the Scheme, the Climate Change Act 2008 [Ref 9-3] sets a legally binding target for the UK to achieve a net zero carbon account by 2050.

National Policy

- 9.6.2 The key national policies relevant to the Scheme are outlined below.
- 9.6.3 Overarching National Policy Statement for Energy 2023 (EN-1) [Ref 9-4]:
- Paragraph 5.14.5 states *“If a project is likely to have significant transport implications, the applicant's ES should include a transport appraisal”*
 - Paragraph 5.14.5 states *“Applicants should consult National Highways and Highways Authorities on assessment and mitigation”*
 - Paragraph 5.14.7 states *“A travel plan should be prepared, including demand management and monitoring measures to mitigate transport impacts”*
 - Paragraph 5.14.11 states that *“Where mitigation is needed, possible demand management measures must be considered. This could include identifying opportunities to;*



- *Reduce the need to travel by consolidating trips*
- *Locate development in areas already accessible by active travel and public transport*
- *Provide opportunities for shared mobility*
- *Re-mode by shifting travel to a sustainable mode that is more beneficial to the network*
- *Retime travel outside of the known peak times; and*
- *Reroute to use parts of the network that are less busy*

9.6.4 National Policy Statement on Renewable Energy Infrastructure 2023 (EN-3) [Ref 9-5]:

- Paragraph 2.10.120 states that *“Modern solar farms are large sites that are mainly comprised of small structures that can be transported separately and constructed on-site, with developers designating a compound on-site for the delivery and assemblage of the necessary components”*
- Paragraph 2.10.123 states that *“Applicants should assess the various potential routes to the site for delivery of materials and components where the source of the materials is known at the time of the application, and select the route that is most appropriate”*
- Paragraph 2.10.124 states that *“Where the exact location of the source of construction materials, such as crushed stone or concrete is not known at the time of the application, applicants should assess the worst-case impact of additional vehicles on the likely potential routes”*
- Paragraph 2.10.125 states that *“Applicants should ensure all sections of roads and bridges on the proposed delivery route can accommodate the weight and volume of the loads and width of the vehicles. Although unlikely, where modifications to roads and/or bridges are required, these should be identified, and potential effects addressed in the ES”; and*
- Paragraph 2.10.126 states that *“Where a cumulative impact is likely because multiple energy infrastructure developments are proposing to use a common port and/or access route and pass through the same towns and villages, applicants should include a cumulative transport assessment as part of the ES. This should consider the impacts of abnormal traffic movements relating to the project in question in combination with those from any other relevant development. Consultation with the relevant local highway authority is likely to be necessary.”*

9.6.5 National Policy Statement on Renewable Energy Infrastructure 2023 (EN-5) [Ref 9-6]:

- Paragraph 2.9.19 states that Applicants should: *“...make the design of access roads, perimeter fencing, earth-shaping, planting and ancillary development an integral part of the site layout and design, so as to fit in with the surroundings.”*

9.6.6 National Planning Policy Framework 2023 (NPPF) [Ref 9-7]:

- Paragraph 108 of the NPPF states that *“Transport issues should be considered from the earliest stages of plan-making and development proposals, so that:*
 - *a) the potential impacts of development on transport networks can be addressed*



- *b) opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, are realised – for example in relation to the scale, location or density of development that can be accommodated*
- *c) opportunities to promote walking, cycling and public transport use are identified and pursued*
- *d) the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains; and*
- *e) patterns of movement, streets, parking and other transport considerations are integral to the design of schemes, and contribute to making high quality places.”*
- Paragraph 115 states *“Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe.”*
- Paragraph 117 states *“All developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed.”*

Local Policy

9.6.7 NCC Local Transport Plan 4 Strategy 2021-2036 (2022) [Ref 9-8]:

- Policy 2 states *“The priority for reducing emissions will be to support a shift to more sustainable modes and more efficient vehicles, including lower carbon technology and cleaner fuels; this includes the facilitation of necessary infrastructure.”*

9.6.8 Breckland Council Local Plan (2023) [Ref 9-9]:

- Policy TR 01 Sustainable Transport Network states that “Development should:
 - seek to minimise the need to travel
 - promote opportunities for sustainable transport modes
 - not adversely impact on the operation or safety of the strategic road network
 - improve accessibility to services; and support the transition to a low carbon future”
- Policy TR 02 states *“Development proposals that are likely to generate a significant number of heavy goods vehicle movements will be required to demonstrate by way of a Routing Management Plan that no severe impacts will be caused to the efficient and safe operation of the road network and no material harm caused to the living conditions of residents”; and*
- Policy TR 02 also states *“Major development proposals should include an assessment of the impacts of new development on the existing transport network; and demonstrate how they will maximise connectivity within and through a development and to the surrounding areas, including the provision of high quality and safe pedestrian and cycle routes. Where potential transport impacts are identified, developers will be expected to produce*



Transport Assessments to assess the impacts and identify appropriate mitigation, together with Travel Plans where appropriate.”

- 9.6.9 The IEMA Guidance [Ref 9-1] identifies two broad rules-of-thumb which could be used as a scoping process to determine the scale and extent of assessment. These rules are summarised as follows:
- Rule 1 – include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles (HGVs) will increase by more than 30%); and
 - Rule 2 – include any other specifically sensitive areas where traffic flows may have increased by 10% or more (or there is a significant change in the mix of vehicles, such as an increase of more than 10% the number of HGVs).
- 9.6.10 With respect to the need for peak hour assessments or junction capacity modelling, whilst there is no set NCC guidance on thresholds for this, reference is made to the (now superseded) DfT 'Guidance on Transport Assessment' (2007) [Ref 9-10] which refers to a threshold of 30 two-way vehicle trips during a peak hour to warrant the need for junction capacity assessments.
- 9.6.11 It is not considered that the level of trip generation during the AM and PM peak hours will be significant enough to warrant detailed junction capacity assessments using these thresholds, although the requirements for this will be developed in consultation with the local highway authorities and included within the PEIR.
- 9.6.12 The IEMA Guidance [Ref 9-1] sets out the following transport and access assessment topics:
- Severance
 - Driver Delay
 - Pedestrian Delay
 - Non-motorised User Amenity
 - Fear and Intimidation
 - Road Safety; and
 - Hazardous and Large Loads.
- 9.6.13 Severance is defined in the IEMA Guidance as *the “perceived division that can occur with a community when it becomes separated by a major traffic artery”*. The IEMA Guidance suggests changes in traffic flow or HGV flow by 30%, 60% or 90% can be considered as having a low, medium or high impact respectively on severance. In addition, the assessment will consider any effects from traffic flow changes as well as effects from formal diversions or closures required for network upgrades.
- 9.6.14 With respect to Driver Delay, the IEMA Guidance defines this as any delay which may occur to motorists. The IEMA Guidance states that any delays due to a Scheme are only likely to be significant when the network is close to or already at capacity. The IEMA Guidance goes on to state *“The assessment of driver delay will normally be based on the technical work reported within the Transport Assessment, which generally focuses on conditions in the network peak periods, with highway mitigation defined to ensure conditions with the development are not materially worse than would otherwise have been the case without the development and mitigation.”*



- 9.6.15 In relation to Pedestrian Delay, this is noted in the IEMA Guidance as being utilised as a proxy for other non-motorised user delay when crossing a road. In the IEMA Guidance, it is stated *"Given the range of local factors and conditions that can influence pedestrian and non-motorised user delay (e.g. a discrete delay may have a lesser impact in an urban environment than a rural setting), it is not considered wise to set down definitive thresholds. Instead it is recommended that the competent traffic and movement expert use their judgement to determine whether pedestrian delay constitutes a significant effect."*
- 9.6.16 For Non-motorised User Amenity, this is defined in the IEMA Guidance as *"the relative pleasantness of a journey and is considered to be affected by traffic flow, traffic composition and pavement width/separation from traffic"*. The IEMA Guidance suggests that a tentative threshold for judging the significance of changes in non-motorised user amenity would be where the traffic flow is halved or doubled which would lead to a high impact, although that any assessment should pay full regard to the local conditions.
- 9.6.17 Fear and Intimidation is acknowledged within the IEMA Guidance, stating: *"A further environmental impact that affects people is the fear and intimidation created by all moving objects. While the traffic and movement assessment has to consider motorcycles, cars, lorries and buses, this scope of consideration is not exclusive – it also has to consider other modes of travel, including horses, cycles, mobility scooters, e-scooters and e-cycles, if appropriate"*. In the assessment of Fear and Intimidation, the IEMA guidance refers to an assessment of the 'degree of hazard' but acknowledges professional judgement should be used with reference to local conditions. The guidance also notes *"The movement of hazardous/large loads will heighten people's perception of fear and intimidation and, if this is likely to occur, it should be noted."*
- 9.6.18 In respect of Road Safety, the IEMA Guidance refers to the use of collision rates and identification of collision clusters to assess the implications of a development. The IEMA Guidance recommends consultation with local highway authorities to determine the significance of any Road Safety effects.
- 9.6.19 With respect to Hazardous and Large Loads, the IEMA Guidance states for Hazardous Loads that the assessment should *"include a risk or catastrophe analysis to illustrate the potential for an accident to happen and the likely effect of such an event."* The IEMA Guidance references any highway features that would pose a risk to any loads being transported, above the typical levels of risk that would generally be expected by utilising the highway network. For large loads (abnormal), the IEMA guidance acknowledges that this is regulated by NH in respect of the SRN and is subject to a separate agreement with all local highway authorities and the Police.

9.7 Potential effects

- 9.7.1 The nature of the Scheme is such that the greatest impact is likely to occur during the Construction Phase. The peak Construction Phase is where the impact will be the greatest in terms of vehicles for construction equipment and staff.
- 9.7.2 With respect to the Decommissioning Phase, there is a high degree of uncertainty as engineering approaches and technologies evolve over the lifespan of the Scheme meaning there is a high degree of uncertainty in modelling future traffic flows.
- 9.7.3 However, the effects are predicted to be similar to, or of a lesser magnitude than the effects generated during the Construction Phase. The Construction Phase is therefore considered to represent a worst-case scenario. Whilst precise impacts cannot be accurately quantified at this stage, the assessment will provide a high-level evaluation of possible decommissioning traffic effects to acknowledge potential impacts based on the construction impacts.



- 9.7.4 During the Operational Phase of the Scheme, it is envisaged that the volume of traffic associated with the Scheme would be so low as to be considered negligible, with only occasional visits needing to be made to for routine maintenance and servicing purposes. Over the lifetime of the Scheme, it is noted that there may be a need to replace all the Solar PV panels once and the BESS equipment twice, though this would take place over a long enough period so as to not lead to any significant Transport and Access effects.
- 9.7.5 The vehicles used for these maintenance visits are likely to be a four-wheel drive off-road car, a van for monitoring and maintenance checks, and, when needed HGVs to access the Scheme to deliver replacement parts.
- 9.7.6 Mitigation will primarily focus on reducing the impacts of the Construction Phase. It is anticipated this will primarily be through the development and implementation of a Construction Traffic Management Plan (CTMP), that will detail suitable mitigation measures to help reduce the impacts of construction. This will be supported by a Travel Plan (TP) to mitigate the impacts of any staff travel to the Scheme. The TP is likely to include measures such as car sharing initiatives, dedicated shuttle bus services, incentives for walking/cycling, and promotion of sustainable travel options to reduce single occupancy vehicle trips.
- 9.7.7 There may be a need for local road improvements and widening to improve access to the Site although the detail of this will be developed in consultation with the local highway authorities and outlined within the DCO Application.
- 9.7.8 To ensure that the operational effects remain not significant in terms of Transport and Access, an Operational Environmental Management Plan would be secured by way of requirement to detail how many operational trips associated with maintenance and replacement would be required annually, as well as providing details of any required mitigation measures such as local road improvements or widening that may be needed to facilitate replacement of the Scheme. Further details on the identified mitigation measures will be provided within the future Transport Assessment that will accompany the DCO submission.
- 9.7.9 A Decommissioning Traffic Management Plan (DTMP) will be prepared in consultation with stakeholders prior to the commencement of decommissioning. The requirement to prepare a DTMP will be set out in the Outline Decommissioning Management Plan submitted with the DCO Application.
- 9.7.10 The local highway authority and other key local stakeholders will be involved in the development of the mitigation documents, with consultation taking place on any measures that are proposed to be implemented.

9.8 Issues Proposed to be Scoped In

- 9.8.1 Traffic generated during the Construction Phase of the Scheme will be assessed. The effect of the Decommissioning Phase is anticipated to be equivalent to or less than the Construction Phase and therefore it is considered that the Construction Phase presents a robust, worst-case assessment and therefore only an assessment of the Construction Phase needs to be scoped in
- 9.8.2 The effects to be assessed during the Construction Phase of the Scheme on those links impacted by the traffic generated are as follows:
- Severance
 - Driver Delay



- Pedestrian Delay
- Non-motorised User Amenity
- Fear and Intimidation; and
- Road Safety.

9.9 Issues Proposed to be Scoped Out

Alternative Modes of Construction Access (Excluding Road)

- 9.9.1 As the origin of materials and equipment to implement the Scheme is unknown, including the relevant port in the United Kingdom that it will arrive to, it is not proposed to assess the shipping of materials in the ES to the relevant port.
- 9.9.2 There are no viable alternative modes of transport to the Site for construction materials, such as a means of rail or river access. As such, only access by road for construction vehicles will be considered within the assessment.

Operational Phase

- 9.9.3 As outlined above, it is considered that the significance of the environmental effects during the Operational Phase of the Scheme would be negligible and not significant in EIA terms with respect to Transport and Access and therefore a detailed assessment of the Operational Phase of the Scheme is proposed to be scoped out of the ES.
- 9.9.4 It is assumed that any operational traffic flows would fall within the IEMA Guidance thresholds of less than a 30% change in total vehicle flows or 10% change in daily HGV flows and would therefore not be significant in EIA terms and not require further assessment. This would be secured by requirement through the eventual Operational Environmental Management Plan which would detail the expected levels of operational trips required each year for expect maintenance and replacement of the Scheme.

Decommissioning Phase

- 9.9.5 As outlined above, it is assumed that the assessment of the Construction Phase would already present the worst-case in Transport and Access terms and capture all effects associated with the Decommissioning Phase. On that basis a separate assessment of the Decommissioning Phase is scoped out.

Hazardous and Large Loads

- 9.9.6 With respect to Hazardous Loads, analysis of the road network within the Study Area indicates that there are no particular features, such as significant vertical drops immediately beyond the carriageway, which would suggest that the transfer of materials poses a particular risk beyond that which would be expected on the general highway network. It is not expected that there would be any Harzardous Loads associated with the Scheme.
- 9.9.7 In addition, any Large Loads required will be managed by NH, the local highway authorities and the Police through the Electronic Service Delivery for Abnormal Loads (ESDAL) system, meaning there will be a limited effect on the LRN or SRN, outside of the standard abnormal load permitting system.



- 9.9.8 No likely significant effects in EIA terms are anticipated and it is therefore proposed to scope Hazardous and Large Loads out of the ES.

9.10 Summary of Scope

- 9.10.1 A summary of the proposed scope for the Transport and Access assessment is included in **Table 9.4**.

Table 9.4 Transport and Access Scoping Summary

Effect	Construction	Operation	Decommissioning
Severance	Scoped In	Scoped Out	Scoped Out
Driver Delay	Scoped In	Scoped Out	Scoped Out
Pedestrian Delay	Scoped In	Scoped Out	Scoped Out
Non-motorised User Amenity	Scoped In	Scoped Out	Scoped Out
Fear and Intimidation	Scoped In	Scoped Out	Scoped Out
Road Safety	Scoped In	Scoped Out	Scoped Out
Hazardous and Large Loads	Scoped Out	Scoped Out	Scoped Out

9.11 In-Combination and Cumulative Effects

In-Combination Effects

- 9.11.1 A separate chapter will be presented within the ES which will provide a summary of effect interactions between topics (in-combination effects), setting out the inter-relationship arising as a result of direct effects from other environmental topics. The effects concluded in the Transport and Access ES chapter will be considered in the preparation of this chapter, determining whether there are multiple effects from different topics on a shared receptor and which will explain what mitigation measures are proposed, and how such mitigation may have an in-combination effect across several topics.

Cumulative Effects

- 9.11.2 The potential for cumulative Transport and Access effects is primarily associated with the uplift in vehicles from the baseline associated with the Scheme, as well as any physical highway works that may be required to facilitate access for these vehicles.



- 9.11.3 There is the potential for Transport and Access effects as a result of the Scheme to be experienced in-combination with effects from other nearby developments. A full list of nearby developments that have the potential for in-combination effects with the Scheme will be presented in the ES and assessed in detail where required.
- 9.11.4 The Applicant is actively engaging with the developer of the adjacent High Grove Solar DCO scheme (which is currently at the pre-application stage) proposed to the south of The Drovers. It is intended that ongoing collaboration and information sharing between the two projects will ensure that both assessments are cognisant of each other and minimise likely significant effects arising in-combination as far as reasonably practicable.

9.12 Consultation

- 9.12.1 An initial online briefing meeting took place with NCC in September 2024 to discuss the principles of the Scheme and outline the potential construction access routes. Engagement is ongoing with NCC regarding the scope of the baseline surveys that will be undertaken to support the future assessment as part of the EIA process.
- 9.12.2 Additional consultation will be undertaken with the key stakeholders and those identified through the consultation process once further details are available on the requirements of the Scheme.



10 Air Quality

10.1 Introduction

- 10.1.1 This chapter sets out the scope and methodology for the assessment of likely significant effects arising from the Scheme on Air Quality during the Construction, Operation and Decommissioning Phases.
- 10.1.2 Due to the implementation of construction dust mitigation measures through an outline Construction Environmental Management Plan (oCEMP) and anticipated development traffic flows being below relevant screening criteria, no likely significant effects are expected.
- This chapter should be read in conjunction with:
 - Chapter 2 Site Description
 - Chapter 7 Ecology and Biodiversity
 - Chapter 9 Transport and Access; and
 - Chapter 14 Climate Change.

10.2 Study Area

- 10.2.1 The Study Area will cover a wide zone of influence to consider the impacts from fugitive dust impacts (up to approximately 250m from the Site Boundary in line with Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction [Ref 10-1]) and road networks affect by road vehicle emissions from the Construction, Operational and Decommissioning Phases at nearby sensitive human and ecological air quality receptors (up to approximately 6 km from the Site Boundary covering the closest receptors to the Site anticipated to be affected by construction traffic). If construction traffic exceeds the criteria within the Environmental Protection UK (EPUK) and IAQM criteria of more than 500 Light Duty Vehicles (LDVs) and/or more than 100 Heavy Duty Vehicles (HDVs) Annual Average Daily Traffic (AADT) outside of an AQMA [Ref 10-2], then detailed dispersion modelling may be undertaken for the Construction Phase and will be included within this zone of influence. It has been confirmed that the Operational Phase traffic will fall below the EPUK and IAQM criteria threshold and therefore no further assessment is required.

10.3 Baseline Conditions

- 10.3.1 The Site is located within the Breckland Council's (BC's) administrative area, with the Site also on the eastern border of the Borough Council of King's Lynn & West Norfolk (BCKLWN) administrative area. The Site is located approximately 1.5 km north of its nearest Air Quality Management Area (AQMA), 'AQMA No.2' as declared by BC within Swaffham, both centred around the A1605 (central route through Swaffham town centre). This AQMA was declared in 2017 for exceedances of the annual mean nitrogen dioxide (NO₂) air quality objective (AQO).

Local Air Quality Monitoring

- 10.3.2 Automatic monitoring of NO₂ and particulate matter of aerodynamic diameter of below 10 micrometres (µm) (PM₁₀) is currently undertaken by both BC and BCKLWN. Monitoring data



from automatic and passive diffusion tube monitoring locations within the BC and BCKLWN administrative areas has been provided by their most recent BC 2023 Air Quality Annual Status Report (ASR) [Ref 10-3] and the BCKLWN 2024 Air Quality ASR [Ref 10-4]. The 2023 monitoring data has not yet been released by BC. As such, the 2022 monitoring data has been considered for both BC and BCKLWN for comparison.

- 10.3.3 BC operate two automatic monitoring stations within its administrative area, the closest of which is BRE02 which is located approximately 2.4 km away from the Site, which measures concentrations of NO₂ only. The second automatic monitoring site operated by BC measures concentrations of NO₂ and PM₁₀ however, is located approximately 24 km southeast of the Site, at a distance too far to be considered representative of the air quality conditions anticipated at the Site.
- 10.3.4 Additionally, BCKLWN operated two reference-grade automatic monitoring stations, CM1 and CM2, to monitor NO₂ concentrations only within their administrative area in from 2018 to 2023. The closest automatic monitoring station is Site ID:CM2 GW, located approximately 15.1km north west from the Site. Additionally, BCKLWN operate four non-reference grade automatic Osiris sensors for measuring PM₁₀ and PM_{2.5} concentrations (which provide indicative PM10 and PM2.5 annual mean results) monitoring across a period from 2018 to 2023. Two of these sites are located within 15km of the Site, the closest being Site ID: OS3 WR, located approximately 14.6km southwest of the Site. Due to the proximity of the BCKLWN automatic monitoring stations to the A10, A47 and A149 in Kings Lynn and High Street, Wretton Road and Lynn Road in Stoke Ferry, pollutant concentrations are likely to be higher than those at the Site. As such, these automatic monitoring locations are considered to represent worst case pollutant concentrations.
- 10.3.5 Recent monitoring data from 2018 to 2023 for the automatic monitoring stations in the vicinity of the Site is detailed in **Table 10.1** and a visual representation of the location of the automatic monitoring stations is shown in **Figure 10-1**.

Table 10.1 Automatic Monitoring Data (2018-2023)

Automatic Monitoring Station ID, Site Name, Administrative Area and Distance (km) from the Site (approx.)	National Air Quality Objective	2018	2019	2020	2021	2022	2023
NO ₂							
BRE02, Swaffham, BC, 2.4 km*	Annual mean (40 µg/m ³)	26	26	19	21	17	-
	Number of hours with	0	0	0	0	0	-



Automatic Monitoring Station ID, Site Name, Administrative Area and Distance (km) from the Site (approx.)	National Air Quality Objective	2018	2019	2020	2021	2022	2023
	concentrations >200 µg/m ³						
CM2 GW, Gaywood	Annual mean (40 µg/m ³)	34	37	27	26	24	25
CM2 GW, King's Lynn, BCKLWN, 15.1 km Annual mean (40 µg/m ³)	Number of hours with concentrations >200 µg/m ³	0	0	0	0	0	0
CM1 SG, Park Lynn BCKLWN, 15.7 km	Annual mean (40 µg/m ³)	24	21	14	18	14	15
	Number of hours with concentrations >200 µg/m ³	0	0	0	0	0	0
PM ₁₀ **							
OS3 WR, BCKLWN, 14.6 km	Annual mean (40 µg/m ³)	13.2	11.0	11.0	12.0	16.1	15.8
	Number of days with concentrations > 50 µg/m ³	0	0	0	0	0	0



Automatic Monitoring Station ID, Site Name, Administrative Area and Distance (km) from the Site (approx.)	National Air Quality Objective	2018	2019	2020	2021	2022	2023
OS4 BD, BCKLWN, 14.7 km	Annual mean (40 µg/m ³)	12.7	10.0	12.8	12.0	15.0	16.3
	Number of days with concentrations > 50 µg/m ³	0	0	0	0	0	0
PM _{2.5} **							
OS3 WR, BCKLWN, 14.6 km	Annual mean (20 µg/m ³)	6.2	6.8	6.4	5.0	7.5	7.0
OS4 BD, BCKLWN, 14.7 km	Annual mean (20 µg/m ³)	5.9	5.3	5.4	6.0	6.0	7.5
<p>*The 2023 monitoring data is not currently available from Breckland Council</p> <p>**The PM₁₀ and PM_{2.5} monitoring results presented from the Osiris MCERTs certified monitors are only indicative values (non-reference grade monitors).</p>							

- 10.3.6 There have been no exceedances of the annual mean NO₂, PM₁₀ or PM_{2.5} objective at any of the automatic monitoring locations in the three years of representative monitoring data (2018, 2019 and 2022). NO₂ concentration in 2022 at CM2, at the closest and most representative automatic location, was 17 µg/m³ or 43% of the annual mean objective (40 µg/m³). Annual mean PM₁₀ and PM_{2.5} concentrations at Site ID: OS3 WR the closest automatic location monitored 16.1 µg/m³ and 7.5 µg/m³ in 2022 respectively. It is considered likely that no exceedances of the annual mean objectives for all pollutants is expected across the Study Area.
- 10.3.7 Further to this, a wide network of diffusion tubes is utilised by BC and BCKLWN to monitor annual mean NO₂ concentrations across their administrative areas.



10.3.8 There are no diffusion tubes located in the immediate vicinity of the Site however, there are nine diffusion tubes located up to 2 km distance operated by BC, which are all located within BC's 'AQMA No.2' located 1.5 km south of the Site, centered around the A1605. **Table 10.2** provides the latest annual mean NO₂ concentrations at the nearest diffusion tube locations operated by BC to the Site for the years 2018 to 2022. The locations of the diffusion tubes are illustrated in **Figure 10-2**.

Table 10.2 Passive Diffusion Tube Monitoring Data (2018 - 2022)

Diffusion Tube ID	Diffusion Tube Name	Site Type	Dist. from site (km)	Annual Mean Concentration (µg/m ³)*				
				2018	2019	2020	2021	2022
S12	Glazedale Lamp post Swaffham	Roadside	1.5	32	38	16	19	18
S14	Corner Whitecross	Roadside	1.6	17	21	19	18	13
S13	33 Station Road Swaffham	Roadside	1.7	15	25	20	24	-
S8	Station Road Swaffham	Roadside	1.7	30	32	24	26	24
S11	13 Station Road Swaffham	Roadside	1.7	31	27	12	14	14
S7	Station Road Swaffham	Roadside	1.7	30	30	19	23	21
S9	Anglia Computer Solutions Swaffham	Roadside	1.8	22	23	14	21	17
S10	Kev's Tackle Swaffham	Roadside	1.8	20	22	14	15	15
S1	Impsons Butchers Swaffham	Urban Centre	1.8	20	20	13	15	14
* National Air Quality Objective - Annual Mean 40 µg/m ³								

10.3.9 There have been no exceedances of the annual mean NO₂ objective of 40 µg/m³ at any of the diffusion tubes located nearest to the Site in the three years of representative monitoring data



(2018, 2019 and 2022). The location with the highest concentration in 2022 was S8 (Station Road Swaffham) located on the A1065 in Swaffham, monitoring $24 \mu\text{g}/\text{m}^3$ or 60% of the annual mean objective. As such it is considered likely that no exceedances of the annual mean objective will be experienced in the vicinity the Site.

- 10.3.10 The 1-hour mean AQO for NO_2 is $200 \mu\text{g}/\text{m}^3$ and should not be exceeded more than 18 times within a year. In line with Local Air Quality Management Technical Guidance (LAQM.TG(22)) [Ref 10-5], exceedance of the 1-hour mean NO_2 objective are unlikely to occur where the annual mean concentration is below $60 \mu\text{g}/\text{m}^3$, which is the case for the diffusion tubes in the vicinity of the Site, as shown in **Table 10.2**.
- 10.3.11 The pollutant concentrations recorded at the automatic monitoring stations and diffusion tubes in 2020 and 2021 are not considered to be representative of 'normal' air quality conditions as they were lower than previous years due to COVID-19 restrictions. Whilst it is expected that as a result of the COVID-19 pandemic behaviours (i.e. reduction in daily traffic movements) will change in the future, the impact of this on air quality long-term is currently unknown and therefore the use of 2020 and 2021 data will be omitted from any analysis, but has been included for information. At the time of writing, 2023 monitoring data has only been released for BCKLWN whilst 2022 monitoring data is the latest available data for BC. As such, the 2022 monitoring data has been utilised to consider baseline air quality conditions anticipated in the vicinity of the Site.

Defra Predicted Background Concentrations

- 10.3.12 The Defra predicted background concentrations [Ref 10-6] have been obtained from the national maps published by Defra. These estimated concentrations are produced on a 1km by 1km grid basis for the whole of the UK. The Site falls into 15 grid squares. The minimum and maximum Defra predicted background concentrations for the Site for NO_2 , PM_{10} and $\text{PM}_{2.5}$ are provided in **Table 10.3** for 2022, the most recent year of available monitoring data from both BC and BCKLWN.

Table 10.3 Estimated annual mean background concentrations in 2022 in $\mu\text{g}/\text{m}^3$

Year	Background Concentration ($\mu\text{g}/\text{m}^3$)		
2022	NO_2	PM_{10}	$\text{PM}_{2.5}$
	5.9 - 6.4	15.2 - 17.0	8.7 - 9.1

- 10.3.13 The modelled background concentrations are well below the relevant annual mean objective levels for NO_2 , PM_{10} ($40 \mu\text{g}/\text{m}^3$) and $\text{PM}_{2.5}$ ($20 \mu\text{g}/\text{m}^3$) in 2022.

10.4 Assessment Methodology

- 10.4.1 The assessment methodology for the likely significant effects resulting from air quality impacts during the Construction Phase is based on relevant legislation and guidance outlined in Section 10.5.

Potential Sensitive Receptors

- 10.4.2 The IAQM Guidance [Ref 10-1] advises the need for a construction dust assessment if there are human receptors within approximately 250m of the boundary of the site or within approximately 50m of the routes used by construction vehicles up to approximately 250m from



the Site Boundary, and if there are ecological receptors (as identified, and separately considered for ecological impacts within Chapter 7 Ecology and Biodiversity) within approximately 50m of the Site Boundary or within approximately 50m of the routes used by construction vehicles up to approximately 250m from the Site Boundary.

- 10.4.3 There are sensitive human receptors within approximately 50m of the Site Boundary and within approximately 50m of the potential construction vehicle routes up to approximately 250m from the Site Boundary; however, there are no ecological sites within the approximately 50m distance of the Site or construction trackout (referred to as 'Access tracks').
- 10.4.4 The impacts from road emissions during the Construction Phase at sensitive human receptors along construction routes will be considered where the change in traffic flows exceed the relevant EPUK/IAQM criteria within the EPUK and IAQM planning guidance [Ref 10-2] of more than 500 Light Duty Vehicles (LDVs) and/or more than 100 Heavy Duty Vehicles (HDVs) Annual Average Daily Traffic (AADT) outside of an AQMA. A criterion of 1000 AADT and/or 200 HDV AADT increase will be considered for ecological site receptors within approximately 200m of the road which may be impacted by Construction Phase traffic, as outlined within IAQM guidance for designated sites [Ref 10-7]. At this stage it is not considered likely that there will be any sensitive ecological receptors within approximately 200m of any roads affected by construction traffic.
- 10.4.5 The sensitive receptors that will be considered in the Air Quality Assessment include:
- Existing sensitive receptors in the vicinity of the Site and potential construction routes, including residential properties and the town of Swaffham; and
 - Designated ecological receptors within approximately 50m of the Site sensitive to dust emission or within approximately 200m of any roads affected by construction traffic. The closest ecological sites are Castle Acre Common and River Nar Site of Special Scientific Interest (SSSI), Breckland Special Protection Area (SPA) and Breckland Forest SSSI alongside Narborough Railway Embankment SSSI. These receptors are not located within approximately 50m of the Site or within approximately 200m of any roads currently considered for construction traffic.

Modelling Approach

- 10.4.6 Where the traffic flows exceed the EPUK/IAQM AADT of 500 LDVs and/or more than 100 HDVs AADT, dispersion modelling will be used to predict concentrations of NO₂, PM₁₀ and PM_{2.5} at sensitive receptors adjacent to roads affected by the Scheme. Modelling will be carried out following Government guidance and using an appropriate model (ADMS-roads). Dispersion modelling calculations will be verified using data gathered in Section 10.3.
- 10.4.7 Model predicted concentrations would be compared to the current statutory standards and objectives. The air quality impact at existing sensitive human and ecological receptors will be described using terms outlined in the EPUK/IAQM guidance. These terms are derived from the percentage change in concentration relative to the air quality assessment level and with the total long-term average concentration during the construction of the Scheme. The EPUK/IAQM impact descriptors are Substantial, Moderate, Slight and Negligible.
- 10.4.8 The Applicant will provide construction traffic data to be used for the assessments in the ES. Construction traffic flows as assessed in Chapter 9 Transport and Access chapter of this EIA Scoping Report are expected to fall below the EPUK/IAQM criteria (500 LDVs and/or more than 100 HDVs) and maybe scoped out of the assessment; however, this will be determined



when detailed traffic data becomes available as the PEIR progresses, and the approach is discussed with the Environmental Health Officer at the Local Authority.

10.5 Overview of Legislation, Policy and Guidance

10.5.1 The Air Quality Assessment will be undertaken in line with the following legislation and guidance documents:

- National Policy Statement (NPS) EN-1 [Ref 10-8]
- National Policy Statement (NPS) EN-3 [Ref 10-9]
- The National Planning Policy Framework (NPPF) [Ref 10-10]
- Planning Practice Guidance (PPG) [Ref 10-11]
- IAQM Guidance on the Assessment of Dust from Demolition and Construction [Ref 10-1]
- Environmental Protection UK (EPUK), and IAQM Land-Use Planning & Development Control: Planning for Air Quality [Ref 10-2]
- Defra Local Air Quality Management Technical Guidance (LAQM.TG(22)) [Ref 10-5]
- Breckland Council Local Plan (2023) [Ref 10-12]
- Environment Act 2021 [Ref 10-13]
- The Air Quality Standards Regulations 2010 [Ref 10-14]
- The Air Quality Standards (Amendment) Regulations 2016 [Ref 10-15]
- The Environment Targets (Fine Particulate Matter) (England) Regulations 2023 [Ref 10-16]
- The Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 (Volume 1) (Volume 2) [Ref 10-17]; and
- The Clean Air Strategy 2019 [Ref 10-18].

10.6 Overview of Assessment of Significance

10.6.1 If construction traffic flows exceed the EPUK/IAQM criteria and detailed dispersion modelling is required, the significance of effects at sensitive receptors will be described as Major, Moderate, Minor or Negligible. The EPUK/IAQM impact descriptor of 'substantial' corresponds to a 'major' effect, a 'moderate' impact corresponds to a 'moderate' effect, a 'slight' impact corresponds to a 'minor' effect and a 'negligible' impact corresponds to a 'negligible' effect.

10.7 Potential effects

10.7.1 It is not considered necessary to undertake any surveys in respect of air quality due to the desktop nature of the assessment relying on existing monitoring data undertaken by the Local Authorities (BC and BCKLWN).

10.7.2 During both the Construction and Decommissioning Phases of the Scheme, there is potential for air quality impacts associated with fugitive dust emissions as well as road traffic emissions associated with vehicles.



- 10.7.3 The impacts of the Decommissioning Phase are expected to be similar to, or of a lesser magnitude than the concentrations generated during the Construction Phase. Therefore, decommissioning will not be assessed separately as the Construction Phase assessment is considered to represent a worst-case assessment for Decommissioning Phase impacts.

Construction and Decommissioning Dust

- 10.7.4 The works being undertaken during the Construction phase include earthworks, construction and construction Access Tracks for an anticipated period of up to 24 months. It is considered that the largest risk to dust emissions will be during the Construction phase as outlined within Section 3.4 Construction within Chapter 3: Scheme Description of this EIA Scoping Report.
- 10.7.5 Dust and particulate matter emissions produced during Construction Phase activities would be controlled through the implementation of an outline Construction Environmental Management Plan (oCEMP) and outline Decommissioning Statement.
- 10.7.6 It is considered that due to the size and proximity of the Scheme to nearby sensitive human receptors that the highest risk of impact, 'high risk', has been assessed in line with the IAQM Guidance [Ref 10-1] and therefore associated high risk mitigation measures will be implemented and included the oCEMP.
- 10.7.7 There are no ecological receptors located within approximately 50m of the Site Boundary as such dust soiling impacts on ecological receptors as a result of the construction and decommissioning phase are not considered.
- 10.7.8 Examples of 'high risk' mitigation measures to be implemented during the Construction and Decommissioning phases, as outlined within IAQM Guidance [Ref 10-1] include but are not limited to:
- Carry out regular site inspections
 - Plan site layout so that plant, machinery and dust causing activities are location away from receptors as a far as possible
 - Erect screens or barriers around dusty activities
 - Avoid idling vehicles - switch off engines when stationary
 - Ensure adequate water supply for dust suppression; and
 - Access gates to be located at least 10m from receptors where possible and regularly inspect access routes.
- 10.7.9 It should be noted that maintenance and replacement activities once the Site is operational are not considered to cause significant impacts, as the magnitude of onsite activities are anticipated to be small.
- 10.7.10 Therefore, the effects of dust and particulate matter emissions released during the Construction and Decommissioning Phase of the Scheme from on-Site activities are unlikely to be considered significant and have been scoped out of the ES.

Construction and Decommissioning Traffic

- 10.7.11 It is anticipated that the construction traffic movements will be controlled through the implementation of an outline Construction Traffic Management Plan (oCTMP). The CTMP is to include details on construction logistics and construction worker travel, alongside providing



information to guide the delivery of material, plant, equipment, and staff during the Construction Phase.

- 10.7.12 It is not expected that construction traffic flows will exceed the EPUK and IAQM screening criterion [Ref 10-2] for either sensitive human or ecological receptors therefore the effects of traffic emissions would be non-significant for the Construction Phase and are proposed to be scoped out of the ES.
- 10.7.13 However, if the change due to the construction traffic flows exceed the criteria in the EPUK and IAQM guidance document (500 LDVs and/or more than 100 HDVs) [Ref 10-2], then the impact of the traffic on existing receptors will be assessed quantitatively.

Non-Road Mobile Machinery Vehicle Exhausts

- 10.7.14 Pollutants emitted by non-road mobile machinery (NRMM) that may have the most significant potential effects on local air quality are NO_x/NO₂, PM₁₀ and PM_{2.5}. Typical NRMM vehicles include, but are not limited to, excavator, cranes, generators and forklift trucks, of which these are anticipated at the Site during the construction phase.
- 10.7.15 However the IAQM construction guidance states that “Experience of assessing the exhaust emissions from on-site plant (also known as non-road mobile machinery or NRMM) and site traffic suggests that they are unlikely to make a significant impact on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed.”
- 10.7.16 It is therefore considered the likely effects of construction plant on local air quality would not be significant.

Operational Phase Traffic

- 10.7.17 The operational phase traffic for the Scheme will be include maintenance vehicles and any HGV movements associated with routine maintenance and also replacement activities, as outlined within Section 3.5.
- 10.7.18 However, the impacts to air quality at sensitive human and ecological receptors from the operational phase of the Scheme are anticipated to be not significant, as operational road traffic flows are expected to be less than the traffic flow generated by the construction and decommissioning phase and therefore fall below the EUK/IAQM guidance [Ref 10-2].

Battery Energy Storage Systems and Substations

- 10.7.19 The proposed Battery Energy Storage System (BESS) has the potential for air quality impacts in the event of a fire. Therefore, the air quality assessment will include point source emissions modelling of a worst-case scenario of pollutants, in the event of a fire, and predict concentrations at nearby sensitive receptors. The result of the assessment can be used to inform the potential mitigation measures where required. A standalone Battery Fire Risk Assessment will be undertaken to determine the potential impacts on the local area and inform the Battery Safety Management Plan (BSMP).

10.8 Issues Proposed to be Scoped Out

- 10.8.1 The following aspects are proposed to be scoped out of the Air Quality ES chapter:



- The works being undertaken during the Construction and Decommissioning Phase include earthworks, construction and Access Tracks. It is anticipated that dust and particulate matter emissions produced during Construction and Decommissioning Phase activities would be controlled through the implementation of the oCEMP. Therefore, the effects of dust and particulate matter emissions released during the Construction Phase of the Scheme from on-site activities are unlikely to be considered significant and have been scoped out of the ES
- It is not expected that construction traffic flows will exceed the screening criterion for either sensitive human or ecological receptors therefore the effects of traffic emissions would be non-significant for the Construction Phase and are proposed to be scoped out of the ES
- Impacts to air quality at sensitive human and ecological receptors from NRMM as emissions of NO_x/NO₂, PM₁₀ and PM_{2.5} will be required to adhere to emissions standards, therefore the effects of construction plant on local air quality would be insignificant
- Impacts to air quality at sensitive human and ecological receptors from the Operational Phase of the Scheme as traffic flows are expected to be minimal and no combustion plant will be present on-Site; and

10.8.2 A standalone Battery Fire Risk Assessment will be undertaken to determine the potential impacts on the local area and inform the Battery Safety Management Plan (BSMP).

10.8.3 On this basis, it is not expected that a specific air quality chapter will be required in the ES.

Table 10.4 Air Quality Scoping Summary

Aspect	Construction	Operation	Decommissioning	Any Surveys
Dust and Particulate Matter	Scoped Out	Scoped Out	Scoped Out	Construction Dust Assessment will support the DCO Application
Vehicle Exhausts Emissions	Scoped Out	Scoped Out	Scoped Out	None
Combustion Emissions	Scoped Out	Scoped Out	Scoped Out	None
BESS Emissions	Scoped Out	Scoped Out	Scoped Out	None



10.9 In-Combination and Cumulative Effects

In-Combination Effects

- 10.9.1 A separate chapter will be presented within the ES which will provide a summary of effect interactions between topics (in-combination effects), setting out the inter-relationship arising as a result of direct effects from other environmental topics. If an Air Quality ES chapter is required to be scoped in to the EIA, the effects concluded will be considered in the preparation of this chapter, determining whether there are multiple effects from different topics on a shared receptor and which will explain what mitigation measures are proposed, and how such mitigation may have an in-combination effect across several topics.

Cumulative Effects

- 10.9.2 There is the potential for Air Quality effects as a result of the Scheme to be experienced in-combination with effects from other nearby developments. A full list of nearby developments that have the potential for in-combination effects with the Scheme will be presented in the ES and assessed as relevant, when detailed information regarding traffic flows are available.
- 10.9.3 The Applicant is actively engaging with the developer of the adjacent High Grove Solar DCO scheme proposed to the south of The Drovers. It is intended that ongoing collaboration and information sharing between the two projects will ensure that both assessments are cognisant of each other and minimise likely significant effects arising in-combination insofar as possible.

10.10 Consultation

- 10.10.1 Contact will be made with the Environmental Health Officer at BC to develop assessment methodologies, diffusion tube and dispersion modelling, if required for the Construction Phase impact assessment.
- 10.10.2 Consultation with BC will be undertaken with the Breckland Council (BC) and the Borough Council of King's Lynn & West Norfolk (EPUK/IAQM) Environmental Health teams to determine what sites they wish to see in any cumulative assessment for air quality impacts due to construction traffic, if dispersion modelling is required. The views and requirements of consultees (including in response to this EIA Scoping Report) will help determine any detailed assessment methodology and any mitigation measures, if required.
- 10.10.3 The Applicant is actively engaging with the developer of the adjacent High Grove Solar DCO scheme proposed to the south of The Drovers. It is intended that ongoing collaboration and information sharing between the two projects will ensure that both assessments are cognisant of each other and minimise likely significant effects arising cumulatively as far as reasonably practicable.



11 Noise and Vibration

11.1 Introduction

- 11.1.1 This chapter sets out the scope and methodology for the assessment of likely significant effects arising from the Scheme on receptors sensitive to noise and vibration during Construction, Operation and Decommissioning Phases.
- 11.1.2 During the Construction Phase and Decommissioning Phase, noise and vibration could arise from both on-site activities, such as the construction of Access Tracks, PV Tables, and Associated Development including the Battery Energy Storage System (BESS), Customer Substation and National Grid Substation. The movement of construction traffic, both onsite and travelling on public roads, to and from the Site also represents a potential source for consideration.
- 11.1.3 During the Operational Phase of the Scheme, the main potential source of noise would be associated with electrical and mechanical plant located within the Site. Operation of the Scheme will also require light vehicle traffic for maintenance and replacement purposes and ad-hoc deliveries by Heavy Goods Vehicles (HGVs).

11.2 Study Area

- 11.2.1 The Study Area for operational noise effects has been identified based on a conservative worst-case scenario in terms of effects, and has been determined by noise-sensitive receptors within approximately 1000m of the boundary of the Solar PV Site. Operational noise emissions from solar developments are generally limited and based on experience of similar recent developments, significant impacts are unlikely beyond a distance of 500m. However, the Solar PV Site will also include the Customer Substation, National Grid Substation and BESS which could have relatively higher noise emissions, thus an increased radius of approximately 1000m will be considered as part of the operational noise Study Area. The study of replacement activities during the operational phase can also consider the same Study Area.
- 11.2.2 Similarly, construction and decommissioning noise impacts will be mostly localised within approximately 500m of the Solar PV Site, as significant impacts are unlikely beyond this distance. In some limited instances, however, the impact may extend further, in cases of night-time work for example. Therefore, the same Study Area of approximately 1000m from the Solar PV Site can also be used.
- 11.2.3 Vibration impacts, mainly associated with the construction and decommission phases, tend to be more localised and will likely be limited to a smaller area within approximately 100m of the Solar PV Site. Therefore, the wider Study Area will also encompass the area required for the study of vibration impacts.
- 11.2.4 Noise sensitive receptors located along the traffic route used for construction as (once defined) well as that used for replacement activities will also be considered. As this assessment will be undertaken on a relative change basis, noise-sensitive receptors located along the route will be considered on a general basis rather than within a specific distance from the route.



11.3 Baseline Conditions

- 11.3.1 The Site is located in a predominately rural area of generally low population density, comprising mostly of agricultural fields except for neighbouring settlements of South Acre and Castle Acre to the north, West Acre to the north-west, Narford to the west, and the town of Swaffham to the south. Potential noise-sensitive receptors, which mainly comprise residential receptors, are located within these settlements or as more isolated properties or farms nearby to the Solar PV Site.
- 11.3.2 The nearest identified noise-sensitive residential receptors to the Study Area are summarised below and are illustrated on **Figure 11-1** in relation to this chapter:
- Finger Hill Cottage and Keepers Cottage immediately adjacent to and surrounded by the Site, but not within the Site ;
 - Properties in towns and settlements closest to the Site:
 - South Acre (including South Acre Hall and Glebe Cottages)
 - Narford (including Hall Farm, and West Acre Road)
 - The Splashes Traveller Site along the A47.
 - The Off Barn along South Acre Road.
- 11.3.3 Some Public Rights of Way (PRoWs) are also located close to or passing through the extents of the Solar PV Site.
- 11.3.4 For properties or PRoWs located along the A47 or in more populated settlements, traffic noise will influence the noise environment. Noise from some commercial sources will be an influence in areas such as the commercial area located to the north of Swaffham. In other cases, the background noise environment will be influenced by natural sources such as wind-disturbed vegetation and birds as well as localised activities such as farming operations.
- 11.3.5 A baseline Noise Survey, in line with British Standard (BS) 4142 [**Ref 11-1**] will be undertaken in late 2024 to characterise the noise environment in further detail in consultation with the local planning authority as detailed below.

11.4 Assessment Methodology

Receptor Sensitivity

- 11.4.1 In accordance with the principles of EIA, the sensitivity of receptors to noise or vibration impacts during construction, operation or decommissioning phases have been defined. General guidance on sensitivity of receptors to noise and vibration is set out below in **Table 11.1**.



Table 11.1 Sensitivity of Receptor

Sensitivity	Description	Examples of Receptor Usage
High	Receptors where people or operations are particularly susceptible to noise or vibration.	<ul style="list-style-type: none"> Residential Conference facilities Schools/educational facilities in the daytime Hospitals/residential care homes Libraries <p>Ecologically sensitive areas for example Special Protection Areas (SPAs)</p>
Medium	Receptors moderately sensitivity to or vibration where it may cause some distraction or disturbance	<ul style="list-style-type: none"> Residences and other buildings not occupied during working hours Factories and working environments with existing high noise levels Sports grounds when spectator or noise is a normal part of the event.
Low	Receptors where distraction or disturbance of people from noise or vibration is minimal	<ul style="list-style-type: none"> Residences and other buildings not occupied during working hours Factories and working environments with existing high noise levels Sports grounds when spectator or noise is a normal part of the event.

11.4.2 The assessment will consider noise-sensitive residential receptors within the Study Area, which are considered highly sensitive to noise.

11.4.3 Users of PRowS within the Study Area would experience noise or vibration from the Scheme on a transient basis. Given this and the recreational nature of the use of these paths, these would not necessarily be considered in noise and vibration assessments. However, it is proposed to considered PRowS in this instance in order to provide a precautionary assessment. For the reasons discussed above, they are considered to have a medium sensitivity to noise and vibration.

11.4.4 Receptors of low or very low sensitivity, such as the unoccupied agricultural buildings along Fincham Drove within the site, or those associated with South Acre Hall Farm and Hall Farm, Narford, or industrial/commercial facilities, such as those to the north of Swaffham, in proximity to the A47, are proposed to be discounted from the analysis as significant effects are unlikely.

Assessment Approach

11.4.5 Construction activities can generate noise as well as localised vibration. These activities tend to be temporary and varied in nature and noise level, and the assessment will therefore focus on understanding the need for dedicated management measures and, if necessary, mitigation



measures. Traffic associated with the construction phase may also increase traffic noise for receptors.

- 11.4.6 BS 5228 [Ref 11-2] provides guidance on a range of considerations relating to construction noise and vibration including general control measures, estimating likely levels and example criteria. Predictions of construction noise levels will be made referencing typical activity emission levels and likely variations in noise levels at surrounding receptor locations, using the prediction methodology and source data for various construction plant and activities set out in BS 5228. Similarly, prediction of construction vibration associated with certain activities known to generate potentially perceptible levels of ground-borne vibration, such as ground compaction will be undertaken using guidance in BS 5228, also on a reasonable worst-case basis.
- 11.4.7 The assessment of construction noise and vibration will identify if and when predicted noise levels may be above standard guideline limits, taking into account the character of the area, as well as the potential duration and nature of the different activities.
- 11.4.8 The construction traffic will be assessed against relevant baseline levels on access routes using the methodology of Calculation of Road Traffic Noise [Ref 11-3], in cases where potentially large increase in traffic flows (and/or proportion of heavy vehicles) are predicted. Associated effects would be assessed in line with the guidance in Design Manual for Roads and Bridges [Ref 11-4], in addition to guidance in BS 5228 [Ref 11-2] where relevant.
- 11.4.9 Operational noise from mechanical and electrical equipment associated with the Scheme could also affect neighbouring sensitive receptors.
- 11.4.10 BS 4142 [Ref 11-1] provides an objective method for rating the likelihood of complaint from industrial and commercial operations. It also describes the means of determining noise levels from fixed plant installations and determining the background noise levels that prevail on a site.
- 11.4.11 The potential operational noise generated by the Scheme will be predicted based on typical noise emission levels using indicative manufacturer selections and experience of similar developments. Predicted noise levels at the nearest receptors will be assessed against relevant baseline noise levels in accordance with the methodology of BS 4142 [Ref 11-1]. Predictions will take into account the potential tonal (or “hum”) character of the noise, by applying a suitable penalty. The resulting ‘rated’ noise level predictions will be compared to typical background noise level measurements in the area, taking into account relevant contextual factors, in order to estimate the potential for adverse noise impacts and any mitigation necessary if required.

Desk and Field Survey Methods

- 11.4.12 A desktop review has been undertaken using available mapping of the potential noise-sensitive receptors in the Study Area and will be supported by the consultation set out in this chapter. The desk study will also identify any available relevant baseline noise monitoring undertaken in the area, for example to support the assessment of recent neighbouring commercial or industrial developments.
- 11.4.13 A baseline Noise Survey will be undertaken at locations representative of the noise-sensitive receptors identified within the Study Area, to quantify in further detail the baseline noise environment for receptors closest to the Site. The survey may also include the acquisition of supporting non-acoustic data such as rainfall during the survey period. The survey and analysis will be undertaken in accordance with the guidance of BS 4142 [Ref 11-1].
- 11.4.14 It is not considered necessary to undertake a survey of baseline noise or vibration levels over the remainder of the Study Area as a basis of quantifying the effects of noise and vibration associated with the construction and decommissioning of the onshore components of the



Scheme. This is because the assessment will mainly be based on fixed thresholds, derived from the guidance reference below, on the basis of the largely rural nature of most of the Study Area.

- 11.4.15 Background noise level measurements are proposed to be carried out in Late 2024 at the locations shown in **Figure 11-2**, which presents a plan of the proposed survey locations which will be the basis for consultation with Breckland Council. It is proposed to combine long-term and short-term attended supplementary measurements.
- 11.4.16 'Long-term Logger 1' would represent general background noise levels within the site (close to Keepers Cottage) and away from A roads to the east and south, and 'Long-term Logger 2' would be representative of properties to the north in the South Acre and Castle Acre area. This longer-term monitoring will be undertaken for a period of at least 72 hrs including a weekend. Additional 30-minute attended measurements will also be taken within the site boundary and at publicly accessible locations to further characterise the variation of noise levels around the proposed Site, as suggested in **Figure 11-2**. The results of the noise survey will be included within the ES.
- 11.4.17 Noise level predictions from plant and equipment are to be carried out based on representative noise source data provided by the relevant manufacturers. These predictions will be made using the methodology outlined in ISO 9613-2 [Ref 11-5].

11.5 Overview of Legislation, Policy and Guidance

- 11.5.1 This section identifies the relevant legislation, planning policy, and guidance which underpin the assessment methodology for noise and vibration, which have informed the scope of the assessment.

Legislation

- 11.5.2 The Environmental Protection Act 1990 [Ref 11-6] defines the powers for local authorities to investigate and control statutory nuisance from noise. Local authorities also have powers under the Control of Pollution Act [Ref 11-7] to control noise and vibration from construction activities. Notwithstanding these powers, the aim of the planning system is to minimise and control (where required) noise and vibration levels associated with the Scheme.
- 11.5.3 The Planning Act 2008 [Ref 11-8] confers statutory authority unless there is a provision in a granted DCO to the contrary.

National Planning Policy

- 11.5.4 The Overarching National Policy Statement (NPS) for Energy (EN-1) [Ref 11-9] recognises that noise and vibration from energy development can have impacts on the quality of human life as well as on wildlife in some cases. These documents outline general principles for the control and management of these impacts and relevant factors and standards to consider but do not provide specific guidance.
- 11.5.5 The NPS for Renewable Energy Infrastructure (EN-3) [Ref 11-10] specifically considers solar photovoltaic generation and recognises that the government is supportive of solar that is co-located with energy storage to maximise the efficiency of land use. It also includes construction (including traffic and transport noise and vibration) as a specific factor to consider. Construction including traffic and transport noise and vibration in solar projects is addressed in paragraphs 2.10.120 to 2.10.126, 2.10.139 to 2.10.144, and 2.10.161 to 2.10.162.
- 11.5.6 The NPS for Electricity Networks Infrastructure (EN-5) [Ref 11-11] sets out specific considerations which apply to electricity network infrastructure. NPS EN-5 notes the potential for



high voltage transmission lines in certain conditions, substation equipment such as transformers and other voltage regulation equipment to produce noise.

- 11.5.7 The Noise Policy Statement for England (NPSE) [Ref 11-12] and National Planning Policy Framework (NPPF) [Ref 11-13] include general planning guidance on noise and introduces the principles of adverse noise effects (which should be mitigated and reduced to a minimum) and significant adverse noise effects (which should be avoided). The NPPF also notes that tranquil areas which have remained relatively undisturbed by noise, and which are prized for their recreational and amenity value should be identified and protected.

Planning Policy Guidance

- 11.5.8 The National Planning Practice Guidance (NPPG) on noise [Ref 11-14] provides more detailed information on the relevance of noise to the planning process and on defining effect thresholds.

Local Planning Policy

- 11.5.9 The Breckland Council Local Development Plan (adopted September 2023) [Ref 11-15] comprises various documents and policies are used in addressing planning applications within the district, two of which are relevant to the scope of this assessment:

- Policy COM 03 (Protection of Amenity); and
- Policy ENV 10 (Renewable Energy Development)

- 11.5.10 The strategy for the protection of the noise environment is laid out in the above policies; the key points of which are summarised as follows:

- The Local Plan highlights the need for considering sources of pollution (including noise) from local developments, and minimise or avoid significant impacts on residential amenity within Policy COM 03 (Protection of Amenity); and
- With regards to low carbon/renewable energy generation sources, Policy ENV 10 (Renewable Energy Development) of the Local Plan specifically considers solar amongst other sources, and the need for these developments to consider effects on residential amenity including noise.

Professional Guidance

- 11.5.11 The British Standards Institution, Highways England and the International Organisation for Standardisation have published a suite of professional guidance of relevance to the scope of this assessment, summarised as:

- BS 5228 [Ref 11-2] provides guidance on a range of considerations relating to construction noise and vibration including general control measures, estimating likely levels and example criteria
- The Design Manual for Roads and Bridges [Ref 11-4] provides a methodology for assessing the impacts of noise and vibration associated with road traffic, both on a long- and short-term basis
- BS 4142 [Ref 11-1] provides an objective method for rating the likelihood of complaint from industrial and commercial operations. It also describes the means of determining noise levels from fixed plant installations and determining the background noise levels that prevail



on a site. Current Government advice to local planning authorities in England refers to BS 4142 as being the appropriate guidance for assessing commercial operations and fixed building services plant noise. The standard also provides guidance on undertaking baseline noise surveys including consideration of suitable equipment, weather condition and other factors such that this survey can be representative of the noise climate generally experienced by the residential receptors considered; and

- Operational noise and its propagation will be modelled using the standard methodology set out in ISO 9613-2 [**Ref 11-5**].

11.5.12 The assessment of likely significant effects during Construction, Operation and Decommissioning Phases of the Scheme will be undertaken using relevant guidance in British Standards and other guidance documents.

11.6 Overview of Assessment of Significance

- 11.6.1 The magnitude of impact will be defined on the basis of the principles set out in the NPSE [**Ref 11-12**] and NPPG [**Ref 11-14**] guidance: this will be determined using thresholds of Lowest Observed Adverse Effect Level (LOAEL) and Significant Observed Adverse Effect Level (SOAEL). These thresholds will be based on the above-referenced guidance documents and measured baseline levels, and will be defined in more detail at the assessment stage.
- 11.6.2 The sensitivity of the receptor (see section 11.4) and the magnitude of impact will both be used to determine the overall significance of effect. The resulting significance of effects matrix for the assessment of noise impacts is set out in **Table 11.2**. Receptors of low or very low sensitivity are unlikely to be associated with significant effects and are therefore not proposed to be included in the assessment.
- 11.6.3 Moderate or major levels of effect are considered to be significant within the meaning of the EIA Regulations and mitigation will be considered where these effects are identified. Minor or negligible effects are not considered significant, but enhancement measures will be considered to minimise the effects, where practicable.

**Table 11.2 Significance of Potential Effects**

Sensitivity	Sensitivity of Receptor	
	Medium (PRoWs)	High (residential)
High	Moderate (significant)	Major (significant)
Medium	Minor (not significant)	Moderate (significant)
Low	Minor (not significant)	Minor (not significant)
Negligible	Negligible (not significant)	Negligible (not significant)

11.7 Potential effects

11.7.1 During the Construction Phase of the Scheme, there is potential for noise impacts associated with construction traffic vehicles, as well as noise and vibration from different construction activities, in particular PV panel piling and horizontal drilling. Furthermore, during the Operational Phase of the Scheme there is potential for operational noise impacts from equipment and plant associated with the Solar PV Site, BESS and National Grid Substation, as well as the replacement and upgrading of equipment such as PV Panels and BESS when required.

11.7.2 Due to this, an assessment of the Scheme's potential impacts on sensitive receptors during its construction and operation, including a consideration of cumulative and in-combination effects, will be scoped into the ES.

Construction Phase

Construction Traffic Noise

11.7.3 The traffic associated with the construction of the Scheme, in particular large heavy goods vehicles (HGVs), has the potential to create significant levels of traffic noise for some receptors only exposed to limited or distant traffic, or increases in traffic noise levels on receptors located alongside existing roads.

11.7.4 For roads that already include moderate to high traffic levels, the potential for noticeable or significant noise effects due to changes in traffic flow associated with the construction or decommissioning would require large increases of 30% or more in the baseline traffic levels (overall or HGV only), which is considered unlikely for most A or B roads. This is based on guidance from the Institute of Environmental Assessment [Ref 11-15].

11.7.5 For unclassified roads that currently include more limited levels of traffic, a traffic increase due to construction may be more noticeable, though absolute noise levels will also be considered. Construction Traffic Noise will be assessed using the guidance set out in the DMRB [Ref 11-4] and BS 5228 [Ref 11-2], taking into account the temporary nature of the traffic increase.

11.7.6 Where likely significant effects are identified, suitable additional mitigation and management measures may be implemented as part of the CTMP.



Construction Noise and Vibration

- 11.7.7 In assessing the impacts of construction phase noise and vibration, it is accepted that the phase is temporary and effects are therefore reversible.
- 11.7.8 In this instance, the nature of most works to construct and decommission the Scheme is such that activities will generally be limited both in intensity and/or duration, such that significant effects from the associated noise and vibration are considered unlikely based on relevant guidance and experience of similar activities. However, some activities such as piling or horizontal drilling, which may be used, have the potential to cause significant effects either because of an increased intensity for the former or due to potential extended hours of operation for the latter.
- 11.7.9 The potential noise impacts associated with potentially significant construction activities will be predicted by referencing typical activity emission levels and likely variations in noise levels at surrounding receiver locations, using the methodology set out in BS 5228 [Ref 11-2]. This standard also provides guidance on assessing the resulting noise levels based on a range of considerations including the absolute level of the noise and existing baseline noise levels.
- 11.7.10 Some construction activities, such as piling operations, drilling or vibratory rolling techniques, can generate elevated vibration levels in close proximity to their use (less than 50 m typically); however, if used as part of the construction of the Scheme this would likely be for limited periods such that significant levels are unlikely. This will, however, be reviewed as part of the assessment. BS 5228-2 [B] provides guidance on estimating vibration levels associated with these activities and threshold values associated with potential disturbance as well as building damage (which only occurs at higher exposure levels).
- 11.7.11 Where likely significant effects are identified, suitable additional mitigation and management measures will be considered and secured as part of the CEMP.
- 11.7.12 The potential effects of noise levels associated with construction and decommissioning activities on sensitive ecological receptors is addressed in Chapter 7 Ecology and Biodiversity of this EIA Scoping Report. Vibration effects on ecological receptors are unlikely because of the localised nature of vibration impacts relative to noise levels for the likely activities involved and so these do not require specific consideration.

Operational Phase

Operational Traffic Noise

- 11.7.13 Vehicular movements during the Operational Phase of the Scheme associated routine servicing and maintenance would be very limited and unlikely to be associated with any significant noise effects (as noted in NPS EN-3, paragraph 2.10.161 [Ref 11-10]). However, vehicle movements associated with the replacement and upgrading of PV Panels and BESS components, though likely to be on an ad-hoc basis, could be carried out on a larger scale than routine servicing and maintenance, therefore would require further consideration.
- 11.7.14 Operational traffic noise impacts are therefore scoped in to the EIA, and will be assessed similarly to the construction phase using the guidance set out in the DMRB [Ref 11-4] and BS 5228 [Ref 11-2]. Where likely significant effects are identified, suitable additional mitigation and management measures will be implemented as part of the OEMP.



Operational Noise

- 11.7.15 Electrical and mechanical plant associated with the Scheme represents another source of potential for operational noise effects. Whilst noise produced by the PV panels themselves is expected to be minimal, large electrical plant such as the Conversion Units can generate noise, which is typically tonal in nature, making it potentially more noticeable. The BESS, Customer Substation and National Grid Substation will include larger electrical plant (also tonal in nature and with higher noise emissions) as well as ancillary cooling units that will also require consideration.
- 11.7.16 Potential noise levels will be predicted on the basis of representative noise data for the plant units potentially installed, on a worst-case basis. The model will be developed using the ISO 9613-2 [Ref 11-5] methodology based on the noise specification data, indicative layout information and experience of similar recent installations. These predicted levels will be assessed relative to the existing baseline background noise levels at the relevant receptors, accounting for the potential character of the noise, in accordance with BS 4142 [Ref 11-1].
- 11.7.17 Embedded mitigation will involve adjusting the overall design of the Scheme to maximise (where possible) the distance from areas including noise-generating plant from noise-sensitive receptors.
- 11.7.18 The final detailed design of the Scheme, including final plant locations and selections, as well as any additional noise control measures such as screening or acoustic attenuation (if required), can be controlled through a requirement of the DCO on the basis of suitable noise limits determined in line with BS 4142 [Ref 11-1].

11.8 Issues Proposed to be Scoped In

- 11.8.1 The noise and vibration effects to be assessed are:
- Construction Traffic Noise
 - Construction Noise and Vibration
 - Operational Traffic Noise – for replacement activities; and
 - Operational Noise and Vibration – electrical and mechanical plant associated with the Solar PV Site, BESS, Customer Substation and National Grid Substation.

11.9 Issues Proposed to be Scoped Out

Construction, Operational and Decommissioning Traffic Vibration

- 11.9.1 The DMRB advises (paragraph 1.4 [Ref 11-4]) that significant vibration impacts from traffic using the road network is unlikely (although momentary vibration may be perceptible in some cases). The DMRB also references 5228-2 [Ref 11-2] which does not consider vibration from vehicle movements as a notable source. Vibration impacts associated with road traffic during all phases of the Scheme are therefore scoped out of the EIA.

Operational Noise and Vibration

- 11.9.2 Based on experience of similar recent installations, the plant likely to be used at the Site, such as the PV Panels and Conversion Units associated with the Solar PV Site, and the larger



electrical plant and ancillary cooling units associated with the BESS, Customer Substation and National Grid Substation, when operational, would generate insignificant levels of vibration with regards to relevant guidance for noise-sensitive receptors. Therefore, operational vibration impacts are scoped out of the EIA.

- 11.9.3 Although they may affect human receptors, operational noise and vibration levels are also of such magnitude that they are unlikely to affect ecological receptors, and this is also scoped out of the EIA Noise and Vibration chapter.
- 11.9.4 The Grid Connection Infrastructure could potentially include new overhead lines, which can generate noise at low level in certain weather conditions (corona discharge noise¹⁰), however this is unlikely to create significant effects in this instance and is therefore proposed to be scoped out. Underground cable sections of the Grid Connection Infrastructure will not generate any noise or vibration, and therefore is proposed to be scoped out.

Decommissioning Noise and Vibration

- 11.9.5 The works involved during the decommissioning phase would be similar or of a lower magnitude/duration than for the construction phase, and therefore have similar/lower effects and subject to similar management or control procedures, and therefore do not require separate consideration. On this basis decommissioning noise and vibration impacts are scoped out of the EIA.

11.10 Summary of Scope

- 11.10.1 A summary of the proposed scope for the Noise and Vibration assessment is included in **Table 11.3**.

Table 11.3 Noise and Vibration Scoping Summary

Aspect	Construction	Operation	Decommissioning	Any surveys
Noise from traffic	Scoped In	Scoped In	Scoped Out	None required
Vibration from traffic	Scoped Out	Scoped Out	Scoped Out	None required
Noise from Solar PV Site, BESS, Customer Substation and National Grid Substation.	Scoped In	Scoped In	Scoped Out	Baseline noise survey methodology to be agreed with Breckland Council

¹⁰ In wet weather, the presence of protrusions on the conductor surface (such as water droplets) can cause electric fields to propagate in the air (so-called 'corona discharge') which can be a source of noise, albeit at low level.



Aspect	Construction	Operation	Decommissioning	Any surveys
Vibration from Solar PV Site, BESS, Customer Substation and National Grid Substation.	Scoped In	Scoped Out	Scoped Out	None required
Noise from Grid Connection Infrastructure	Scoped In	Scoped Out	Scoped Out	None required
Vibration from Grid Connection Infrastructure	Scoped In	Scoped Out	Scoped Out	None required

11.11 In-Combination and Cumulative Effects

In-Combination Effects

11.11.1 A separate chapter will be presented within the ES which will provide a summary of effect interactions between topics (in-combination effects), setting out the inter-relationship arising as a result of direct effects from other environmental topics. The effects concluded in the Noise and Vibration ES chapter will be considered in the preparation of this chapter, determining whether there are multiple effects from different topics on a shared receptor and which will explain what mitigation measures are proposed, and how such mitigation may have an in-combination effect across several topics.

Cumulative Effects

11.11.2 There is the potential for Noise and Vibration effects as a result of the Scheme to be experienced cumulatively with other nearby developments. A full list of nearby developments that have the potential for in-combination effects with the Scheme will be presented in the ES and assessed where relevant.

11.11.3 The Applicant is actively engaging with the developer of the adjacent High Grove Solar DCO scheme proposed to the south of The Drovers. It is intended that ongoing collaboration and information sharing between the two projects will ensure that both assessments are cognisant of each other and minimise likely significant effects arising in-combination insofar as possible.

11.12 Consultation

11.12.1 Consultation will be undertaken with Breckland Council's Environmental Health Department, which represents the only statutory consultee for this topic. This will include the requirements for baseline noise monitoring and potential survey locations and methodology. The views and requirements of this consultee as well as other non-statutory consultees (including in response to this EIA Scoping Report) will help determine the detailed assessment methodology and any required mitigation measures.



12 Soils and Agricultural Land

12.1 Introduction

- 12.1.1 This chapter sets out the scope and methodology for the assessment of likely significant effects arising from the Scheme on Soils and Agricultural Land during the Construction, Operation and Decommissioning Phases.

12.2 Study Area

- 12.2.1 The Study Area for this assessment is the Site. Information on agricultural land quality and soils will be collected only for this area, to inform the baseline conditions for assessment. Farm information collected is likely to cover wider areas farmed beyond the boundary of the Site, so that the full potential effect on operating farm businesses can be assessed.

12.3 Baseline Conditions

- 12.3.1 The baseline is assessed in terms of:

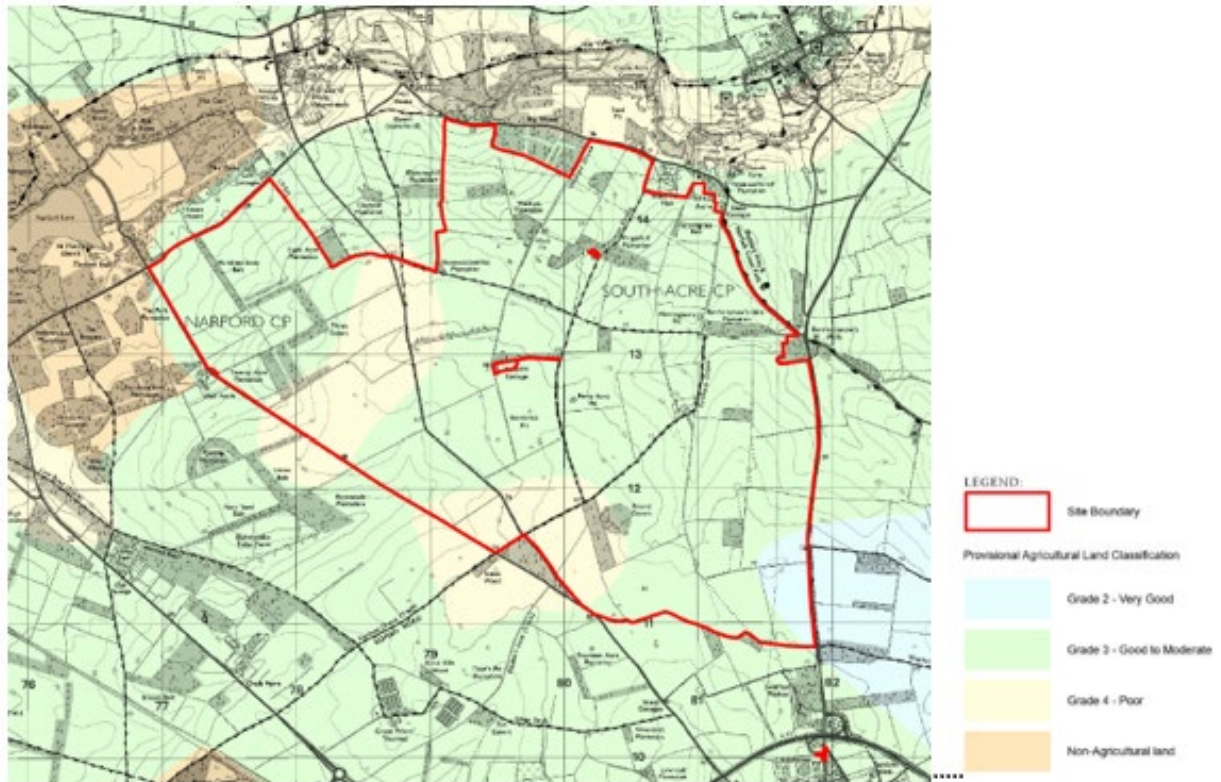
- Agricultural land quality
- Soils and soil type; and
- Local agricultural circumstances.

Agricultural Land Quality

- 12.3.2 Agricultural land quality is measured under a system of Agricultural Land Classification (ALC). This grades land based on the long-term physical limitations of land for agricultural use, including climate (temperature, rainfall, aspect, exposure and frost risk), site (gradient, micro-relief and flood risk) and soil (texture, structure, depth and stoniness) criteria, and the interactions between these factors determining soil wetness, droughtiness and utility. The system is described in Natural England's Technical Information Note TIN049 (2012) [**Ref 12-1**].
- 12.3.3 Land is divided into five grades, 1 to 5. Grade 3 is divided into two subgrades, referred to as Grade 3a and Grade 3b. Land falling into ALC Grades 1, 2 and Subgrade 3a is the 'best and most versatile' (BMV) (as defined in the National Planning Policy Framework (2023), Annex 2 [**Ref 12-2**]). Natural England estimate in Natural England's Technical Information Note TIN049 that 42% of agricultural land in England is of BMV quality [**Ref 12-1**].
- 12.3.4 The Ministry of Agriculture, Fisheries and Food (MAFF) produced a series of 'provisional' ALC maps in the 1970's [**Ref 12-3**] (the provisional map). These were reprinted by Natural England in 2010. These maps were produced at a scale of 1:250,000 and do not show the subgrades of Grade 3.
- 12.3.5 The provisional map for the East of England shows the Site to be mostly of undifferentiated Grade 3 with areas of Grade 4. There is a small area of Grade 2 shown on the eastern edge. **Image 12.1** shows the provisional ALC maps for the area. An insert is shown below.



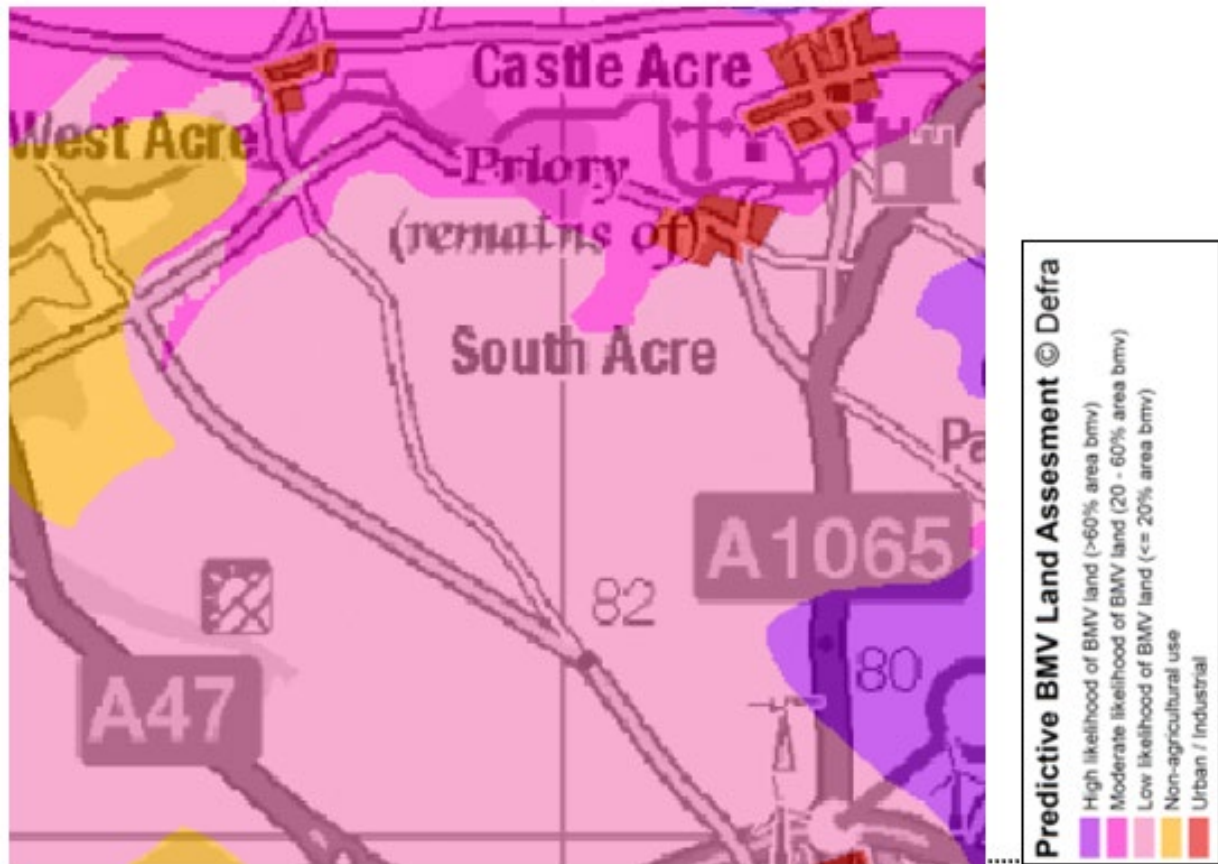
Image 12.1 Provisional ALC Map for the Site and Surrounding Area



- 12.3.5 In 2017 Natural England published a series of maps, also at 1:250,000 scale, showing the likelihood of BMV land [Ref 12-5] (the BMV likelihood maps). These maps divide the country into three categories: low (<20% area BMV), moderate (20%-60% area BMV), and high (>60% area BMV). The Site is shown as mostly falling into the "low likelihood" category, with some high likelihood (>60% BMV) just on the eastern edge (this is an area of the order of 25ha that correlates to the 'provisional' Grade 2 area). The northern Proposed Mitigation and Enhancement Areas include small areas shown as of moderate likelihood (20-60% area BMV). **Image 12.2** shows the predictive BMV maps for the area.



Image 12.2 Predictive BMV Map for the Site and Surrounding Area

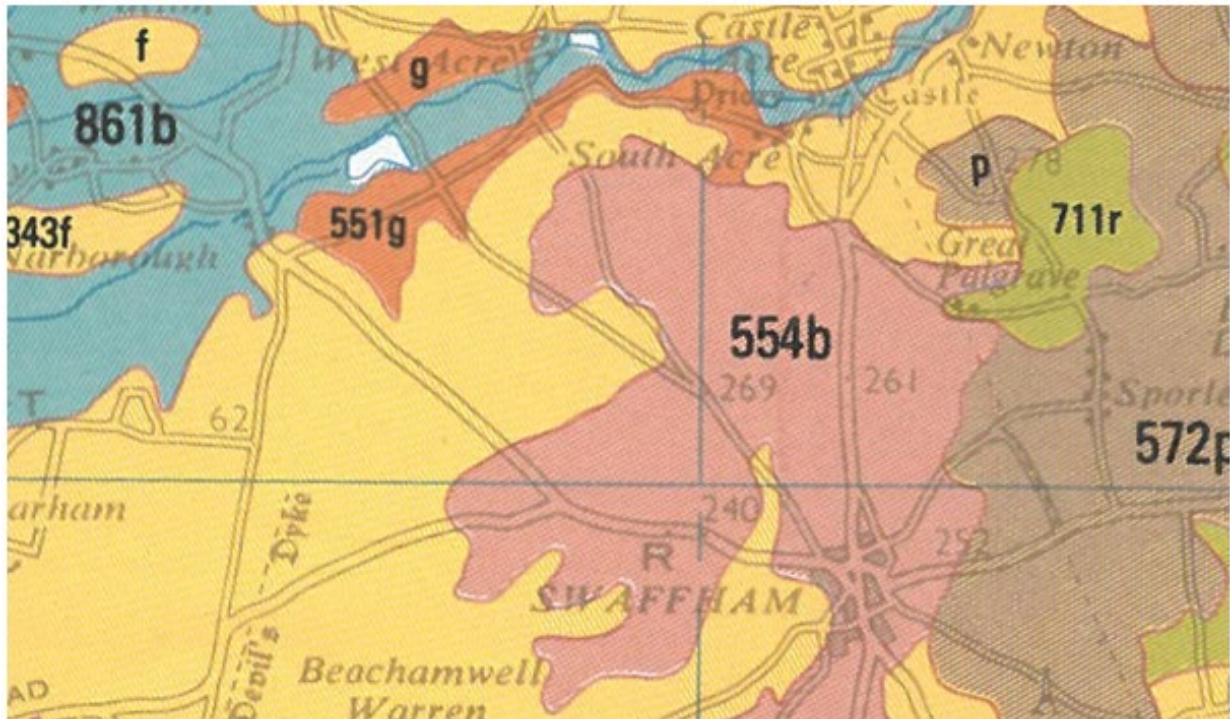


Soils and Soil Type

- 12.3.6 Soils have been mapped historically by the Soil Survey of England and Wales (SSEW) [Ref 12-6] at a 1:250,000 scale. The SSEW mapping for the Site identifies that the soils are expected to comprise mostly soils of the 554b Worlington Association, being deep, well-drained sandy soils, in places very acid with subsurface pan, and at risk of wind erosion. In the western part of the Site, soils are shown as 343f Newmarket 1, being shallow well-drained calcareous sandy over coarse loamy soils over chalk or chalk rubble. A small part of the Proposed Mitigation and Enhancement Areas to the north are shown as 551g Newport 4 association soils, being deep, well-drained sandy soils. **Figure 12-3** shows the SSEW map for the area.



Image 12.3 SSEW Map for the Site and Surrounding Area



Farming Circumstances

- 12.3.7 Based at this stage on early investigations and a review of aerial photography, the Site is mostly in arable farming use, with some outdoor reared livestock periodically. There are no significant farmsteads or groups of farm buildings, although there are a few scattered agricultural buildings within the Site. Details will be established during the assessment process.

12.4 Baseline Surveys

- 12.4.1 The baseline information not already available will be collected to inform the Soils and Agricultural Land baseline conditions for the ES. The following methods will be undertaken:
- Detailed assessment of the land within the Site will be completed to establish its ALC
 - An assessment of soils across the Site will be made in parallel with the ALC field survey to determine soil quality; and
 - Discussions with landowners and walk-over or over-the-hedge survey of agricultural land within the Site to establish farming operations, drainage, cropping and stocking, and as appropriate farming of adjacent land where it forms part of affected businesses. This will provide information for the farm and economic assessments, and to aid the production of outline Soil Management Plans.
- 12.4.2 Agricultural land quality will be assessed through field survey using qualified and experienced soil surveyors. This will be undertaken at a detailed scale, with one auger sample per 100m on a regular grid, as recommended by Natural England [Ref 12-1]. This will identify the ALC across the whole of the site and will assist in the design of the layout of the Scheme.



- 12.4.3 The ALC results will therefore provide an appropriate level of information for assessing the potential effects of the Scheme.
- 12.4.4 Information about soils will be collected as part of the ALC and field walk-over surveys. This will enable the plotting of different soil types on a map, which will provide the baseline data for the outline Soil Management Plan (oSMP).
- 12.4.5 Information about the farming operations and activities will be collected through face-to-face interviews with the land managers and farmers, and a walk-through survey of all the land within the Site. This information will be presented in the ES and used to inform the assessment, as appropriate.

12.5 Assessment Methodology

Approach

- 12.5.1 The assessment will consider the agricultural land quality of the Site, and the extent to which the Scheme will affect the land quality. It will consider the method of construction, operation and decommissioning phases of the Scheme and the impact this would have on soil qualities, and in particular whether the construction and decommissioning will result in any sealing or permanent downgrading of agricultural land. It will consider the removal of the panels and the reversibility of the impact, and it will consider the extent to which agricultural use can continue during the life of the Scheme.
- 12.5.2 The assessment will consider the potential impact on soils. For example, clayey soils in wet climate areas are less resilient to being handled and trafficked, and the assessment will therefore consider the soils and the methodologies appropriate to minimise disturbance to soil structure from the Scheme.
- 12.5.3 The effect of the Scheme on farm business, on farm enterprises and farm labour, will also be assessed. This will mostly be restricted to the Site but wider economic effects on the farm economy and food production will be considered. The information will be collected to enable an assessment of effects for the duration of the Scheme to be assessed.

12.6 Overview of Legislation Policy and Guidance

National Planning Policy

- 12.6.1 The key national policies and legislation relevant to the Scheme include:
- Overarching National Policy Statement for Energy 2024 (EN-1) [Ref 12-7]
 - National Policy Statement on Renewable Energy Infrastructure 2024 (EN-3) [Ref 12-8]
 - National Policy Statement for Electricity Networks Infrastructure (EN-5) [Ref 12-12]; and
 - National Planning Policy Framework 2023 (NPPF) [Ref 12-2].

Guidance

- 12.6.2 Other Guidance that will be considered will include:



- Natural England's TIN049 (2012) "Protecting the best and most versatile agricultural land" [Ref 12-1]
- MAFF (1988) ALC of England and Wales: revised guidelines and criteria for grading the quality of agricultural land [Ref 12-4]
- Defra (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites [Ref 12-9]
- Institute of Quarrying (2021) Good Practice Guide for Handling Soils [Ref 12-10]
- Institute of Environmental Management and Assessment (2022) A New Perspective on Land and Soil in Environmental Impact Assessment (hereafter the 'IEMA Guidance') [Ref 12-11]; and
- Breckland Local Plan, particularly Policy ENV10 [Ref 12-13].

12.7 Overview of Assessment of Significance

- 12.7.1 The results of the baseline surveys will enable an assessment of likely significant effects in respect of soils and agricultural land, by determining the sensitivity of the receptors.
- 12.7.2 The methodology to determine significance of effect is based on the IEMA Guide [Ref 12-11]. The assessment methodology identifies the sensitivity of the various receptors in terms of their importance (e.g. BMV land quality) and their susceptibility to damage when being trafficked (e.g. sensitive soil type).
- 12.7.3 The IEMA Guide considers land of ALC Grade 1, 2 and 3a to be of 'very high' sensitivity, and land of Subgrade 3b to be of 'medium' sensitivity. Land of Grades 4 and 5 is 'low' sensitivity.
- 12.7.4 The methodology considers soils of high clay content in wetter climate regions to be sensitive to damage from trafficking.
- 12.7.5 The IEMA Guide does not provide magnitude and sensitivity definitions for farm businesses, although effects are described in paragraph 8.3.3 of the IEMA Guide. The criteria in **Table 12.1** to **Table 12.3** below are based on professional judgement. The methodology considers farm businesses to be more resilient to change. Full-time businesses that would be terminated by Scheme are identified as a major adverse magnitude of impact, with farm businesses less affected being identified as moderate or minor magnitude impacts. The sensitivity of farms is reflective of their reliance to change.
- 12.7.6 The sensitivity of receptors will be measured as set out in **Table 12.1** below.

Table 12.1 Methodology for Determining Receptor Sensitivity

Sensitivity	ALC/biomass production	Sensitivity of topsoil and subsoil	Agricultural businesses
High	Land of ALC Grades 1, 2 and subgrade 3a	High clay soils where the Field Capacity Days (FCD)* is >150, or medium textured	(No farm business is of high sensitivity)-



Sensitivity	ALC/biomass production	Sensitivity of topsoil and subsoil	Agricultural businesses
		soils where the FCD is >225	
Medium	Land of ALC Subgrade 3b	High clay soils where the FCD is <150, or medium textured soils where the FCD is <225	Full-time businesses, and farm businesses where the location of land is particularly important such as dairy farms.
Low	Land of ALC Grades 4 and 5	Soils with a high sand fraction where the FCD is <225	Part-time farms or farms with low sensitivity to change, e.g. arable land held in short-term arrangements.
Negligible	Land of ALC Grades 4 and 5 with only indirect links	(No soils are of negligible sensitivity)-	Agricultural land that is not farmed or does not form part of a farm business.
*Field Capacity Days: days when the soil is replete with water			

- 12.7.7 The magnitude of impacts will be assessed as per the methodology set out in **Table 12.2** below. The determination of 'loss' will draw on the definition in the IEMA Guide **[Ref 12-11]**. This defines 'loss' for assessing magnitude as *"permanent, irreversible loss of one or more soil functions or soil volumes (including permanent sealing or land quality downgrading)"*. It identifies that *"temporary developments can result in a permanent impact if resulting disturbance or land use change causes permanent damage to soils"* [Table 3, **Ref 12-11**].

Table 12.2 Methodology for Determining Magnitude of Change

Magnitude of Impact	Definition	
	Effects on Agricultural Land (Soils)	Effects on Farm Business (Agricultural Business)
High	Assessed development would directly lead to the loss (including permanent sealing or land quality downgrading) of over 20 hectares of soil-related features; or potential for improvement in one or more soil functions over an area of more than 20 ha.	The impact of development would render a full-time agricultural business non-viable.



Magnitude of Impact	Definition	
	Effects on Agricultural Land (Soils)	Effects on Farm Business (Agricultural Business)
Medium	Assessed development would directly lead to the loss (including permanent sealing or land quality downgrading) over an area of between 5 and 20 hectares of soil-related features; or potential for improvement in one or more soil functions over an area of between 20 ha and 50 ha.	The impact of the development would require significant changes in the day-to-day management of a full-time agricultural business, or closure of a part-time agricultural business. Loss of buildings or impacts on drainage or water supplies affecting the potential for at least 5 ha of adjacent land to be farmed fully.
Low	Assessed development would directly lead to the loss (including permanent sealing or land quality downgrading) of less than 5 hectares of soil-related functions; or potential for improvement in one or more soil functions over an area of less than 5 ha.	Land take would require only minor changes in the day-to-day management / structure of a full-time agricultural business or land take would have a significant effect on a part-time business. Minor effects, direct or indirect, on surrounding land beyond the boundaries of the Site.
Negligible	No discernible loss or reduction or improvement of soil functions or volumes.	Land take would require only negligible changes in the day-to-day management of a full-time agricultural business or land take would require only minor changes to a part-time farm business

12.7.8 The assessment of the significance of effects will be determined based on the matrix in **Table 12.3** below.

Table 12.3 Methodology for Determining Significance

		Sensitivity of Receptor / Receiving Environment to Change / Impact			
		High	Medium	Low	Negligible
Magnitude of Impact	High	Major	Major-Moderate	Moderate-Minor	Negligible
	Medium	Major-Moderate	Moderate	Minor	Negligible
	Low	Moderate-Minor	Minor	Negligible	Negligible



		Sensitivity of Receptor / Receiving Environment to Change / Impact			
		High	Medium	Low	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

- 12.7.9 Effects of a major or major-moderate significance will be considered to be significant in EIA terms for the ES chapter.

12.8 Potential Effects

Construction Phase

- 12.8.1 The potential for adverse effects on agricultural land (both the potential effect on the soils and the potential effect on the agricultural land quality) resulting from the construction of the following elements of the Scheme are considered:
- Temporary construction compounds
 - Access tracks
 - Ground-mounted PV Modules
 - Vehicle trafficking (on both soils and land quality)
 - Electrical cabling for the cable circuit and Cable Route Corridor
 - Customer Substation and BESS and;
 - Electrical infrastructure such as the Transformers.
- 12.8.2 Construction effects may arise as a result of impacts on soils, either from physical movement of the soils or physical movement across the soils by vehicles. As part of the assessment an outline Soil Management Plan (oSMP) will be developed to help guide good practice and minimise potential effects on soils and agricultural land quality. This will cover construction, operation and decommissioning.
- 12.8.3 A number of potential impacts are capable of mitigation by the careful use and handling of soils. These potential impacts are generally scoped-in to the assessment and are already addressed with embedded mitigation (for the purposes of mitigation and impact minimisation) through the oSMP.

Temporary Construction Compounds

- 12.8.4 The topsoil removed for the temporary construction compounds will be placed temporarily in a low-level bund or bunds usually adjacent and within the Site. These bunds are temporary storage areas for the topsoil, which will be used in restoration of these areas once construction is complete. As such, the temporary construction compounds are not expected to have any adverse long-term effect on soils or agricultural land quality.



Access Tracks

- 12.8.5 The topsoil removed for the construction of access tracks to the Site will be placed in low-level bunds in proximity to where it is excavated. These bunds are storage areas for the topsoil for the duration of the Operational Phase, which will be used in restoration when the Scheme is decommissioned after operation. As such, the access tracks are not expected to have any permanent significant adverse effects on soils or agricultural land quality, but they will be affected for the duration of the Operational Phase.

Ground-mounted PV Modules

- 12.8.6 The PV panels will be mounted onto piles as part of the PV tables, and it is anticipated that these will be inserted into the ground using a pneumatic hammer action, which pushes the piles straight down into the soil to the correct depth. This process does not involve any digging or mixing of the soils. It is similar to the process of knocking-in a fence post as the soil simply moves laterally as the pile is knocked in. As a consequence, there is not expected to be any significant adverse effects to soil resource and the inherent agricultural land quality.

Vehicle Trafficking

- 12.8.7 Construction of the Scheme will involve vehicle trafficking over agricultural land. There is the potential for the soil to be adversely affected by vehicular movement if not managed properly. However, oSMP submitted in support of the DCO Application will include measures to mitigate adverse effects to soils (e.g. compaction).

Electrical Cabling

- 12.8.8 Cabling around the PV modules is usually limited to the end of each row of PV panels, connecting back to the electrical structure. This cabling normally involves a narrow trench with soils replaced in the same order as they were removed, shortly after the trench is dug. The soils are replaced to the same profile as before trenching, and this operation does not cause a significant effect on soils.
- 12.8.9 The Cable Route Corridor within the Site between Generating Stations and the Customer Substation, and then also from the Customer Substation to the National Grid Substation, will again involve a narrow trench, and short-term disturbance, and no long-term adverse effect on soils.

Customer Substation and BESS

- 12.8.10 The BESS and Customer and National Grid Substations may affect soils and will be considered. The scale of the BESS is not yet known. The possible works required will be assessed, and the extent to which soils can be conserved on site for restoration on decommissioning, in order to be able to assess the potential for a permanent land-quality downgrading. The physical works, and the land area, land quality and soil types involved, will be considered.

Electrical Infrastructure

- 12.8.11 Associated electrical infrastructure such as Transformers, Switchgear and metering equipment may require the construction of bases. In many cases these will not require deep foundations and any foundations will be removed on decommissioning. The construction and decommissioning works involved, and the potential effects on soils and land quality, will be considered. They are expected to result in temporary effects for the duration of the Construction and Operational Phases.



Operational Phase

- 12.8.12 The land under and around the Solar PV Arrays will be kept in grassland use and will be managed by a combination of sheep grazing, hay/silage production and wildflower grassland. There may be periodic need for some mechanical activity such as for mowing or topping of grassland, but this will be normal agricultural activity and should have no adverse effect on soils. Operational activities will be covered by the oSMP. By careful operation (e.g. not travelling over the land when it is evidently too wet) there should be no significant adverse effects on soil resource or agricultural land quality during operation.
- 12.8.13 The change from arable farming to long-term grassland uses is likely to have a beneficial effect on soils.
- 12.8.14 The potential effect of operational activities on land quality and soils is expected to be limited. Vehicle access for periodic repairs and regular cleaning will be considered and the effects assessed. As described in Chapter 3: Scheme Description, there is the potential need for the replacement of components of the Scheme during the operational phase, and the timing of works activities (especially in respect of the PV Panels) will need to be planned to minimise access over the land when soils are not in a sufficiently dry state. This will be covered in the SMP.
- 12.8.15 The Scheme has the potential for adverse economic impacts, as a result of reduced agricultural income for the businesses affected during the Operational Phase. However, this will be mitigated by alternative incomes received by leasing of the land for the Scheme. It is anticipated that agricultural activity, involving grazing of sheep, will be part of the ongoing land management. The enterprises currently and historically operated (if different) will be assessed and the implications for labour and the wider economy, together with issues such as food production, will be assessed. There is the potential for an adverse effect, but this may be balanced by other economic factors. Overall, there is not likely to be a significant adverse effect.

Decommissioning Phase

- 12.8.16 During the Decommissioning Phase, all the solar infrastructure including PV Panels, Mounting Structures, above ground cabling, Conversion Units, fencing, Ancillary Infrastructure, BESS and the Customer Substation would be removed over a 12 to 24 month period as described in Chapter 3: Scheme Description. These works, depending upon time of year and ground conditions, have the potential to affect soils and land quality in localised small areas within the Site. The soils are expected to be sandy and resilient to being handled, and no significant adverse effects that are not capable of being rectified with normal agricultural land management machinery, are expected. Detailed guidance will be presented in the ES in the oSMP. With this embedded mitigation in place, no significant effects are anticipated.

12.9 Issues Proposed to be Scoped In and Out

- 12.9.1 With regard to the potential effects from the various construction, operational, and decommissioning activities described in section 12.8, the potential effects proposed to be scoped into or out of the Agriculture and Soils ES chapter are presented in **Table 12.4** below.

**Table 12.4 Scope of Agriculture and Soils Assessment**

Aspect	Construction	Operation	Decommissioning	Surveys Required
Disturbance and Crop Loss	Scoped In	Scoped Out	Scoped Out	None required
Land Quality	Scoped In	Scoped In	Scoped In	Agricultural Land Classification
Soils	Scoped In	Scoped In	Scoped In	Soil Quality Assessment (Within ALC)
Economic and Land Use Effects for Farm Businesses and Rural Economy	Scoped Out	Scoped In	Scoped Out	Discussions with Landowners and walk-over or over-the-hedge surveys.

12.10 In-Combination and Cumulative Effects

In-Combination Effects

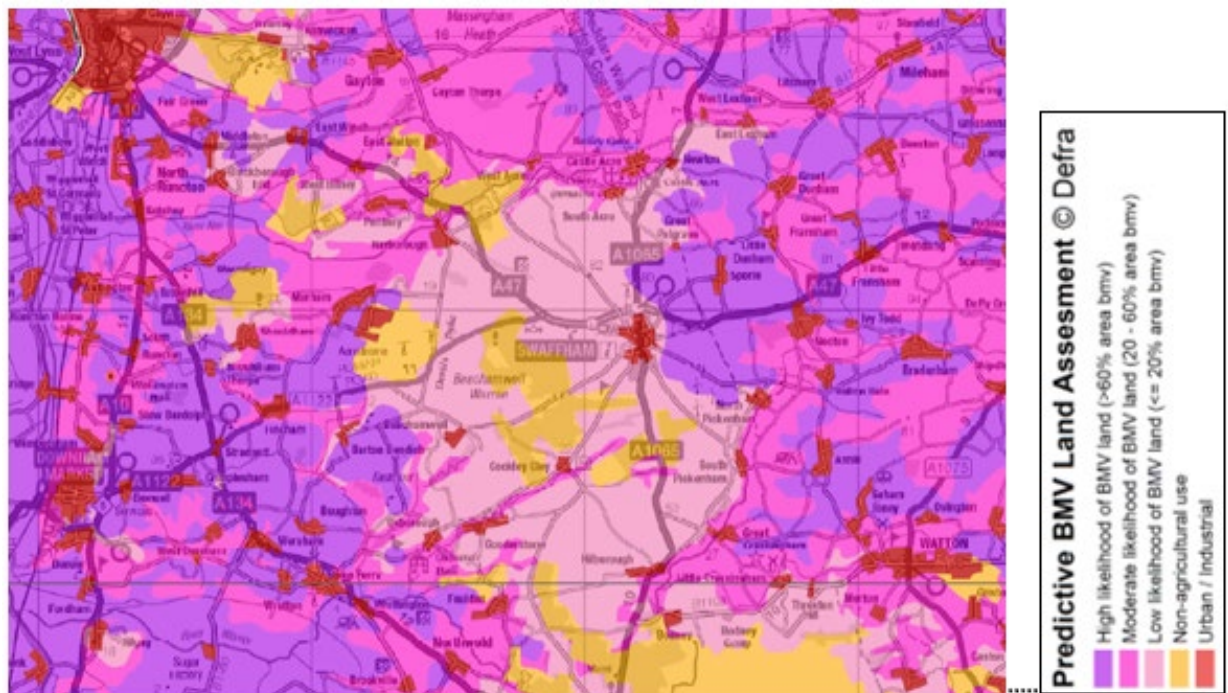
- 12.10.1 A separate chapter will be presented within the ES which will provide a summary of effect interactions between topics (in-combination effects), setting out the inter-relationship arising as a result of direct effects from other environmental topics. The effects concluded in the Agriculture and Soils ES chapter will be considered in the preparation of this chapter, determining whether there are multiple effects from different topics on a shared receptor and which will explain what mitigation measures are proposed, and how such mitigation may have an in-combination effect across several topics.

Cumulative Effects

- 12.10.2 The cumulative effects of the Scheme will be considered in the context of the Written Ministerial Statement of 15th May 2024 [Ref 12-14]. The effect on the use of land, and the land quality of the wider area, will be considered. As shown on **Image 12.4**, the Site lies in an area predicted to be of the lowest proportion of BMV in the wider area.



Image 12.4 BMV Mapping for Wider Area



- 12.10.3 There is the potential for Agriculture and Soils effects as a result of the Scheme to be experienced cumulatively with other nearby developments. A full list of nearby developments that have the potential for in-combination effects with the Scheme will be presented in the ES and assessed where relevant.
- 12.10.4 The Applicant is actively engaging with the developer of the adjacent High Grove Solar DCO scheme proposed to the south of The Drovers. It is intended that ongoing collaboration and information sharing between the two projects will ensure that both assessments are cognisant of each other and minimise likely significant effects arising in-combination insofar as possible.

12.11 Consultation

- 12.11.1 As part of the assessment process, it is proposed to undertake consultation with Natural England regarding the ALC survey work and oSMP. Further consultees may be identified.



13 Water Resources and Ground Conditions

13.1 Introduction

- 13.1.1 This chapter sets out the scope and methodology for the assessment of likely significant effects arising from the Scheme on hydrological and hydrogeological resources, including Ground Conditions, during construction, operation and decommissioning.
- 13.1.2 This chapter has been informed by observations from the Ecology site work undertaken to date.
- 13.1.3 This chapter includes the following elements:
- Consultation to Date
 - Preliminary Baseline Conditions
 - Likely Environmental Effects
 - Assessment Methodology
 - Assessment of Cumulative Effects; and
 - Matters and Aspects Scoped Out.

13.2 Baseline Conditions

Study Area

- 13.2.1 The Site Boundary (**Figure 2-1**) will form the Core Study Area (CSA) for both the Scoping and PEIR Chapters.
- 13.2.2 Baseline data will be used to assess potential effects of the Scheme on hydrological and hydrogeological resources within a 5 km study area of the Site Boundary (the Wider Study Area (WSA)). This WSA is based on the hydrological and hydrogeological connectivity of water bodies located downstream of the Scheme.
- 13.2.3 Study Areas are shown on **Figure 13-1**.
- 13.2.4 At distances greater than 5km, it is considered that solar developments in low lying catchments are unlikely to contribute to chemical or sedimentation effects due to attenuation, dilution and deposition.
- 13.2.5 The WSA will also be used for the cumulative assessment.
- 13.2.6 A smaller 1km study area based upon the CSA will be applied to assess private water supplies (PWS) and public water supplies (PuWS) abstractions and will be termed the Water Supplies Study Area (WSSA).
- 13.2.7 The WSSA distance is based on Paragraph 2.15 of guidance issued by the Scottish Environmental Protection Agency (SEPA) [**Ref 13-1**], in the absence of guidance relating to study area distance issued by the EA or the British Geological Survey (BGS).



- 13.2.8 These study areas are defined based on the author's professional judgement and experience assessing similar scale developments (DCO solar developments) within lowland agricultural environments and similar hydrological catchments in England.
- 13.2.9 A desk-based survey was undertaken in September 2024 to provide an overview of the baseline conditions for water resources and ground conditions within the CSA. Field surveys will be undertaken following receipt of PWS data and agreement on infiltration testing locations and these are outlined in Table 13.7 of this Chapter.

Hydrological Setting

- 13.2.10 The Core and Wider Study Areas are located within the primary catchment of the River Nar, which is located approximately 685 m north of the Site Boundary at its nearest point.
- 13.2.11 The River Nar flows west towards King's Lynn and discharges to the Tidal River Ouse, approximately 17 km northwest of the CSA. The River Nar is part of the North West Norfolk Management Catchment.
- 13.2.12 At West Acre the River Nar flows over the river valley gravels and then over alluvial silt from Narborough through the fens. The river water is base-rich, alkaline and recharged by clear springs flowing from the underlying chalk.
- 13.2.13 The River Nar has Water Framework Directive (WFD) classifications as outlined in **Table 13.1**.

Table 13.1 WFD Waterbody Characteristics

WFD Indicator	Nar upstream of Abbey Farm
Water body ID	GB105033047791
Hydro-morphological designation	Not designated artificial or heavily modified
Ecological Status	Moderate
Chemical Status including uPBTs	Fail
Chemical Status excluding uPBTs	Good
Ecological Objective	Good by 2015
Chemical Objective	Good by 2063

- 13.2.14 There are no natural watercourses within the CSA and site observations from the Ecology site walkovers confirm that shallow agricultural ditches have been persistently dry. As such, there



are no obvious natural watercourses or surface water flow pathways within the CSA to the River Nar, with rainwater anticipated to infiltrate rapidly, rather than generate substantial run-off.

- 13.2.15 The majority of the CSA is located within a Drinking Water Protected Area (Nar upstream of Abbey Farm - EA ID GB105033047791), as shown on **Figure 13-2**.
- 13.2.16 There is one open / aboveground reservoir located in the northern sections of the CSA, within the Potential Mitigation and Enhancement Areas.

Flood Zones

- 13.2.17 The CSA is located entirely within Flood Zone 1, with the exception of an area of Flood Zone 3 in the east measuring approximately 38m² (approximately 0.0003 % of the CSA), as shown on **Figure 13-3**.
- 13.2.18 Whilst there are areas of Flood Zone 2 and 3 close to the eastern section of the CSA, the Recorded Flood Outlines (EA) dataset shows that no section of the CSA has previously flooded. The nearest recorded flooding from the River Nar is located approximately 10 km west (north of Wormegay) and was associated with the 1993 event where Section 3.4.2 Historic Records of River Flooding of the Strategic Flood Risk Assessment (SFRA) [**Ref 13-2**], which notes that the cause of flooding was a breach of flood defenses.
- 13.2.19 The Norfolk County Council (NCC) Flood Investigation Reports for the Breckland Area (2014-2021) and Countywide (2022) [**Ref 13-3**] do not identify any incidents of flooding within the CSA or within close proximity to the CSA.
- 13.2.20 The SFRA also notes that hydraulic modelling of the River Nar upstream as far as Marham (downstream of the Breckland District) has been undertaken. Royal Haskoning confirmed that even with a major tidal event on the Great Ouse coincident with a fluvial event on the Nar causing it to back up behind the tidal outfall structure, water levels would not be affected as far upstream as Marham, due to the nature of the river gradient (Mott MacDonald 2007).
- 13.2.21 A data request regarding flood data was provided by the EA on 25 September 2024. Outputs from the Eastern Rivers Modelling Report - Nar (v1.0 May 2015), show that the 1% AEP Annual Exceedance Probability (AEP) + 20% climate change, the 0.5% AEP and the 0.1% AEP flood outlines do not encroach into the CSA.
- 13.2.22 Flows used within the River Nar model are 56% higher for the 0.1% AEP than the 1% AEP and, therefore, in the absence of a scenario showing the 33% AEP of CC required for the 2080's higher central allowance for the North West Norfolk Management Catchment peak river flow, the 0.1% AEP has been used as a proxy.
- 13.2.23 The EA Surface Water Flood Map shows that the modelled surface water flooding extent for the 1 % AEP event is largely absent across the entire CSA with the exception of a small area in the north which is confined to a topographical depression and an area in proximity to Fincham Drove.
- 13.2.24 Figure 7 of the SFRA (Areas Susceptible to Groundwater Flooding) shows that the majority of the CSA is located outside an area classified as at risk of groundwater flooding, with minor areas in the north of the CSA classed as having a 25-50% and 50-75% risk of groundwater emergence. Areas identified at risk of flooding from groundwater are mostly within the Potential Mitigation and Enhancement Areas.
- 13.2.25 The CSA is located outside the extents of the Fluvial Contribution and Wet Day scenarios should the retaining walls of Manor Farm Reservoir (Wells) fail.



- 13.2.26 Borehole records (BGS borehole IDs 511123 and 509969) [**Ref 13-4** and **Ref 13-5**] in the north of the CSA show an absence of groundwater to a depth of 14 m BGL.

Geology and Ground Conditions

- 13.2.27 BGS datasets show that the majority (approximately 75%) of the CSA is underlain by chalk of the Lewes Nodular Chalk Formation. The western section of the CSA is underlain by chalk of the Holywell Nodular Chalk Formation and New Pit Chalk Formation, as shown on **Figure 13-4**.
- 13.2.28 Superficial deposits, including sensitive receptors such as peatland, are mapped to be largely absent across the CSA, with the exception of minor areas of till (diamicton) and sand and gravels from the Lowestoft Formation in the northern and southern sections of the CSA, as shown on **Figure 13-5**.
- 13.2.29 A BGS borehole record in the north of the CSA shows chalk was encountered at 0.9 m below ground level (BGL), suggesting a very thin superficial geology covering.
- 13.2.30 No geological faulting or linear features are noted within the CSA on the BGS dataset.
- 13.2.31 The Soilscales dataset [**Ref 13-6**] indicates that superficial cover across the majority of the CSA is classed as 'freely draining sandy Breckland soils' (Soilscales ref 11) which are freely draining. The northern section of the CSA is classed as a mix of shallow lime-rich soils over chalk or limestone (Soilscales ref 3) and freely draining slightly acid sandy soils (Soilscales ref 10).
- 13.2.32 The BGS Minerals and Quarries dataset shows there to be several marl pits (clay removed for agricultural fertiliser) throughout the CSA, none of which are active.
- 13.2.33 The EA dataset shows that there are no historic landfill sites within the CSA.

Hydrogeological Setting

- 13.2.34 The Hydrogeology 625,000 digital hydrogeological map of the UK (BGS) shows that the CSA is underlain by chalk of the white chalk subgroup, characterised as a High Productivity Aquifer where flow is virtually all through fractures and other discontinuities.
- 13.2.35 The Aquifer Designation Map (Bedrock) (England) identifies that the Study Area is underlain by aquifers classed as a Principal Aquifer.
- 13.2.36 The CSA is not located within a Drinking Water Safeguard Zone (Groundwater).
- 13.2.37 The majority of the CSA is located in Source Protection Zone (SPZ) 2 and the western section located in SPZ 1, as shown in **Figure 13-3**, associated with an Anglian Water abstraction at Marham, approximately 5.8km west of the CSA.
- 13.2.38 The EA River Basin Management Plan (RBMP) shows that the North West Norfolk Chalk groundwater body has characteristics as outlined in **Table 13.2**.

**Table 13.2 WFD Groundwater body Characteristics**

WFD Indicator	Nar upstream of Abbey Farm
Water body ID	GB40501G400200
Chemical Status	Poor
Quantitative Status	Poor
Chemical Objective	Poor by 2015
Quantitative Objective	Good by 2027 - Low confidence

13.2.39 The EA note that groundwater abstraction, poor nutrient management and sewage discharge as reasons for the groundwater body not achieving good status.

13.2.40 The Norfolk Rivers Trust “The River Nar - A Water Framework Directive Local Catchment Plan” (2014) [Ref 13-7] notes that the general chemical failures of the chalk groundwater bodies under the CSA are a result of widespread elevated nitrate concentrations. Based upon known pollutant linkages and conceptual knowledge of the catchment the predominant source of leached nitrate is a result of diffuse agricultural pollution.

13.2.41 The Norfolk Rivers Trust Catchment Plan also notes that groundwater abstracted from boreholes at Marham shows high concentrations of nitrate significantly above the drinking water standard of 50 mg/l (as NO₃), largely due to diffuse agricultural pollution.

Designations

13.2.42 Designations located within the WSA (i.e., 5 km from the Site) are outlined in **Table 13.3**.

Table 13.3 Designations within Wider Study Area

Designation	Qualifying Interest	Approximate distance and direction from the CSA	Hydrological link to CSA
River Nar SSSI	A variety of wetland species, including southern marsh orchid.	175 m northeast	Yes – via chalk aquifer baseflow
Castle Acre Common SSSI	Unimproved grazing marsh on the banks of the River Nar has diverse grassland habitats, and the marshy conditions provide nesting sites for several wetland bird species. There are acidic	435 m north	Yes – via chalk aquifer baseflow



Designation	Qualifying Interest	Approximate distance and direction from the CSA	Hydrological link to CSA
	flushes where springs emerge from sands in the bottom of the valley		
East Walton and Adcock's Common SSSI and SAC	Chalk grassland, springs, open water and scrub	2.3 km northwest	Yes – via chalk aquifer baseflow
Breckland Forest SSSI	Breeding habitat for woodlark and nightjar	2.4 km south	Yes – via chalk aquifer baseflow
Narborough Railway Embankment SSSI	Diverse chalk grassland	2.5 km west	Yes – via chalk aquifer baseflow

13.3 Assessment Methodology

- 13.3.1 The significance of the potential effects of the Scheme will be classified by professional consideration of the sensitivity of the receptor and the magnitude of the potential effect.
- 13.3.2 The approach for the hydrological and hydrogeological impact assessment for the Scheme has been developed in consultation with the several statutory consultees and Internal Drainage Boards over numerous Town and Country Planning Act applications and DCO applications for solar and energy storage sites.
- 13.3.3 The assessment will be based on a source-pathway-receptor methodology, where the sensitivity of the receptors and the magnitude of potential change (effect) upon those receptors is identified within the study areas identified in Section 13.2.
- 13.3.4 As a minor area of the CSA is located within Flood Zone 2 and 3a the Flood Risk Assessment (FRA) will need to demonstrate that, where development is proposed in areas with identified risk of flooding from all sources (e.g. fluvial or surface water flooding), it passes the Sequential and Exception tests outlined in National Policy Statements (NPS) and the National Planning Policy Framework (NPPF) (see paragraph 13.4.1 for more detail). There will be a requirement to raise all above ground electronically sensitive equipment at least 300mm above the highest modelled flood level for the 1% AEP event (plus climate change allowance) or have a commitment to install flood resilient onsite infrastructure, however avoidance of these areas will be considered as a preferred design solution where practicable.
- 13.3.5 The climate change allowance data will be obtained from the EA Climate Change Allowances for Peak River Flow in England (2022) for the North West Norfolk Management Catchment. As the Scheme is classed as Essential Infrastructure as per Annex 3: Flood risk vulnerability classification of the NPPF and will be operational between the 2050's and 2080's epochs the Higher Central band of 33% will be used to assess fluvial flows.
- 13.3.6 The FRA will focus on the following elements:



- The risk of flooding to the Scheme from fluvial, pluvial, groundwater and artificial (reservoir and drainage infrastructure) sources
- Assessment of the introduction of new hardstanding and impermeable ground areas on the greenfield run-off rates, using InfoDrainage software
- Storage requirement calculations to accommodate the 3.33% and the 1% AEP storm events including an allowance for climate change i.e. 25% for the Central Allowance for the 2070s epoch (2061 to 2125) as the Scheme has a proposed Operational Phase of 60 years. In accordance with Paragraph 13.1.5 of the Norfolk LLFA Statutory Consultee Guidance (Document Version 7.1, June 2024) [Ref 13-8] the SuDS design for the BESS, Customer Substation and Access Tracks¹¹ will be sensitivity tested applying a 40% climate change allowance
- The management of surface water run-off rates using Rural Sustainable Drainage Systems (RSuDS) techniques, such as grassland under the drip lines, for the PV Tables; and
- The FRA will also conclude how the Scheme complies with local planning policy, the BC Level 1 Strategic Flood Risk Assessment Update and Section 5.8 of the NPS EN-1.

13.3.7 The FRA will utilise fluvial data and results from the Eastern Rivers Modelling Report – Upper Nar flood study. It is not proposed to model fluvial and tidal flooding based on the validity and acceptance of published flood studies by the LLFA and the EA and are considered suitable for use to inform the FRA.

13.3.8 Due to the freely draining nature of the soils within the CSA and the limited extent of the modelled 1% AEP pluvial event, it is not proposed to undertake two-dimensional (2D) direct rainfall modelling.

13.3.9 Due to the underlying chalk geology across the CSA, the potential for an infiltration-based SuDS solution for the Customer Substation and BESS to cause dissolution of the soluble rocks will be investigated through infiltration testing and intrusive ground investigations. Given the absence of watercourses, the next disposal solution compliant with the SuDS hierarchy would be to dispose of water to Anglian Water assets, which will be investigated if required.

Sensitivity of Receptors

13.3.10 The sensitivity of the baseline conditions, including the importance of environmental features on or near to the Scheme or the sensitivity of potentially affected receptors, will be assessed in line with best practice guidance, legislation, statutory designations and / or professional judgement.

13.3.11 **Table 13.4** details the proposed framework for determining the sensitivity of receptors.

Table 13.4 Framework for Determining Sensitivity of Receptors

Sensitivity of Receptor	Definition
High	A watercourse or water body with a WFD classification of 'High' or 'Good':

¹¹LLFA verbal advice to treat access tracks as impermeable



Sensitivity of Receptor	Definition
	<ul style="list-style-type: none"> The receptor and associated downstream environment has limited capacity to attenuate fluctuations in hydrochemistry and cannot buffer further changes without profoundly altering its characteristics or natural processes The hydrological receptor is designated as having international importance, such as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) Water abstractions used for the production of mass-produced consumables (food and drink) Areas classed as Functional Floodplain (Flood Zone 3b) and flood storage areas not protected by flood defences; and Flood defences.
Medium	<p>A watercourse or water body with a WFD classification of 'Moderate';</p> <ul style="list-style-type: none"> The receptor and associated downstream environment has some capacity to attenuate fluctuations in hydrochemistry but cannot absorb prolonged changes without profoundly altering its baseline characteristics / natural processes The hydrological receptor is of high environmental importance or is designated as having national importance, such as SSSIs Areas classed as Flood Zone 3a; and Areas containing geological features of designated regional importance including Regionally Important Geological/geomorphological Sites (RIGS).
Low	<p>A watercourse or water body with a WFD Overall Water Body Class of 'Poor' or 'Bad' and / or a Current Chemical Quality classification of 'Fail' excluding ubiquitous, persistent, bioaccumulative and toxic substances (uPBTs);</p> <ul style="list-style-type: none"> Heavily modified watercourses or manmade drainage ditches The receptor is not of regional, national or international environmental importance The hydrological receptor does not support abstractions for public water supply or private water abstractions Poor groundwater quality and / or very low permeability make exploitation of groundwater unfeasible; and Areas classed as Flood Zone 2.
Negligible	<ul style="list-style-type: none"> The receptor is resistant to change and / or is of little environmental value; and Areas classed as Flood Zone 1.



Magnitude of Effect

13.3.12 The magnitude of potential effects will be identified through consideration of the Scheme, the degree of change to baseline conditions predicted as a result of the Scheme, the duration and reversibility of an effect and professional judgement, best practice guidance and legislation.

13.3.13 The criteria for assessing the magnitude of an effect are presented in **Table 13.5**.

Table 13.5 Framework for Determining Magnitude of Effects

Sensitivity of Receptor	Definition
High	<p>A major shift in hydrochemistry or hydrological conditions sufficient to negatively change the function of the receptor. This change would result in a downgrading of an WFD Quality classification by two classes, e.g., from 'High' to 'Moderate'</p> <p>A material increase in the probability of flooding onsite and offsite, adding to the extent which requires protection by flood prevention measures or affecting the ability of the functional flood plain to attenuate the effects of flooding by storing flood water (in accordance with NPPF paragraphs 159 to 169) i.e., loss of functional floodplain (Flood Zone 3b) storage</p> <p>A permanent or long-term degradation of quality to groundwater quality or a long term reduction in the available yield; and / or</p> <p>A greater than 50 % loss of a geological receptor or peat habitat site, or where there would be complete severance of a site such as to fundamentally affect the integrity of that site (e.g., severing hydrological connectivity).</p>
Medium	<p>A non-fundamental change to the hydrochemistry or hydrological environment, resulting in a change in ecological status. This change would result in a downgrading of a EA water quality classification by one class, e.g., from 'Good' to 'Moderate';</p> <p>A loss of between 15 % to 50 % of a geological receptor or peat habitat site, complete or substantial severance and effects to its integrity as a feature, or disturbance such that the value of that site would be affected, but could still function;</p> <p>The yield or quality of PWS or PuWS may be temporarily reduced; and / or</p> <p>A moderate increase in the probability of flooding onsite and offsite, adding to the area of land which requires protection by flood prevention measures or affecting the ability of the functional flood plain to attenuate the effects of flooding by storing flood water i.e., moderate loss of storage within Flood Zone 3a.</p>



Sensitivity of Receptor	Definition
Low	<p>A detectable non-detrimental change to the baseline hydrochemistry or hydrological environment. This change would not reduce the WFD status of the receptor</p> <p>Loss of storage within Flood Zone 2</p> <p>Interaction with the groundwater table which will marginally alter local ecology or will lead to a slight detectable displacement of groundwater; and / or</p> <p>A detectable but non-material effect on the receptor or a moderate effect on its integrity as a feature or where there would be a minor severance or disturbance such that the functionality of the receptor would not be affected.</p>
Negligible ¹²	<p>No detectable changes to the baseline hydrochemistry or hydrological environment; and</p> <p>No increase in the probability of flooding onsite and offsite.</p>

13.4 Overview/Legislation, Policy and Guidance

13.4.1 The following guidance, legislation and information sources will be considered when carrying out the EIA:

- Water Resources Act 1991
- Water Resources Act 1991 (Amendment) (England and Wales) Regulations 2009
- Land Drainage Act 1991 as amended 1994
- Flood and Water Management Act 2010
- Water Act 2003 as amended 2014
- Water Supply Regulations 2016 as amended 2018
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017
- The Water Resources (Environmental Impact Assessment) (England and Wales) (Amendment) Regulations 2017
- The Groundwater (England and Wales) Regulations 2009
- Groundwater Daughter Directive (2006/118/EC) 2006
- Anti-Pollution Works Regulations 1999

¹² Negligible magnitude of change also includes magnitude of effects that are assessed as no change to the baseline scenario



- The Environmental Damage (Prevention and Remediation) (England) Regulations 2015
- Conservation of Habitats and Species Regulations 2017
- Environment Act 1995
- The Environmental Permitting (England and Wales) (Amendment) Regulations 2018
- Planning Inspectorate - Nationally Significant Infrastructure Projects: Technical Advice Page for Scoping Solar Development (2024)
- Planning Inspectorate - Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive (2024)
- Overarching National Policy Statement for Energy (EN-1, November 2023) Section 5.8: Flood Risk. This outlines the requirements for a Flood Risk Assessment (FRA) and the promotion of the use of SuDS
- National Policy Statement for Renewable Energy Infrastructure (EN-3), provides advice with regards to siting of critical equipment in relation to potential flood risk (Paragraph 2.10.60). It also notes that any development will need to appropriately consider drainage but confirms that as solar arrays *“drain to the existing ground, the impact will not in general be significant”* (paragraph 2.10.84)
- National Policy Statement for Electricity Networks Infrastructure (EN-5) - Section 2.3 outlines that climate change should be assessed and details of how infrastructure has been designed to be resilient to flooding should be included in the assessment
- National Planning Policy Framework (NPPF) (2023), paragraphs 165 to 175. This states that for development comprising one hectare or above, the vulnerability to flooding, or the potential to add to flooding elsewhere should be assessed in a FRA
- The Environment Agency’s approach to groundwater protection (2018 v1.2)
- Good Practice Guide for Environmental Impact Assessment (EIA), 2006 (withdrawn but still considered relevant in the absence of superseding guidance)
- NCC - Drainage design standards
- NCC - Lead Local Flood Authority Statutory Consultee for Planning. Guidance Document (Version 7.1, June 2024)
- Pollution Prevention Guidelines (PPGs). These have been withdrawn but are still considered relevant in the absence of superseding guidance
- Construction Industry Research and Information Association (CIRIA) C753 ‘The SuDS Manual’ (CIRIA, 2015); and
- Environmental good practice on site guide (5th edition) C811 (CIRIA, 2023).

13.5 Overview of Assessment of Significance

- 13.5.1 The sensitivity of the receptor and the magnitude of the predicted effect will be used as a guide, in addition to professional judgement, to assess the significance of the likely effect. **Table 13.6** summarises guideline criteria for assessing the significance of effects.

**Table 13.6 Framework for Assessment of the Significance of Effects**

Magnitude of Effects	Sensitivity of Resource or Receptor			
	High	Medium	Low	Negligible
High	Major	Moderate	Moderate	Minor
Medium	Moderate	Moderate	Minor	Negligible
Low	Minor	Minor	Negligible	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

Embedded Mitigation

- 13.5.2 Embedded mitigation measures will be included within the outline Construction Environmental Management Plan (oCEMP).
- 13.5.3 The oCEMP will comprise good practice construction methods and works that are established and effective measures, such as silt traps, settlement lagoons and cut-off ditches, to which the Applicant will be committed throughout the Scheme process and which can be secured by an appropriate Schedule 2 Requirement.
- 13.5.4 There is confidence in the effectiveness of the measures that will be outlined in the oCEMP (i.e., these have been observed to function effectively on similar projects) for them to be treated as part of the Scheme for the purposes of the assessment. As such, the assessment of significance of effects of the Scheme will be considered assuming implementation of the measures in the oCEMP.
- 13.5.5 The measures to be included in the oCEMP are fundamentally part of the Scheme design and should be treated as embedded mitigation.
- 13.5.6 The Water Resources Chapter of the ES will consider the likelihood of an effect occurring and concludes whether the significance will be Major, Moderate, Minor or Negligible, before additional mitigation has been implemented. The ES will then report on any residual effects. The assessment will involve professional judgment to ensure that the effects are appropriately assessed.
- 13.5.7 A residual effect is considered to be a likely significant effect in accordance with EIA Regulations if assessed as Moderate or Major following the implementation of additional mitigation measures.

13.6 Assessment of Cumulative Effects

- 13.6.1 The methodology to assess the cumulative effects will be the same as that used for the Scheme in isolation.
- 13.6.2 A cumulative effect is considered to be an additional effect on a hydrological or hydrogeological resource (i.e., within the same hydrological catchment) arising from the Scheme in addition to the contribution of other developments likely to affect the hydrological environment but whose



effects are not represented in the baseline data. In-combination effects occur when a single resource or receptor is impacted by multiple environmental impacts.

- 13.6.3 At distances greater than 5 km, developments are unlikely to contribute to a cumulative or in-combination hydrological effect due to attenuation, dilution and deposition over distance of potentially polluting chemicals and sediment. Therefore, for the purposes of the assessment of potential cumulative effects on the catchment in which the Scheme is located, only proposed developments, which require large scale construction / excavation, within approximately 5 km of the Site will be considered.
- 13.6.4 The Applicant is actively engaging with the developer of the adjacent High Grove Solar DCO scheme proposed to the south of the Scheme. It is intended that ongoing collaboration and information sharing between the two projects will ensure that both assessments are cognisant of each other and minimise likely significant effects arising in-combination insofar as possible.

13.7 Potential effects

- 13.7.1 The following sections indicate the Hydrological issues to be scoped in and out of the ES Chapter, while **Table 13.7** summarises hydrological issues scoped in or out for each phase of the Scheme.

Issues Proposed to be Scoped In

- 13.7.2 The following potential effects, for all phases of the Scheme, will be scoped into the assessment:
- Chemical pollution
 - Erosion and sedimentation
 - Impediments to surface water flow
 - Changes in soil interflow patterns
 - Changes in groundwater flow
 - Compaction of soils
 - Increase in surface water run-off rates
 - Displacement of flood storage
 - Changes in quality or quantity of supply (PWS and PuWS); and
 - Migration of Pollutants from Contaminated Land.

Issues Proposed to be Scoped Out

- 13.7.3 As the Scheme is not located within 6 km of a tidally-influenced stretch of the River Nar the risk of flooding from tidal sources will be scoped out of the ES and accompanying FRA.
- 13.7.4 Potential effects from historic landfill sites will be scoped out of the assessment, due to the absence of landfill sites within 3km of the CSA.
- 13.7.5 Due to the homogenous nature of the underlying geology, limited ground disturbance during the installation of PV arrays and absence of sensitive superficial geology receptors, such as peatland and GWDEs, effects on ground conditions will be scoped out of the PEIR.



Table 13.7 Water Resources Scoping Summary

Hydrological Topic	Construction	Operation	Decommissioning	Surveys
Surface Water and Quality Quantity	Scoped In	Scoped In	Scoped In	Site walkover to ground-truth receptors
Groundwater and Quality Quantity	Scoped In	Scoped In	Scoped In	Desk study to confirm levels
Ground Conditions	Scoped Out	Scoped Out	Scoped Out	Desk study to confirm baseline con
Flood Risk: Fluvial Pluvial Groundwater	Scoped In	Scoped In	Scoped In	Desk study and data provided by EA
Flood Risk: Tidal	Scoped Out	Scoped Out	Scoped Out	N/A
Drainage	Scoped In	Scoped In	Scoped In	Infiltration testing and full design of SuDS network

13.8 Consultation

13.8.1 An initial meeting was held with the Lead Local Flood Authority (Norfolk County Council (NCC)) on 24th September 2024 to discuss the Scheme and the proposed approach to assessment.

13.8.2 Prior to the PEIR, the Applicant will consult the following organisations:

- The Lead Local Flood Authority (NCC) to discuss the proposed drainage measures to manage surface water flows using Sustainable Drainage Systems (SuDS) and Rural Sustainable Drainage Systems (RSuDS) techniques
- Anglian Water - to request details of assets and groundwater abstraction within the Study Area
- The EA - to request data on licenced abstractions Public Water Supply (PuWS)



- Breckland Council and the Borough Council of King's Lynn & West Norfolk to request details on Private Water Supplies (PWS); and
- The High Grove Solar DCO Project Team – to ensure a coherent approach to development designs and in-combination effects.



14 Climate Change

14.1 Introduction

- 14.1.1 This chapter sets out the scope and methodology for the assessment of likely significant effects arising from the Scheme on climate change during construction, operation and decommissioning.
- 14.1.2 In accordance with the requirements of the EIA Regulations **[Ref 14-1]** and Institute of Environmental Management (IEMA) Guidance for assessing climate mitigation and adaptation **[Ref 14-2]**, this chapter of the Scoping Report considers effects arising as a result of the Scheme, including prior to and post mitigation, in relation to:
- Greenhouse Gas Emissions (GHG)
 - In-combination Climate Change Impact (ICCI) Assessment; and
 - Climate Change Resilience.
- 14.1.3 The assessment will use professional judgment to calculate proposed GHG emissions from products and activities associated with the Scheme. However, due to the assessment being completed at the early design stages, it is likely that some assumptions will have to be made around, for example, transport of materials, exact product types to be used etc.
- 14.1.4 Climate change projections are subject to uncertainties due to the complexity of the climate system and uncertainty over future greenhouse gas emission levels, and modelling uncertainties used to develop the Met Office's predictions.
- 14.1.5 To address these uncertainties, the UK Climate Projections 2018 (UKCP18) **[Ref 14-3]** provides a range of likely climate changes to give a lower and upper estimate. This allows for provision of a greater level of confidence for the magnitude and impact of climate change effects.

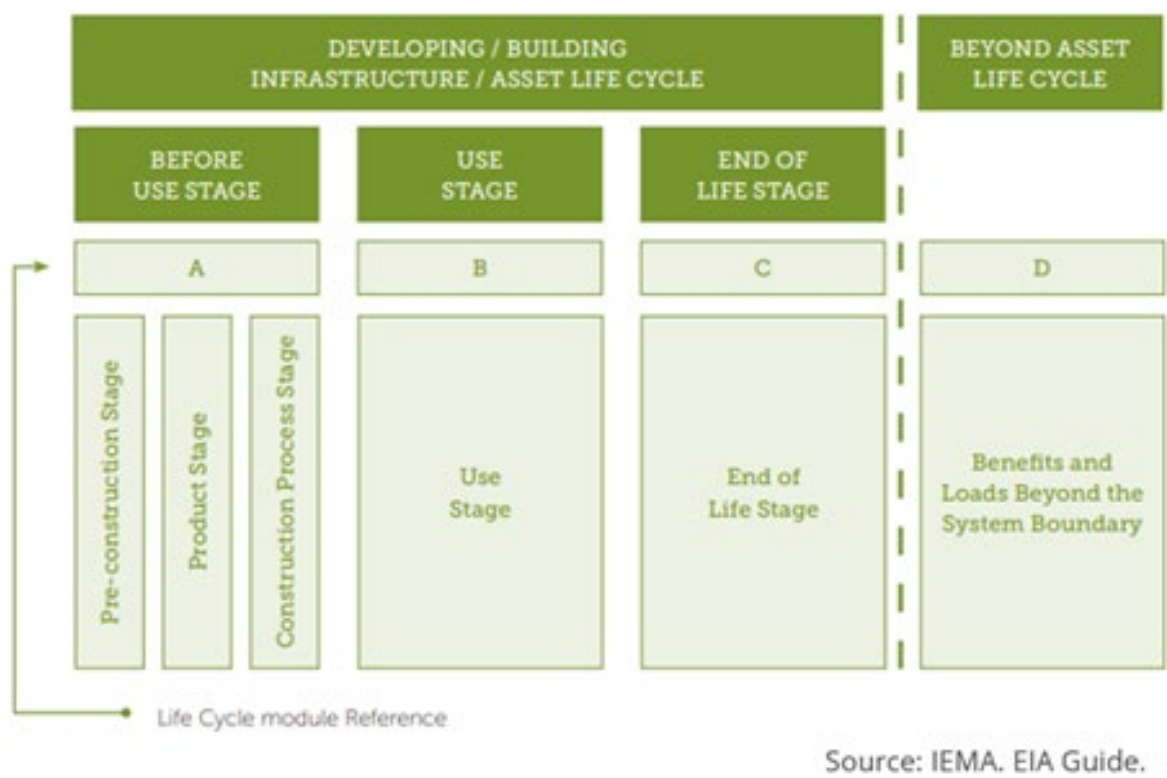
14.2 Study Area

Lifecycle Greenhouse Gas (GHG) Impact Assessment

- 14.2.1 According to the latest IEMA guidance, the Study Area for the assessment of GHG emissions is considered to be the global climate.
- 14.2.2 The preliminary GHG Impact Assessment is based on the Scheme lifecycle stages **[Ref 14-19]** shown in **Image 14.1**. The considered stages include: the before use stage (A), hereafter referred to as the 'Construction Phase', the use stage (B), referred to as the 'Operation and Maintenance Phase', and end of life stage (C), referred to as the 'Decommissioning Phase'. Both direct emissions from activities within the Scheme, as well as indirect emissions from activities outside the Scheme, for example, embodied carbon within construction materials and emissions arising during transportation of materials and personnel to the Scheme, have been considered in the assessment.
- 14.2.3 The Operational Phase of the Scheme is projected to span 60 years.



Image 14.1 Modular approach of life cycle stages and modules



In-combination Climate Change Impact Assessment

- 14.2.4 The Study Area for the In-combination Climate Change Impact (ICCI) Assessment is those receptors that are within the surrounding environment that will be impacted by the Scheme in combination with future climatic conditions. This is primarily concerned with the effect of Climate Change on the Scheme itself. Baseline Conditions for the ICCI Assessment will be determined using the climate change projections data.
- 14.2.5 Historical climate data for the 25km² grid covering the Site has been obtained from the UKCP18 data available from the Centre of Environmental Data Analysis (CEDA) Archive from the dataset “HadUK-Grid Gridded Climate Observations on a 25km grid over the UK for 1862-2018” [Ref 14-5]. **Table 14.1** presents a summary of the observed climate in the Study Area.

Table 14.1 Historical Climate Data for the 25km Grid Covering the Proposed Scheme

Parameter	Long term average (1991 –2020)
Duration of sun in a year (hours)	1,543
Days of snow-lying (days)	7.8
Mean windspeed at 10m above ground (knots)	5.1
Rainfall in a year (mm)	715



Parameter	Long term average (1991 –2020)
Mean vapour pressure (hPa)	10.4
Mean sea level pressure (hPa)	1014
Mean relative humidity (%)	81.4
Days of ground frost (days)	98.2
Mean air temperature (°C)	10.3

14.2.6 Separate to the historic data used to gain the above data, a review of future predicted climate was completed. This uses the UKCP18 [Ref 14-3] database (in 12km² grid square format) where the Site is located. The results are based on nearby postcode of PE32 2AD. The climate data indicates that, on average across the Site, with the potential effects of climate change, the Study Area could experience the:

- hottest summer day temperature of around 37.7°C if global warming increases by 2°C. If global temperatures rise by 4°C it could increase to around 40.7°C. The hottest summer day of the last 30 years has been 35.8°C
- warmest winter day temperature of around 18.9°C if global warming increases by 2°C. If global temperatures rise by 4°C it could increase to around 20.2°C. The warmest winter day of the last 30 years has been 18.7°C
- wettest summer day of 75mm of rainfall if global warming increases by 2°C. If global temperatures rise by 4°C it could increase to 74mm of rainfall. The wettest summer day of the last 30 years has been 69mm of rainfall; and
- wettest winter day of 35mm of rainfall if global warming increases by 2°C. If global temperatures rise by 4°C it could increase to 39mm of rainfall. The wettest winter day of the last 30 years has been 29mm of rainfall.

14.2.7 This data shows that it is expected that there will be more extreme rainfall events and extreme temperature events (heatwaves) during the summer months.

Climate Change Resilience

- The potential impacts of climate change that the Scheme must be resilient to are:
- increased average temperatures and incidence of heatwaves
- increased frequency of heavy precipitation events
- increased risk of flooding in respect of sea level rises; and
- increase in strong wind events.

14.2.8 These are relevant factors for consideration, together with particular consideration of future climate change conditions data from the UKCP18. Some of these matters, such as flood risk, will be considered in detail in other technical topics within the ES.



- 14.2.9 Specifically, the effect of Climate Change on flood risk at the development will be included within the Flood Risk modelling and the conclusions of this assessment will be summarised within the Climate Change Chapter.

14.3 Baseline Conditions

Existing Baseline

- 14.3.1 The land within the Site is predominately in agricultural use, being utilised in part for livestock farming and in part for arable crop production across a series of agricultural fields bounded by grassland margins, hedgerows, tree belts and tracks. The baseline agricultural GHG emissions are dependent on the soil and vegetation types present, and the fuel used for the operation of any plant and machinery on the Site.
- 14.3.2 The Scheme is expected to provide a substantial source of renewable electricity for the country with a gross electrical capacity of over 50 megawatts which would allow the generation, storage and export of electricity.
- 14.3.3 While it is expected there will be some baseline emissions from the management of the Site's current use, as a conservative approach, it will be assumed within the assessment that there are no emissions from the current use of the Site.
- 14.3.4 The assessment will establish the baseline which will consider the factors above and will then consider the GHG emissions over the Scheme's lifetime.
- 14.3.5 Consideration will be given to the wider impacts of the Scheme including in the context of the carbon budget targets developed for the United Kingdom, and the Scheme's overall contribution to greenhouse gas emissions, potential emissions reductions, and resilience.

Future Baseline

- 14.3.6 The Scheme is expected to provide a substantial source of renewable electricity for the country. Compared to the emissions generated from the current grid as a UK average, the Scheme is anticipated to result in the generation of fewer GHG emissions. This will be assessed by the comparison of emissions of Carbon Dioxide and equivalent gases (CO₂e) from existing UK average grid emissions forecast and the carbon intensity of the Scheme. The development of carbon capture projects to reduce emissions from existing plant and available baseline information were considered to the extent possible.
- 14.3.7 The assessment will establish the baseline which will consider the factors above and will then consider the GHG emissions over the Scheme's lifetime.
- 14.3.8 Consideration will be given to the wider impacts of the Scheme including in the context of the carbon budget targets developed for the UK, and the Scheme's overall contribution to climate change.
- 14.3.9 In the absence of the Scheme, it is considered there will be no change to the future baseline for climate change. The baseline details (including the energy generated by fossil fuels) are not anticipated to change in the absence of the Scheme.

14.4 Assessment Methodology

- 14.4.1 It is anticipated that the assessment will include three aspects of Climate Change Assessment:



- Lifecycle GHG Impact Assessment: the impact of the Scheme by considering all GHG emissions associated with its entire lifecycle
- ICCI Assessment: considering combined effects of the Scheme contributing to climate change, their interactions and cumulative impact on the environment; and
- Climate Change Resilience: the resilience of the Scheme to climate change impacts.

Lifecycle GHG Impact Assessment

- 14.4.2 The assessment will establish the baseline scenario and the GHG emissions over the assessed Scheme lifetime. The assessment will consider the construction phase emissions over the construction phase, the operational phase which is anticipated to be 60 years, and decommissioning. Detail on the anticipated construction programme and start of operation will be provided in the PEIR from the basis of technical assessments.
- 14.4.3 For the baseline scenario, the GHG emissions from the land use, current methods of generating power (emissions savings due to the Scheme), and available baseline information will be considered to the extent possible. As a conservative assessment, the assumption will be that there are zero emissions from the current land use. For the Scheme operation, direct GHG emissions arising from activities involved during construction, operation (inclusive of replacement of PV Panels and batteries) and decommissioning will be considered. The assessment will be inclusive of embedded GHG in the construction materials, and emissions from transport of materials, waste and workers will be considered.
- 14.4.4 The assessment will include consideration of activities that might be prevented or changed due to the Scheme, such as existing power production methods. The assessment will also consider the emissions avoided as a result of the Scheme, for example, the reduction in the use of non-renewable sources of energy .
- 14.4.5 With reference to the GHG Kyoto Protocol guidelines [**Ref 14-8**], the following GHG emissions will be considered within the assessment over the Scheme's lifecycle:
- Carbon dioxide (CO₂)
 - Methane (CH₄)
 - Nitrous oxide (N₂O)
 - Sulphur hexafluoride (SF₆)
 - Hydrofluorocarbons (HFCs)
 - Perfluorocarbons (PFCs); and
 - Nitrogen trifluoride (NF₃).
- 14.4.6 GHG emissions created over the Scheme's lifecycle will be calculated using an appropriate assessment method which is aligned with the GHG protocol.
- 14.4.7 It is anticipated that the below potential sources of GHG emissions in **Table 14.2** will be scoped in as part of each stage of the development:



Table 14.2 Possible Sources of GHG Emissions

Life Cycle Stage	Activity	Primary Emission Sources
Construction Stage	The extraction of raw materials and manufacturing of products necessary to make equipment. This stage is anticipated to contribute significantly to GHG emissions, due to the materials that contain high levels of embodied carbon, complex manufacturing processes and equipment design	GHG emissions that are embodied within the equipment.
	Construction materials that are transported and not integrated in embodied GHG emission. Equipment required is likely to require shipment due to overseas origin.	Transportation of materials to the sites and the amount of fuel consumed.
	Construction workers that would need transportation to the site.	Transportation of workers to the sites and resulting GHG emissions.
	Construction activity on-site.	Energy consumption on-site. Commuting construction workers.
	Waste produced during the construction process that needs to be disposed.	GHG emissions produced from the transportation and removal of waste materials
	Water use	Treatment of wastewater and supply of potable water
Operation Stage	Scheme operation	Emissions from routine maintenance are expected to be negligible. However, the periodic replacement of
	Scheme maintenance	



Life Cycle Stage	Activity	Primary Emission Sources
	Replacement materials (i.e. batteries and replacement panels)	<p>components has the potential to have significant impacts given the embedded emissions associated with the production and transport of the equipment involved. The components of the Scheme are anticipated to have the following approximate lifespans:</p> <p>PV Panels – 25 to 40 years</p> <p>Batteries – 15 to 20 years</p>
	Water use on-site for fire suppression and cleaning panels	
Decommissioning Stage	Decommissioning activity occurring on-site	Energy consumption of on-site vehicles and generators.
	Removal and transportation of any waste materials	GHG emissions generated from the transportation and disposal of waste materials. This has the potential to be significant given the complexity of the design of the equipment, and the use of materials with high associated waste treatment emissions.
	Workers that would need to be transported to the site	Transportation of workers to site and resulting GHG emissions

- 14.4.8 As noted, it is down to the practitioner’s professional judgement on how best to contextualise a project’s GHG impact. In GHG accounting, IEMA guidance [Ref 14-20] recommends contextualising emissions against pre-determined carbon budgets. The UK has a defined national carbon budget and budgets set by industry bodies which have been determined as being compatible with net zero and international climate commitments. For this Scheme, the most appropriate sector carbon budget is for the electricity supply sector. Currently, indicative carbon budgets are available for the electricity supply sector [Ref 14-17]. The electricity supply sectoral carbon budgets are in place to track sector’s pathway to being carbon neutral by 2050. Progress against these budgets is reviewed annually and future budgets are set 12 years in advance. **Table 14.3** sets out the relevant UK carbon budgets and identifies the phases of the Scheme and how they are expected to correspond to the dates of carbon budgets.



Table 14.3 Relevant UK Carbon Budgets

Carbon Budget	Total budget (MtCO ₂ e)	Sectoral Carbon Budget year	Annual Electricity Supply Sectoral Carbon budget (MtCO ₂ e)	Anticipated Phase of Scheme
4th (2023 – 2027)	1,950	2023	44.01	N/A
		2024	44.44	Pre-Application
		2025	41.65	Pre-Application
		2026	32.36	Examination
		2027	26.70	Pre-Construction
5th (2028 – 2032)	1,725	2028	23.75	Pre-Construction
		2029	22.40	
		2030	18.55	
		2031	15.77	Construction Phase (anticipated to commence Q3)
		2032	12.09	Construction Phase
6th (2033 – 2037)	965	2033	9.86	Construction Phase up to Q4 when scheme is anticipated to become Operational
		2034	8.00	Operational Phase
		2035	6.20	Operational Phase
		2036	6.01	Operational Phase
		2037	5.67	Operational Phase



- 14.4.9 To assess the impact of GHG emissions from the Scheme, the carbon budgets for the electricity supply sector will be used as a proxy for the climate. To provide further perspective, emissions from the Scheme have also been considered in the context of the UK carbon budgets. The UK carbon budgets are in place to restrict the amount of GHG emissions the UK can legally emit in a five-year period.
- 14.4.10 A qualitative approach will be taken for assessing the significance of GHG emissions arising as a result of the Scheme for the years beyond 2037. A quantitative approach is not possible beyond 2037 as although the carbon budgets are set to decrease over time, there will still be permitted GHG emissions beyond 2050, but with offsetting measures in place to ensure net emissions are zero. The rate at which they will decrease is not known, so it is not possible to predict the quantity of emissions permitted within the carbon budgets beyond 2037.

In-combination Climate Change Impact Assessment

- 14.4.11 An ICCI Assessment identifies how identified receptors in the surrounding environment are affected by the Scheme in combination with future climate change conditions. Climate change impacts relevant to the Scheme will be assessed through the other relevant topics of the ES. For example, how an increase in rainfall may lead to a higher risk of flooding, will be covered in the Hydrology, Flood Risk and Drainage Chapter. These in-combination effects will be summarised within the Climate Change Chapter.
- 14.4.12 The factors in **Table 14.4** will be considered in the ICCI Assessment.

Table 14.4 Climate Change Factors for ICCI Assessment

Factor	Scoped In/Out	Justification
Temperature change	In	The anticipated increase in temperature will be summarised within the locality, and any impacts from the Scheme discussed within the Climate Change Chapter with regards to the effect of localised heat island effects
Precipitation change	In	This will be considered in the Hydrology, Flood Risk and Drainage Chapter and summarised within the climate change assessment
Extreme weather conditions (wind)	In	The anticipated increase in extreme wind/hailstorm and other events within the locality will be summarised and any impacts on the Scheme discussed within the Climate Change Chapter
Sea level rise	Out	The Scheme is not located in an area that is susceptible to sea level rise



Climate Change Resilience Assessment

14.4.13 A Climate Change Resilience Assessment will be undertaken to inform the ES. The assessment will consider future climate conditions and the impact this will have on the Scheme. The following factors will be included in the assessment of the Scheme's resilience to climate change:

- increased average temperatures and incidence of heatwaves
- increased frequency of heavy precipitation events; and
- increased in strong wind events.

14.4.14 The Climate Change Chapter will describe how the Scheme has been designed to be as resilient as is reasonably practicable to future climate change. As with the ICCI Assessment, **Table 14.5** below factors have been scoped in or out of the Climate Change Resilience Assessment.

Table 14.5 Climate Change Factors for Climate Change Resilience Assessment

Factor	Scoped In/Out	Justification
Temperature change	In	Assessed as part of the design process for any potential for heat to damage materials
Precipitation change	In	Assessed as part of the design process with reference to Hydrology, Flood Risk and Drainage Chapters
Extreme weather conditions (wind)	In	Assessed as part of the design process to protect the Scheme from extreme winds
Sea level rise	Out	The Scheme is not located in an area that is susceptible to sea level rise.

14.5 Overview of Legislation, Policy and Guidance

14.5.1 The assessment will include reference to the following:

- Paris Agreement, United Nations Framework Convention on Climate Change (UNFCCC), 2015. **[Ref 14-6]**
- United Nations Framework Convention on Climate Change **[Ref 14-7]**
- United Nations Kyoto Protocol **[Ref 14-8]**
- National Policy Statements for Energy (November 2023):
- Overarching National Policy Statement for energy (EN-1) **[Ref 14-11]**
- National Policy Statement for renewable energy infrastructure (EN-3) **[Ref 14-12]**
- National Policy Statement for electricity networks infrastructure (EN-5) **[Ref 14-13]**
- National Planning Policy Framework (NPPF) **[Ref 14-14]**



- Planning Policy Guidance (PPG) [Ref 14-15]
- Climate Change Act 2008; inclusive of Climate Change Act 2008 (2050 target amendment) Order 2019 [Ref 14-16]
- Carbon Budgets Order 2021 and previous iterations thereof [Ref 14-17]
- Climate Change Adaptation Practitioner Guidance, IEMA, 2022 [Ref 14-2]
- Environmental Impact Assessment Guide to: Climate Change Resilience & Adaptation, Institute of Environmental Management (IEMA), 2020 [Ref 14-18]
- Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance, IEMA, 2022 [Ref 14-19]
- Carbon Management in Infrastructure and Built Environment (PAS 2080) British Standards Institution [Ref 14-20]
- Corporate Accounting and Reporting Standard; The Greenhouse Gas Protocol, 2004 [Ref 14-21]
- Whole Life Carbon Assessment for the Built Environment (RICS, 2023) [Ref 14-22]
- Norfolk Climate Change Partnership Annual Report 2023 [Ref 14-23]
- Norfolk County Council Climate Strategy, May 2023 [Ref 14-24]; and
- Norfolk County Council Environmental Policy 2018. [Ref 14-25].

14.6 Overview of Assessment of Significance

Lifecycle GHG Impact Assessment

- 14.6.1 The receptor for the GHG assessment is the global climate. This will be defined as ‘high’ sensitivity as any additional GHG impacts could compromise the UK’s ability to reduce its GHG emissions and therefore meet its future 5-year carbon budgets and Net Zero by 2050 target. The extreme importance of limiting global warming to below 2°C this century is broadly asserted by the International Paris Agreement, the United Nations Climate Change Conferences (COP27) and the climate science community.
- 14.6.2 Standard GHG accounting and reporting practices have been followed to assess the effect of the Scheme. The IEMA guidance states that *“it is up to the GHG practitioner’s professional judgement to decide which tool is most appropriate for the project at hand with regard to assessing the magnitude of GHG impacts”*. The GHG accounting method is deemed most appropriate for this part of the assessment.
- 14.6.3 IEMA guidance [Ref 14-19] states that there are currently no agreed methods to evaluate thresholds of GHG significance, that the application of the standard EIA significance criteria is not considered to be appropriate for climate change mitigation assessments, and that professional judgement is required to contextualise a project’s GHG emission impacts.
- 14.6.4 The guidance explains that *“the crux of significance therefore is not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050.”*



- 14.6.5 **Table 14.6** presents the different significance levels as per the latest version of IEMA guidance. The guidance emphasises that *“a project that follows a ‘business-as-usual’ or ‘do minimum’ approach and is not compatible with the UK’s net zero trajectory, or accepted aligned practice or area-based transition targets, results in a significant adverse effect. It is down to the practitioner to differentiate between the ‘level’ of significant adverse effects e.g. ‘moderate’ or ‘major’ adverse effects.”*

Table 14.6 Significance Levels as per IEMA Guidance

Significance Level	Definition	Significant
Major adverse	The project’s GHG impacts are not mitigated or are only compliant with do-minimum standards set through regulation, and do not provide further reductions required by existing local and national policy for projects of this type. A project with major adverse effects is locking in emissions and does not make a meaningful contribution to the UK’s trajectory towards net zero.	Yes
Moderate adverse	The project’s GHG impacts are partially mitigated and may partially meet the applicable existing and emerging policy requirements but would not fully contribute to decarbonisation in line with local and national policy goals for projects of this type. A project with moderate adverse effects falls short of fully contributing to the UK’s trajectory towards net zero.	Yes
Minor adverse	The project’s GHG impacts would be fully consistent with applicable existing and emerging policy requirements and good practice design standards for projects of this type. A project with minor adverse effects is fully in line with measures necessary to achieve the UK’s trajectory towards net zero.	No
Negligible	The project’s GHG impacts would be reduced through measures that go well beyond existing and emerging policy and design standards for projects of this type, such that radical decarbonisation or net zero is achieved well before 2050. A project with negligible effects provides GHG performance that is well ‘ahead of the curve’ for the trajectory towards net zero and has minimal residual emissions.	No
Beneficial	The project’s net GHG impacts are below zero and it causes a reduction in atmospheric GHG concentration, whether directly or indirectly, compared to the without-project baseline. A project with beneficial effects substantially exceeds net zero requirements with a positive climate impact.	Yes



14.7 Potential Effects

- 14.7.1 The Scheme will generate GHG emissions through the Construction Phase, Operational Phase, and Decommissioning Phase.

Construction Phase

- 14.7.2 The likely significant effect of the Scheme is the release of GHG emissions over the Construction Phase whilst the Scheme is being built and with associated embodied carbon in products used. Therefore, Construction Phase emissions are scoped in for assessment.

Operational Phase

- 14.7.3 Once operational, there would be GHG emissions associated with the Scheme associated with vehicles visiting the Site to maintain and replace Scheme equipment and embodied carbon associated with replacement products as well as some emission from regular routine maintenance.
- 14.7.4 The Operational Phase of the Scheme is anticipated to have a positive impact upon climate change. However, the IEMA definition of a beneficial impact is where *“the project’s net GHG impacts are below zero and it causes a reduction in atmospheric GHG concentration, whether directly or indirectly, compared to the without-project baseline. A project with beneficial effects substantially exceeds net zero requirements with a positive climate impact.”* Since solar panels will only ever contribute towards net zero requirements during their operation without exceeding these (i.e. sequestering carbon) then under this definition the Scheme would be assessed as having a negligible impact rather than a beneficial one.
- 14.7.5 GHG emissions will be created over the lifetime of the Scheme (from production to decommissioning) and therefore are scoped in. Any amount of GHG emissions produced will result in impacts to both the local microclimate and global climate. To comply with the UK’s carbon budgets, it is necessary to scope GHG emissions in, as this is important for reaching net-zero emissions by 2050. There will be negative effects, including from construction, movement, import of materials etc. Notwithstanding, given the nature of solar farm developments, the carbon impact will be offset by the overall beneficial impacts of the Scheme. It is anticipated that effects are likely to be beneficial in this regard.
- 14.7.6 In terms of climate change resilience of the Scheme, increased average temperatures and incidence of heatwaves, increased frequency of heavy precipitation events and increase in strong wind events will need to be scoped in. The Scheme is vulnerable to extreme weather events, including heatwaves, flooding events and strong winds, as these factors have the potential to damage the Scheme and reduce its efficiency. Therefore, adaptation measures using projections from UKCP18 will be further addressed in the ES.
- 14.7.7 The ES will include a proportionate Climate Change Chapter given that it is unlikely the Scheme, in-combination with projected changes, will cause significant adverse impacts as the primary purpose of the scheme is to provide an energy source which mitigates against more highly emitting energy generation methods.
- 14.7.8 Overall, the Scheme’s contribution to climate change is likely to be a positive one.
- 14.7.9 Operational Phase emissions are scoped into the assessment.



Decommissioning Phase

- 14.7.10 There will be emissions associated with the Decommissioning Phase of the Scheme. These will be generated from transporting materials off site, appropriate recycling and disposal of products and worker transport emissions.
- 14.7.11 The likely emissions are difficult to predict due to the advances expected in technology during the life of the Scheme. However, to enable an assessment of the likely 'worst case' scenario, the assessment will assume that effects during decommissioning are no worse than those at the Construction Phase. Therefore, Decommissioning Phase emissions are scoped into assessment.

14.8 Embedded Mitigation

- 14.8.1 The way that potential environmental impacts have been or will be prevented, avoided or mitigated to reduce impacts to a minimum through design and/or management of the Scheme are scoped within this section. Proposed environmental enhancements are also described where relevant.
- 14.8.2 The following embedded mitigation measures for construction, operation and maintenance and decommissioning are anticipated to be incorporated into the Scheme design, with detailed proposals and locations to be submitted with the DCO Application.

Embedded Construction Mitigation Measures

GHG Impact

- 14.8.3 Embedded mitigation measures will be implemented to reduce the GHG impact of the Scheme. Specific embedded mitigation measures include the following and will also be included in the Outline Construction Environment Management Plan (oCEMP):

Reducing waste

- Increasing recyclability by segregating construction waste to be re-used and recycled where reasonably practicable;
- Designing, constructing and implementing the Scheme in such a way as to minimise the creation of waste and maximise the use of alternative materials with lower embodied carbon, such as locally sourced products and materials with a higher recycled content where feasible; and
- Reusing suitable infrastructure and resources already available within the Sites where possible to minimise the use of natural resources and unnecessary materials (e.g. reusing excavated soil for fill requirements);

General practices

- Adopting the Considerate Constructors Scheme (CCS) to assist in reducing pollution, including GHGs, from the Scheme by employing good industry practice measures; and
- Conducting regular planned maintenance of the construction plant and machinery to optimise efficiency.



Reducing vehicle emissions

- Encouraging the use of lower carbon modes of transport by identifying and communicating local bus connections and pedestrian and cycle access routes to/ from the Scheme to all construction staff, and providing appropriate facilities for the safe storage of cycles; and
- Switching vehicles and plant off when not in use and ensuring construction vehicles conform to current EU emissions standards.

Climate change resilience

- 14.8.4 Climate change resilience measures are embedded within the Scheme, particularly in relation to flood risk. These measures will be determined through detailed assessment but may include minimum mounting heights for any panels to be introduced in areas at risk of flooding as an example.

14.9 Issues Proposed to be Scoped In and Out

- 14.9.1 Sea Level rise has been scoped out of the assessment due to the distance of around 25km of the Scheme from the coast.

Summary of Scoping In/Out

- 14.9.2 **Table 14.7** below summarises the proposed scope of the Climate Change Assessment which lists those elements that have been scoped in and out.

Table 14.7 Summary of Climate Change Scoping

Factor	Sub-element	Scoped in/Out
GHG Emissions	Construction Phase emissions	In
	Operational and Maintenance Phase emissions	In
	Decommissioning Phase emissions	In
ICCI Assessment	Temperature change	In
	Precipitation change	In
	Extreme weather conditions (wind)	In
	Sea level rise	Out
Climate Change Resilience	Temperature change	In
	Precipitation change	In



Factor	Sub-element	Scoped in/Out
	Extreme weather conditions (wind)	In
	Sea level rise	Out

14.10 Cumulative and In-Combination Effects

- 14.10.1 The Cumulative Effects Chapter of the ES will consider the additional impacts of the Scheme that arise cumulatively with other developments and future climate conditions. Any in-combination effects identified will be considered within the Climate Change Chapter of the ES.
- 14.10.2 It should be noted that there are limitations in considering localised cumulative effects with regards to a development's effect on climate change, as any effects would generally apply at a national and international level rather than specific localised effects
- 14.10.3 The In Combination Climate Impact assessment will identify how receptors in the surrounding environment are affected by the Scheme in combination with future climate change conditions. For example, how an increase in rainfall due to climate change may lead to a higher risk of flooding, is covered in the Hydrology, Flood Risk and Drainage chapter.

14.11 Consultation

- 14.11.1 No consultation has been undertaken regarding Climate Change to date. Targeted consultation with County Council or Local Planning Authority Climate Officers may be recommended following completion of the technical assessment and/or responses from the Scoping Report.
- 14.11.2 The Applicant is actively engaging with the developer of the adjacent High Grove Solar DCO scheme proposed to the south of The Drovers. It is intended that ongoing collaboration and information sharing between the two projects will ensure that both assessments are cognisant of each other and minimise likely significant effects arising cumulatively insofar as possible.



15 Glint and Glare

15.1 Introduction

- 15.1.1 This chapter sets out the scope and methodology for the assessment of likely significant effects arising from the Scheme of glint and glare during the Construction, Operation and Decommissioning Phases.
- 15.1.2 This chapter will describe and identify the potential level of effects arising as a result of the Scheme, including mitigation through the Scheme's design process, with particular focus on risk to residential amenity, road safety, railway operations and infrastructure, and aviation safety.
- 15.1.3 'Glint' is defined as a momentary flash of bright light typically received by moving receptors or from moving reflectors, while 'Glare' is defined as a continuous source of bright light typically received by static receptors or from large reflective surfaces. The term 'solar reflections' is used to refer to both collectively.
- 15.1.4 The Glint and Glare Assessment (GGA) will form an appendix to Chapter 18 Other Environmental Matters of the ES. The extent to which glint and glare impacts are relevant to the consideration of other effects, such as landscape and visual amenity effects, will be considered in that specific chapter.

15.2 Study Area

- 15.2.1 There is no formal guidance with regard to the maximum distance at which glint and glare should be assessed. From a technical perspective, there is no maximum distance for potential reflections. 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.
- 15.2.2 A 1km Study Area (measured relative to the PV areas) for ground-based receptors (road users and dwellings) is considered appropriate for glint and glare effects on ground-based receptors based on past project experience and has become the de-facto industry standard amongst glint and glare assessment providers. Receptors within this distance have been identified based on mapping and aerial photography of the region. The following receptors have been identified within the Study Area:
- Residential dwellings
 - The A47 road
 - The A1065 road; and
 - Local roads.
- 15.2.3 Viewpoints representing PRow and bridleways have also been identified within the 1km Study Area. The GGA will consider the Viewpoint receptors at a high-level (i.e. without detailed modelling). The effect upon these receptors is considered to be at most minor adverse due to the potential effects upon safety being minor compared to road users and effects upon amenity being considered to be less than that of a dwelling, as effects upon a user will be transient as



they move along the PRoW or bridleway. Viewpoints (i.e. PRoW and bridleways) will therefore be scoped out of assessment within the ES, due to the lack of likely significant effects arising.

- 15.2.4 There is no set buffer distance within which aviation effects must be modelled. However, in practice, concerns are most often raised for developments within 10km of a licensed aerodrome. Requests for modelling at ranges of 10-20km of a licensed aerodrome are less common. Assessment of aviation effects for developments over 20km from a licensed aerodrome is a very unusual requirement and is not necessary for the Scheme. An assessment range of 5km is considered appropriate for unlicensed general aviation aerodromes based on past project experience. A 10km Study Area for licensed and 5km Study Area for unlicensed aerodromes is considered appropriate when identifying aviation receptors, as this is the typical assessment range based on previous experience; aerodromes outside of this range would only be considered for assessment upon request from the relevant aerodrome. Unlicensed aerodromes between 5km and 10km may be assessed at a high-level (i.e. without detailed modelling).
- 15.2.5 The following receptors in the surrounding area have been identified, with distances from the Site boundary noted:
- Great Friars Thornes Farm Airfield, approximately 1.4km south-west
 - RAF Marham, approximately 5.1km west
 - East Winch Airfield, approximately 7.9km north-west (to be assessed at a high-level); and
 - Great Massingham Airfield, approximately 9.2km north (to be assessed at a high-level).
- 15.2.6 It is acknowledged that Network Rail may also raise concerns where a development generates glare towards train drivers or affects railway signals; if a railway line is identified within 200m of the Scheme, then a technical assessment is undertaken for railway receptors within a 500m Study Area. This assessment area size is deemed appropriate when identifying railway receptors and infrastructure and has been previously accepted by Network Rail. No railway lines have been identified which pass through or near the Scheme and therefore railway receptors will not be assessed as part of the GGA.

15.3 Baseline Conditions

- 15.3.1 The Site location is semi-rural, surrounded by roads, dwellings, PRoW (both within and off the Site), bridleways, and local airfields. The town of Swaffham is located approximately 1km to the south of the Site. A description of the Scheme and its wider context is set out in Chapter 2 of this EIA Scoping Report.
- 15.3.2 Only the Solar PV Site is relevant for glint and glare, as PV Panels will be sited within this area. The Potential Mitigation and Enhancement Areas are not relevant for glint and glare as no PV Panels are proposed to be sited within these areas.
- 15.3.3 All surfaces inherently reflect light and therefore they have the potential to cause a solar reflection if illuminated by the sun. Common existing sources of glint and glare with the potential for a specular like reflection will include existing nearby solar farms (approximately 600m west), bodies of water, road surfaces (especially when wet), and building facades.



15.4 Assessment Methodology

Assessment Process

- 15.4.1 The GGA methodology is based on Pager Power's Glint and Glare Guidance (Fourth Edition) [Ref 15-1], which was developed in line with information provided to Pager Power through consultation with stakeholders and by reviewing the available studies, as shown in Appendix B of 'Receptor Scoping and Methodology' (**Appendix 15.1**). The methodology for a Glint and Glare Assessment is as follows:
- Identification of relevant receptors based on their type and range from the panel area
 - Technical modelling of the sun path throughout the year to calculate the times and duration of predicted glare for the proposed panel configuration
 - Evaluation of impact significance based on the criteria for the receptor type in accordance with Pager Power's guidance (the main considerations are duration, field of view and intensity but this varies per receptor type)
 - Identification of areas that require mitigation, if any; and
 - Mitigation strategy if required.
- 15.4.2 In general, light-sensitive receptors with a view of a solar development have potential to experience a solar reflection from a solar panel. However, there is no formal guidance regarding the maximum distance at which glint and glare should be assessed.
- 15.4.3 As not all the proposed PV Panels will be present simultaneously during the Construction or Decommissioning Phases, it is considered that the length and intensity of any glare will be less than or equal to the Operational Phase. The worst-case scenario for glint and glare effects is therefore the Operational Phase.
- 15.4.4 Under the Pager Power methodology, technical modelling is not recommended for local roads, where traffic densities are likely to be relatively low. Any solar reflections from the Scheme that are experienced by a road user along a local road would be considered minor adverse in the worst case in accordance with the guidance and industry best practice. Therefore, no modelling of local roads (i.e. roads with low traffic densities and typically without lane markings) will be undertaken in the ES and has been scoped out.

15.5 Overview of Legislation, Policy and Guidance

National Planning Policy

- 15.5.1 This EIA Scoping Report and accompanying 'Receptor Scoping and Methodology' (**Appendix 15.1**) has considered the National Policy Statement (NPS) for Renewable Energy Infrastructure (EN-3) (NPS EN-3) [Ref 15-2] effective as January 2024.
- 15.5.2 NPS EN-3 (para 2.10.158) states that:

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



- 15.5.3 NPS EN-3 does not state which receptors should be considered as part of a quantitative GGA. Typical receptors include residential dwellings, road users, aviation infrastructure, and railway infrastructure.

Legislation

- 15.5.4 In some instances, an aviation stakeholder can refer to the Air Navigation Order (ANO) 2016 [Ref 15-3] regarding safeguarding. Key points from the document are presented below.

“Lights liable to endanger

224. (1) A person must not exhibit in the United Kingdom any light which—

(a) by reason of its glare is liable to endanger aircraft taking off from or landing at an aerodrome; or

(b) by reason of its liability to be mistaken for an aeronautical ground light is liable to endanger aircraft.

(2) If any light which appears to the CAA to be a light described in paragraph (1) is exhibited, the CAA may direct the person who is the occupier of the place where the light is exhibited or who has charge of the light, to take such steps within a reasonable time as are specified in the direction—

(a) to extinguish or screen the light; and

(b) to prevent in the future the exhibition of any other light which may similarly endanger aircraft.

(3) The direction may be served either personally or by post, or by affixing it in some conspicuous place near to the light to which it relates.

(4) In the case of a light which is or may be visible from any waters within the area of a general lighthouse authority, the power of the CAA under this article must not be exercised except with the consent of that authority.

Lights which dazzle or distract

225. A person must not in the United Kingdom direct or shine any light at any aircraft in flight so as to dazzle or distract the pilot of the aircraft.'

The document states that no 'light', 'dazzle' or 'glare' should be produced which will create a detrimental impact upon aircraft safety.

Endangering safety of an aircraft

240. A person must not recklessly or negligently act in a manner likely to endanger an aircraft, or any person in an aircraft.

Endangering safety of any person or property

241. A person must not recklessly or negligently cause or permit an aircraft to endanger any person or property.”

- 15.5.5 The UK Civil Aviation Authority (CAA) issued interim guidance relating to Solar Photovoltaic Systems (SPV) on 17 December 2010 and was subject to a CAA information alert 2010/53. The



formal policy was cancelled on September 7th, 2012 however the advice is still applicable until a formal policy is developed. This interim guidance makes the following recommendations:

“8. It is recommended that, as part of a planning application, the SPV developer provide safety assurance documentation (including risk assessment) regarding the full potential impact of the SPV installation on aviation interests.

9. Guidance on safeguarding procedures at CAA licensed aerodromes is published within CAP 738 Safeguarding of Aerodromes and advice for unlicensed aerodromes is contained within CAP 793 Safe Operating Practices at Unlicensed Aerodromes.

10. Where proposed developments in the vicinity of aerodromes require an application for planning permission the relevant LPA normally consults aerodrome operators or NATS when aeronautical interests might be affected. This consultation procedure is a statutory obligation in the case of certain major airports, and may include military establishments and certain air traffic surveillance technical sites. These arrangements are explained in Department for Transport Circular 1/2003 and for Scotland, Scottish Government Circular 2/2003.

11. In the event of SPV developments proposed under the Electricity Act, the relevant government department should routinely consult with the CAA. There is therefore no requirement for the CAA to be separately consulted for such proposed SPV installations or developments.

12. If an installation of SPV systems is planned on-aerodrome (i.e. within its licensed boundary) then it is recommended that data on the reflectivity of the solar panel material should be included in any assessment before installation approval can be granted. Although approval for installation is the responsibility of the ALH, as part of a condition of a CAA Aerodrome Licence, the ALH is required to obtain prior consent from CAA Aerodrome Standards Department before any work is begun or approval to the developer or LPA is granted, in accordance with the procedures set out in CAP 791 Procedures for Changes to Aerodrome Infrastructure.

13. During the installation and associated construction of SPV systems there may also be a need to liaise with nearby aerodromes if cranes are to be used; CAA notification and permission is not required.

14. The CAA aims to replace this informal guidance with formal policy in due course and reserves the right to cancel, amend or alter the guidance provided in this document at its discretion upon receipt of new information.

15. Further guidance may be obtained from CAA’s Aerodrome Standards Department via aerodromes@caa.co.uk.”

Local Planning Policy

- 15.5.6 Breckland Local Plan (2023) [Ref 15-4] mentions glint and glare in relation to *“Planning considerations include the quality of agricultural land, the visual and landscape impact, the effect on landscape of glint and glare and on neighbouring uses and aircraft safety, the impact of security infrastructure such as lights and fencing and the impact on the setting of heritage assets.”*



15.6 Overview of Assessment of Significance

Assessment of Sensitivity

- 15.6.1 The nature or sensitivity of all identified environmental receptors, as well as the magnitude of impact on those receptors will be described as high, medium or low. **Table 15.1** sets this out in the context of glint and glare.

Table 15.1 Sensitivity/Importance of the Identified Receptor

Sensitivity	Definition
High	A receptor that requires exceptional isolation or screening from glint and glare of any kind
Medium	A receptor that may be affected by glare, but can experience glint and glare with limited adverse impacts
Low	A receptor that is largely unaffected by glint and glare of any kind
Negligible	A receptor that is unaffected by glint and glare of any kind

Aviation Receptors – Air Traffic Control Tower Receptors

- 15.6.2 Sensitivity and importance: air traffic control tower receptors are of 'Medium' sensitivity because air traffic control personnel experience glare from the man-made and natural environment all the time (e.g. from bodies of water and buildings with glass facades).
- 15.6.3 Magnitude of impact: The magnitude of effect upon receptors is predominantly dependent on the following factors:
- The predicted glare intensity; and
 - The direction that glare occurs from, relative to the receptor.
- 15.6.4 A 'Negligible' magnitude would occur if no glare could be experienced at the receptor.
- 15.6.5 A 'Low' magnitude would occur if the receptor could be subjected to glare which was of an intensity of 'low potential for temporary after-image' and the effects are considered to not significantly impact the operations of the airport.
- 15.6.6 A 'Medium' magnitude would occur if the receptor could be subjected to glare which was of an intensity of 'low potential for temporary after-image' and the effects are considered to significantly impact the operations of the airport or of an intensity of 'potential for temporary after-image'.
- 15.6.7 A 'High' magnitude would occur if the receptor could be subjected to glare which was of an intensity of 'potential for permanent eye damage'.



Aviation Receptors – Airborne Receptors

- 15.6.8 Sensitivity and importance: airborne aviation receptors are of 'Medium' sensitivity because pilots experience glare from the man-made and natural environment all the time (e.g. from bodies of water and buildings with glass facades).
- 15.6.9 Magnitude of impact: The magnitude of effect upon receptors is predominantly dependent on the following factors:
- Whether glare is predicted to be possible; and
 - The predicted glare intensity.
- 15.6.10 A 'Negligible' magnitude would occur if no glare could be experienced at the receptor.
- 15.6.11 A 'Low' magnitude would occur if the receptor could be subjected to glare which was of an intensity of 'low potential for temporary after-image', or 'potential for temporary after-image' and there are sufficient mitigating factors.
- 15.6.12 A 'Medium' magnitude would occur if the receptor could be subjected to glare which was of an intensity of 'potential for temporary after-image' without the presence of sufficient mitigating factors.
- 15.6.13 A 'High' magnitude would occur if the receptor could be subjected to glare which was of an intensity greater than 'potential for temporary after-image'.

Road Receptors

- 15.6.14 Sensitivity and importance: road receptors are of 'Medium' sensitivity because road users experience glare from a man-made and natural environment all the time (e.g. from bodies of water and buildings with glass facades).
- 15.6.15 Magnitude of impact: The magnitude of effect upon a person is predominantly dependent on the direction that glare originates from, relative to the receptor.
- 15.6.16 A 'Negligible' magnitude would occur if no glare could be experienced at the receptor.
- 15.6.17 A 'Low' magnitude would occur if the receptor could be subjected to glare which originates outside of a road user's primary field-of-view (50 degrees either side of the direction of travel), or inside of a road user's primary field-of-view and there are sufficient mitigating factors.
- 15.6.18 A 'Medium' magnitude would occur if the receptor could be subjected to glare which originates inside of a road user's primary field-of-view.
- 15.6.19 A 'High' magnitude would occur if the receptor could be subjected to glare which originates directly in front of a road user and there are no mitigating factors.

Dwelling Receptors

- 15.6.20 Sensitivity and importance: dwelling receptors are of 'Medium' sensitivity because people experience glare from a man-made and natural environment all the time (e.g. from bodies of water and buildings with glass facades).
- 15.6.21 Magnitude of impact: The magnitude of effect upon a person is predominantly dependent on the duration a receptor may be subjected to the glare.



- 15.6.22 A 'Negligible' magnitude would occur if no glare could be experienced at the receptor.
- 15.6.23 A 'Low' magnitude would occur if the receptor could be subjected to glare for less than three months per year and less than 60 minutes on any given day, or more than three months per year or more than 60 minutes on any given day and there are sufficient mitigating factors.
- 15.6.24 A 'Medium' magnitude would occur if the receptor could be subjected to glare for more than three months per year or more than 60 minutes on any given day and there are insufficient mitigating factors.
- 15.6.25 A 'High' magnitude would occur if the receptor could be subjected to glare for more than three months per year and more than 60 minutes on any given day and there are no mitigating factors.

Significance

- 15.6.26 The significance of an environmental effect is determined by the interaction of magnitude and sensitivity. **Table 15.2** sets out the impact significance matrix

Table 15.2 Impact Significance Matrix

	Sensitivity			
	High	Medium	Low	Negligible
High	Major	Major/Moderate	Moderate	Minor
Medium	Major/Moderate	Moderate	Moderate/Major	Minor
Low	Moderate	Moderate/Major	Minor	Negligible
Negligible	Moderate/Minor	Minor	Negligible	Negligible

- 15.6.27 Overall, the level of effect would be considered 'Significant' if the resultant significance of effect was 'moderate' or higher.

15.7 Potential effects

- 15.7.1 The Scheme has the potential to affect receptors during the Construction Phase, the Operational Phase, and the Decommissioning Phase. The likely effects during the Decommissioning Phase are assumed to be no worse than those at the Construction Phase, for the purposes of the assessment.

Mitigation and Enhancement

- 15.7.2 The impact of the Scheme can only reliably be determined via detailed geometric modelling, this will be undertaken in accordance with the methodology and guidance as stated in previous section of this chapter.
- 15.7.3 Common mitigation strategies for ground-based receptors are:



- Provision of screening (planting or opaque fence) at the Site boundary or elsewhere between the observer and reflecting panel areas
- Design of the configuration of infrastructure on-site. This may involve changes to the azimuth angle of the solar panels; and/or changes to the elevation (tilt) angle of the solar panels; and
- Changes to technology. This may involve implementing areas of Fixed South Facing PV Arrays or Single Axis Trackers (note that both options are considered under this assessment).

- 15.7.4 The most common mitigation solution for ground-based receptors is the provision of screening at the Site boundary or within appropriate places within the Site. A screening solution that sufficiently obstructs visibility of the potentially reflecting panels will mitigate impacts.
- 15.7.5 The reflecting panels that should be obscured from view, based on the proposed configuration, will be defined within the impact assessment (if any).
- 15.7.6 For aviation receptors, where mitigation is required, the most common solution is changes to the Site configuration, for example adjustments to the positioning, technical specification, or location of solar panels. This is because screening solutions are typically unviable due to the inherent visibility of elevated receptors.

15.8 Issues Proposed to be Scoped In and Out

- 15.8.1 The following aspects are proposed to be scoped out of the Glint and Glare Assessment in the ES:
- Glint and Glare effects towards receptors outside of the relevant Study Areas
 - Local road users within the Study Area
 - Viewpoints (PRoWs and bridleways)
 - Impacts on Rail Infrastructure; and
 - All impacts associated with the Construction and Decommissioning Phases.
- 15.8.2 On this basis, it is not expected that a specific glint and glare chapter will be required in the ES and that glint and glare effects in respect of those matters to be scoped in will be covered in Chapter 18 Other Environmental Matters of the ES for receptors identified in **[Appendix 15.1]**.
- 15.8.3 A technical appendix will also be prepared which considers glint and glare impacts which will be submitted alongside the ES, to support the text to be included in Chapter 18 Other Environmental Matters of the ES. **Table 15.3** sets out the glint and glare impacts that are to be scoped in whilst **Table 15.4** sets out the glint and glare impacts that are to be scoped out.



Table 15.3 Glint and Glare Impacts Scoped In

Receptor	Justification
Dwellings within the 1km Study Area	The Scheme has the potential to have a 'Moderate Adverse' degree of significance upon dwellings if left unmitigated.
Non-Local Road Infrastructure within the 1km Study Area (Sections of the A47 and A1065 within the Study Area)	The Scheme has the potential to have a 'Moderate Adverse' degree of significance upon road users if left unmitigated.
Licensed Aviation Infrastructure within the 10km Study Area: RAF Marham	The Scheme has the potential to have a 'Moderate Adverse' degree of significance upon aviation if left unmitigated.
Licensed Aviation Infrastructure within the 5km Study Area: Great Friars Thornes Farm Airfield	The Scheme has the potential to have a 'Moderate Adverse' degree of significance upon aviation if left unmitigated.
Cumulative Assessment	The Scheme and the adjacent High Grove Solar Farm DCO have the potential for cumulative effects and has the potential to have a 'Moderate Adverse' degree of significance. The Scheme and some of the Solar PV areas for the High Grove Solar Farm will be assessed for cumulative modelling for aviation, roads, and dwelling receptors as outlined in Section 6 of the 'Receptor Scoping and Methodology' [Appendix 15.1].

Table 15.4 Glint and Glare Impacts Scoped Out

Receptor	Justification
Construction and Decommissioning Phases	As not all of the proposed panels will be present simultaneously during the construction and decommissioning phase, it is considered that the length and intensity of any glare will be less than or equal to the Operational Phase. The worst-case scenario for glint and glare effects is therefore the Operational Phase.
Rail Infrastructure	No rail infrastructure identified within the relevant Study Area (i.e. 200m of the Scheme).
Viewpoints: - PROWs	The effect upon these receptors is considered to be at most 'Minor Adverse' due to the potential effects upon



Receptor	Justification
	safety and amenity is considered to be less than that of a road user or a dwelling. PROWs will therefore be scoped out; however, will be considered at a high-level (without detailed modelling).
Viewpoints: - Bridleways	The effect upon these receptors is considered to be at most 'Minor Adverse' due to the potential effects upon safety and amenity is considered to be less than that of a road user or a dwelling. Bridleways will therefore be scoped out; however, will be considered at a high-level (without detailed modelling).
Aviation Infrastructure outside of the 5km and 10km Study Areas: East Winch Airfield and Great Massingham Airfield	The effect upon these receptors will be at most 'Minor Adverse' because the effects will be no greater than 'low potential for temporary after image' upon a pilot and/or will occur outside a pilots primary field of view (50 degrees either side of the direction). No ATC Towers are present at these airfields. East Winch Airfield and Great Massingham Airfield will therefore be scoped out; however, will be considered at a high-level (without detailed modelling).

15.9 Cumulative and In-Combination Effects

- 15.9.1 Cumulative glint and glare effects as a result of the Scheme are predicted as possible in combination with other nearby solar developments that are consented, under construction, or operational, and will therefore be considered cumulatively within the ES and assessed as relevant.
- 15.9.2 As set out in Chapter 4 of this EIA Scoping Report, a long list of other developments will be developed and agreed with Norfolk County Council and this will inform the cumulative assessment accordingly. Developments which could contribute to cumulative effects will be identified and agreed with relevant stakeholders and will also be included within the cumulative assessment.
- 15.9.3 Potential in-combination effects (i.e. glint and glare effects combined with other effects and/or from combined phases of work on the Scheme such as LVIA) will be considered and described. The glint and glare section of Chapter 18 Other Environmental Matters of the ES will assess if there is potential for in-combination effects or not. Where in-combination effects are identified, these will be assessed.

15.10 Consultation

- 15.10.1 No consultation has been undertaken to date regarding glint and glare. Targeted consultation may be recommended following completion of the technical assessment and/or upon receipt of responses from the Scoping Report.



- 15.10.2 The Applicant is actively engaging with the developer of the adjacent High Grove Solar DCO scheme proposed to the south of The Drovers Solar Farm. It is intended that ongoing collaboration and information sharing between the two projects will ensure that both assessments are cognisant of each other and minimise likely significant effects arising in combination insofar as possible.



16 Socio-Economics

16.1 Introduction

- 16.1.1 This chapter sets out the scope and methodology for the assessment of likely significant effects arising from the Scheme on socio-economics during the Construction, Operation and Decommissioning Phases.
- 16.1.2 The Study Area and baseline conditions are first established through a desktop review followed by the proposed methodology for the assessment of likely significant effects. The potential impacts are then presented, together with the potential mitigation measures that may be implemented to manage impacts, which form the basis of the identification of the effects proposed to be scoped in and out of the Environmental Statement (ES). The consultation undertaken to date and proposed further consultation is then set out.
- 16.1.3 Given the scoping exercise set out in Chapter 17: Human Health, it is proposed that relevant Human Health effects which also relate to Socio-economics (such as employment and income) will be assessed in a combined nature with Socio-economics. As such, the ES chapter will be progressed as a Socio-economics and Human Health chapter, with Human Health being scoped out as a standalone topic.

16.2 Study Area

- 16.2.1 Baseline conditions will be assessed at several geographic Study Areas. The Study Areas will be defined in detail in the chapter and could vary for individual effects, but are likely to include as a minimum:
- The Local Area surrounding the Site – likely to be a collection of wards (2022) or Lower Layer Super Output Areas (LSOAs) containing the Site¹³
 - The Local Authority Districts (LAD) (Breckland and the neighbouring Kings Lynn and West Norfolk)¹⁴
 - The ceremonial county (Norfolk)
 - The region (East of England); and
 - The nation, if required for comparative purposes (England).
- 16.2.2 The Local Area will be defined at a later stage (ahead of production of the ES chapter). It will be based on a collection of small areas (likely to be comprised of a collection of either Ward or

¹³ Lower Layer Super Output Areas (LSOAs) are small areas that comprise between 400 and 1,200 households, and usually contain between 1,000 and 3,000 residents. Wards are small electoral districts that elect one or more councillors to a local government.

¹⁴ Note: Although the site is fully within Breckland, it lies close to the boundary with King's Lynn and West Norfolk. As a result, the Local Area may include LSOAs from both Breckland and King's Lynn and West Norfolk. When assessing socio-economic effects at the local authority level, it may be appropriate to analyse data for Breckland and King's Lynn and West Norfolk separately, and in some cases, to consider a combined assessment. This approach will be outlined in the relevant sections.



LSOAs)¹⁵. This Study Area will be developed during the initial local needs assessment, which will include consultation with relevant stakeholders. This exercise will identify areas of local need through which the Scheme can benefit the Local Area and meet policy needs. It will also capture the area (and relevant receptors) that could potentially be adversely impacted by the Scheme from a socio-economic perspective. This will ensure that the Local Area is the most appropriate study area, capturing where the impact of the Scheme is likely to be felt locally, which cannot be determined at this early stage.

16.3 Baseline conditions

- 16.3.1 The Site is located within the Breckland LAD in Norfolk, close to Swaffham, a mid-sized market town, and borders the King's Lynn and West Norfolk LAD. Breckland has a population of approximately 145,000, accounting for 16% of the population of Norfolk [Ref 16-1]. The neighbouring LAD of King's Lynn and West Norfolk has a population of 156,000, representing 17% of Norfolk's population [Ref 16-2]. The population density of Breckland and King's Lynn and West Norfolk is 111 and 109 people per square kilometre respectively, which is significantly lower than the averages for the East of England (340 people per square kilometre) and England (440 people per square kilometre) [Ref 16-3]. This demonstrates the relative rurality of the Scheme's location.
- 16.3.2 In 2022, the most recent year for which data is available, the two LADs had a combined Gross Value Added (GVA) of £6.2 billion, equivalent to £53,700 of GVA per worker. This figure is lower than the regional and national averages of £59,400 and £64,700, respectively [Ref 16-4]. This shows that the two LADs face challenges with regards to productivity in the area.
- 16.3.3 There are a total of 115,500 workers across the two LADs [Ref 16-5]. The two LADs are predominantly residential, with an employment to population ratio of 0.36 [Ref 16-6]. This is significantly lower than the national average of 0.48 workers per resident. The key employment sectors in the two LADs include manufacturing (13%), health (13%), and retail (11%). The proportion of workers in manufacturing and retail are notably higher than the national averages of 7% and 8% respectively, while the percentage employment in health (13%) matches the national figure. Agriculture accounts for 6% of total employment in the two LADs, significantly above regional (2%) and national (1%) levels. This shows that the two LADs have a strong prevalence of agriculture compared to nationally.
- 16.3.4 Between 2015 and 2022, employment in the two LADs as a whole grew by 5% [Ref 16-7]. However, this hides diverging performance across the two LADs – Breckland saw a decline of 1% over this period, whilst employment in King's Lynn and West Norfolk grew by 9%. In comparison employment in the East of England and at the national level grew by 7% and 8% respectively. There was no notable drop in employment across all Study Areas, during the coronavirus pandemic, with employment continuing to rise between 2020 and 2022 for all study areas apart from Breckland which saw a 0% increase between this period.
- 16.3.5 The two LADs have an unemployment rate of 3.8%, lower than the regional East of England rate of 4.2% and the national (England) rate of 4.9%. Conversely the economic inactivity rate of the two LADs combined is 21.0%, similar to the regional and national rates of 19.4% and 21.0% respectively [Ref 16-8].
- 16.3.6 Qualification and skills levels are broadly in line with national averages. In 2023, 8% of the population in the two LADs had no qualifications, slightly higher than the regional and national

¹⁵ Lower Layer Super Output Areas (LSOAs) are small statistical subdivisions of England that comprise between 400 and 1,200 households, and usually contain between 1,000 and 3,000 residents.



rates of 5% and 6%, respectively. Similarly, the two LADs only have 29% of residents achieving the highest level of qualification, compared to 43% regionally, and 47% nationally [Ref 16-9]. This demonstrates a clear need for upskilling in the area.

- 16.3.7 Census (2021) data on households in deprivation is based on four dimensions, comprising education, employment, health and housing. Currently, 45% of households in the two LADs are not deprived in any dimension, which is below the regional and national averages of 50% and 48%, respectively [Ref 16-10]. This implies that 55% of the two LADs households are deprived in at least one dimension of deprivation.
- 16.3.8 The Index of Multiple Deprivation (IMD) (2019) disaggregates deprivation data into different domains, offering a detailed view of various aspects of deprivation [Ref 16-11]. The sub-domains are Income, Employment, Education, Skills and Training, Health and Disability, Crime, Barriers to Housing and Services, and Living Environment. The two LADs combined perform well with regard to overall deprivation, with just 4.8% of the LSOAs falling within the top 10% most deprived LSOAs nationally. However, when looking at specific domains, Education (15%), Barriers to Housing and Services (19%), and Living Environment (11%), show higher levels of deprivation in the two LADs combined, compared to other domains (% of LSOAs in the top 10% most deprived for the respective domain of deprivation).
- 16.3.9 Tourism is a significant source of economic activity in Norfolk, with visitors spending £2.4 billion across the county in 2022. It is estimated that this spending supports 68,000 jobs, equivalent to 15.9% of total employment across the county [Ref 16-12].
- 16.3.10 Whilst data on the amount of tourism expenditure in Swaffham is not available, 16.8% of the jobs in the town are in 'tourism industries' as defined by the Office for National Statistics (ONS), indicating that Swaffham has a proportionally similarly sized tourism industry to the county average [Ref 16-13]. For comparison, the regional and national averages for 'tourism industries' are 10.8% and 11.1%, respectively, highlighting the significance of tourism as a key source of employment in Norfolk. The primary tourist attractions in and around Swaffham are the Swaffham Museum and Castle Acre Priory.
- 16.3.11 In terms of Public Rights of Way (PRoW), an initial desk-based review suggests that in total there are four that either cross or sit on the perimeter of the Site providing access in all directions, and a further three within the wider landscape that connect to nearby local settlements [Ref 16-14].

16.4 Assessment Methodology

Overview

- 16.4.1 There is no specific guidance available which establishes a methodology for assessing the socio-economic effects of a solar farm. Therefore, the approach to the socio-economic assessment is based on professional judgement, previous experience and good practice. It is informed by the planning policy requirements set out within the designated National Policy Statements (NPS) and local planning policy.

Establishing the baseline

- 16.4.2 The baseline will be developed from a review of relevant planning and economic development strategies and policies, as well as a desk-based review of key socio-economic datasets covering the local area and local authority level. This will be benchmarked against several geographic Study Areas, which will be defined in detail in the chapter. The datasets will include but not be limited to the following sources:



- ONS, 2021 Census
- ONS, Annual Population Survey; and
- ONS, Business Register and Employment Survey.

16.4.3 The baseline analysis will summarise the socio-economic context of the various socio-economic Study Areas under three broad categories. Each category has a broad list of indicators. Each indicator will be reviewed during the assessment and only the most relevant and insightful indicators will be included:

- Demographics: population (resident and workplace), age, and deprivation
- Economy and labour market: employment, sectoral employment, unemployment and claimant count, labour skill levels, economic activity, land use; and
- Tourism and leisure: visitor economy, visitor accommodation, local attractions, and visitor expenditure.

16.4.4 With respect to phasing, an assessment will be undertaken to assess the impact of the Scheme on the baseline socio-economic conditions, at both (i) the Construction and Decommissioning Phases and (ii) Operational Phase. The core assessment year(s) will be confirmed within the ES and will be determined to represent a worst-case scenario from a socio-economic perspective. The core assessment year(s) refer to key points in time selected for assessing the future baseline socio-economic conditions, rather than projecting impacts far into the future (up to 60 years) which would be highly speculative and uncertain. The periods representing the most likely worst case scenario from a socio-economic perspective are at the beginning of the Construction Phase, the year of peak construction activity, and the first year of operation as a minimum. These points in time are critical as they likely present the greatest socio-economic changes due to factors such as maximum workforce numbers and early impacts on the local economy. This approach ensures that the assessment will capture the most significant potential socio-economics impacts. Where impacts will persist (for example for up to 60 years of operation) this will be clearly stated and the effects will be assessed on the basis of duration (temporary or permanent).

Receptors

16.4.5 Receptors are likely to include, but may not be limited to, current and future:

- Residents
- Workers
- Businesses; and
- Visitors.

16.5 Overview/Legislation, Policy and Guidance

National

16.5.1 Chapter 6 of the National Planning Policy Framework (NPPF) focuses on building a strong and competitive economy, stating that significant weight should be placed on the need to support economic growth and productivity, taking into account both local business needs and wider opportunities for development [Ref 16-15]. The approach should allow for each area to build on its strengths, counter any weaknesses and address the challenges of the future.



Additionally, chapter 8 emphasises the importance of promoting healthy and safe communities. It highlights the need to encourage social interaction, promote healthy lifestyles, and ensure that local facilities and services are provided to meet the needs of the community, contributing to overall well-being and social cohesion.

- 16.5.2 The assessment is informed by the planning policy requirements set out within the Overarching National Policy Statement for Energy (EN-1), which identifies the potential beneficial and adverse socio-economic impacts that should be considered as a result of energy developments [Ref 16-16]. The national policy for energy infrastructure outlines the guidance for likely scope and geographical coverage for energy infrastructure developments, including the associated likely socio-economic impacts. It states that all relevant socio-economic impacts should be considered. The policy also states that the applicant is strongly encouraged to carry out engagement with relevant local authorities early on to better understand issues and opportunities.
- 16.5.3 The National Policy Statement for renewable energy infrastructure (EN-3) and (EN-5) in conjunction with EN-1 provides the primary policy decisions by the Secretary of State on applications for nationally significant renewable energy infrastructure and electrical networks infrastructure, including solar [Ref 16-17]. Key policy from EN-3 relating to socio-economics includes that applicants should set out where there may be socio-economic benefits in retaining infrastructure after the operational life, such as retaining pathways through the site. It also states that the Secretary of State should take into the account the economic (and other benefits) of the best and most versatile agricultural land and ensure the applicant puts forward appropriate mitigation measures to minimise the impacts on soils or soil resources.
- 16.5.4 16.5.4 In addition, paragraph 2.6.2 of EN-3 states that where flexibility is sought in the consent, the likely worst-case social and economic effects of the proposed development should be assessed. Key policy from EN-5 relating to socio-economics states that though decarbonisation is a priority for the government, the development of new infrastructure must minimise costs to consumers and limit community and environmental impacts where possible.
- 16.5.5 16.5.5 In addition, the Homes & Communities Agency (HCA) Additionality Guide is used which provides a framework for estimating displacement, multiplier and leakage factors [Ref 16-18] for employment estimates.

Regional and Local Policy

- 16.5.6 Relevant regional and local strategies and policies that will be reviewed include the Breckland Local Plan (2023) and Updated Local Plan (2024)¹⁶, and King's Lynn and West Norfolk Local Plan (2011). In addition, relevant Supplementary Planning Guidance (SPG) will also be reviewed such as:
- Better Together for Norfolk. Norfolk County Council Strategy (2021-2025)
 - Breckland Skills Plan 2024
 - Breckland Corporate Plan 2024 to 2028
 - Breckland Employment Growth Study Update Report (2017)
 - Future Breckland – Thriving People and Places (2023)
 - Breckland Council Future Breckland Evidence Encyclopaedia (2022)

¹⁶ Breckland's Updated Local Plan is currently in the consultation phase and has not yet been adopted.



- King's Lynn and West Norfolk Draft Economic Vision and Strategy (2024)
- King's Lynn and West Norfolk Employment Land Review (2017)
- King's Lynn and West Norfolk Development Management Policies Plan; and
- Swaffham's Town Delivery Plan (2023).

16.6 Overview of Assessment of Significance

- 16.6.1 The approach to the assessment of the significance of effects is outlined below. There is no UK legislation or guidance for the assessment of socio-economic effects. Effects are identified from the interaction between the magnitude of impacts and the sensitivity of receptors. Specifically, the assessment of likely significant effects is based on the magnitude of the predicted change to the baseline position, as well as the sensitivity of the socio-economic receptors. It also takes into consideration any embedded mitigation that forms part of the Scheme (which is explained further below).
- 16.6.2 Embedded mitigation refers to mitigation measures integrated into the Scheme's design to avoid, reduce and, if possible, offset significant adverse effects. The presence of embedded mitigation can influence the likely significance of the effects. Additional mitigation refers to measures outside the Scheme's design, implemented to further minimise or enhance impacts.
- 16.6.3 A summary of all mitigation measures and how they will be secured, either inherently through the Scheme design, or through control documents, or requirements within the DCO, are set out in the Commitments Register, which will be kept under review as the Scheme progresses.
- 16.6.4 With respect to phasing, an assessment will be undertaken to assess the impact of the Scheme on the baseline socio-economic conditions, at both (i) the Construction and Decommissioning Phases and (ii) Operational Phase. The core assessment year(s) and their rationale will be confirmed within the ES.
- 16.6.5 The Scheme is proposed to operate for a 60-year lifespan, with the Decommissioning Phase of the Scheme then taking place. The decommissioning of the Scheme will generate further direct and indirect socio-economic effects similar to during the Construction Phase. Given the socio-economic impacts during the Construction and Decommissioning Phases of the Scheme are likely to be very similar, these phases will be assessed against the same proposed scope.

Receptor Sensitivity

- 16.6.6 The receptor sensitivity will be assessed on a case-by-case basis, using professional judgement informed by the baseline statistics and stakeholder engagement. To assist with this assessment, broad definitions of the receptor sensitivities are given in **Table 16.1**.

Table 16.1 Receptor Sensitivity Criteria

Sensitivity	Evidence for sensitivity assessment
High	High responsiveness of a receptor to changes in baseline conditions, characterised by low capacity or high scarcity of a socio-economic indicator when compared to targets or compared to other geographies. The receptor is very sensitive to most temporary or permanent changes. For example, if all



Sensitivity	Evidence for sensitivity assessment
	residents in an area were unemployed and looking for a job, then they would be highly sensitive to a change in the provision of new employment opportunities.
Medium	Moderate responsiveness of a receptor to changes in baseline conditions. For example, if slightly more residents in an area were unemployed and looking for a job compared to comparator geographies, then residents in that area would have a medium sensitivity to a change in the provision of new employment opportunities.
Low	Limited responsiveness of a receptor to changes in baseline conditions. For example, if slightly the same proportion of residents in an area were unemployed and looking for a job as in comparator geographies (and such geographies were performing well relative to historic trends), then residents in that area would have a low sensitivity to a change in the provision of new employment opportunities.

Magnitude of Impact

16.6.6 Magnitude of impacts will be determined with reference to the baseline conditions, using the criteria provided in **Table 16.2** and classified as high, medium, low, or negligible. The assessment will aim to be objective by quantifying the magnitude of impacts wherever possible. Where quantification is not possible, qualitative assessments based on professional judgement will be made and justified.

16.6.7 Impacts will be identified as either beneficial or adverse.

Table 16.2 Magnitude of Impact Criteria

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



Magnitude of Impact	Description
	be similar to the pre-development circumstances / situation.
Negligible	Very little change from baseline conditions. Change barely distinguishable, approximating to a 'no change' situation.

Significance of Effects

- 16.6.8 Socio-economic effects are a reflection of the relationship between the sensitivity of the affected receptor and the magnitude of the impact. **Table 16.3** shows how the assessment of the significance of effects has been determined.

Table 16.3 Significance Matrix

Magnitude of Impact	Description		
	High	Medium	Low
High	Major	Major	Moderate
Medium	Major	Moderate	Minor
Low	Moderate	Minor	Negligible
Negligible	Minor	Negligible	Negligible

- 16.6.9 Moderate or Major effects are generally classed as 'significant'. Minor and Negligible effects are classed as not 'significant' in EIA terms. However, this is tested with professional judgement and a conclusion will be drawn in the ES.

16.7 Potential effects

- 16.7.1 Potential socio-economic effects have been determined by considering what type of impacts the Scheme may generate during the Construction, Operation and Decommissioning Phases within the relevant socio-economic Study Areas. Consideration of potential effects has been determined through the use of past experience, professional knowledge and a review of the socio-economics scope of previous (or current) similar solar farm projects across the UK.

Construction and Decommissioning

Construction and decommissioning jobs

- 16.7.2 The Scheme will create direct, indirect and induced jobs during the Construction and Decommissioning Phases. The Scheme would likely require a large construction workforce. Whilst the number of construction workers that would be required during the Construction and Decommissioning Phases is not yet known, high level estimates can be found by analysing



similar schemes. Through this method, it is estimated that the Scheme would require between 300 and 700 workers at the peak of the Construction Phase. The indirect and induced jobs will be derived using the additionality guide leading to a higher overall impact. In an area of relatively low employment (see paragraph 16.3.3), this could result in a significant effect. The extent to which the Scheme can utilise local supply chains will be assessed. As such, these effects are scoped in.

- 16.7.3 Consideration will be given to how increased construction and decommissioning jobs could translate into human health effects.

Provision of education, skills and training

- 16.7.4 The Scheme will provide an opportunity for local residents to acquire new skills and training within the construction industry. The baseline has shown that the LADs have a low level of qualification levels and with the potential for the Scheme to provide education and training initiatives (e.g., school programmes, adult learning and apprenticeships) which are to be developed as the Scheme design progresses. As such, this effect is scoped in.

- 16.7.5 Consideration will be given to how increased levels of education, training, employment, and income could translate into human health effects.

Changes in demand for temporary workers accommodation

- 16.7.6 There are an estimated 51,900 construction workers who live in a collection of local authorities within a 60-minute drive of the Site [Ref 16-19]¹⁷. Using a worst-case scenario of 700 peak workers (see paragraph 16.7.2), the Scheme would approximately require 1.3% of this labour pool¹⁸. Therefore, the construction of Scheme is expected to draw upon only a relatively small proportion of construction workers within a commutable distance. However, it is important to note that the construction of solar farms require very specialist skillsets which may not be available from within the 60-minute travel time. As such, some workers may be expected to be sourced from further afield. Even in this worst-case scenario, it is unlikely that this will place significant pressure on local accommodation providers. For this reason, change in demand for temporary workforce accommodation is not likely to be significant and is proposed to be scoped out.

Effect on land uses

- 16.7.7 The Construction Phase of the Scheme will lead to a temporary and/or permanent loss of agricultural land. It is assumed that the Customer Substation would be removed upon decommissioning but the National Grid Substation could remain as part of the energy network. This will be investigated further as the Scheme is refined and will be outlined in the ES. A survey is being carried out to assess the Site's Agricultural Land Classification, with the findings to be presented in the PEIR and ES.
- 16.7.8 The agricultural land within the Solar PV Site represents 0.005% of the UK's utilised agricultural area. Although the Scheme will lead to a temporary and/or permanent loss of agricultural land, it is unlikely that the changes in agricultural land are sufficiently extensive to substantially constrain local food supply, or cause any human health effects to occur.

¹⁷ The LADs which are located East Cambridgeshire, Fenland, South Holland, Breckland, Broadland, King's Lynn and West Norfolk, North Norfolk, South Norfolk, Mid Suffolk, and West Suffolk

¹⁸ Note: May not sum due to rounding.



- 16.7.9 For these reasons, the socio-economic effect from impacts on the use of agricultural land is not likely to be significant and is proposed to be scoped out.

Spending associated with the workers

- 16.7.10 The construction workforce is likely to spend money in the area surrounding the Site on items such as food, drink, and travel. While this impact will be temporary, and only a proportion of workers are expected to spend money locally, it is likely to have a positive effect on the area. Given that the current annual spend on food and drink in the surrounding area is £860,000¹⁹, the additional spending during the Construction and Decommissioning Phases could bring temporary economic benefits to the local economy [Ref 16-20]. For these reasons, the effect on spending associated with the workers has the potential to be significant and is proposed to be scoped in.

Disruption to local businesses

- 16.7.11 There is not a high density of businesses in the vicinity of the Site that would be likely to experience disruption from the noise or visual impacts of the Construction and Decommissioning Phases. The largest concentration of nearby businesses is in Swaffham, which would be located at least 1km away from the Site. They are unlikely to have direct sight of the Scheme or experience any significant noise or visual impacts (see the Noise and Vibration, and Landscape and Visual Impact Assessment scoping chapters for more detail).
- 16.7.12 A potential source of disruption for local businesses is the impact that the Scheme could have on traffic congestion. Swaffham is serviced by the A47 from West to East, and the A1065 from North to South. As such, it has a high-capacity road network providing access in and out of the town. Any traffic and congestion related impacts, including noise and dust generated by the Scheme would be mitigated by measures included within the Construction Traffic Management Plan (CTMP) and the Construction Environment Management Plan (CEMP). As the road network has a strong level of capacity, and impacts from the Scheme would have mitigation, this potential effect is scoped out.

Changes in demand for health and social care

- 16.7.13 There is the potential for construction workers to become injured and so place additional demand on local health infrastructure. This additional demand would be temporary and would not be expected to be significant for two reasons. First, just 3% of construction workers are injured at work, on average, a year, and so the number of construction workers who would be injured at the Site would likely be very low [Ref 16-21]. Second, the Construction Environmental Management Plan (CEMP) will outline how the construction Site will follow best practice measures, thus minimising the risk of accidents or injury. In summary, there are likely to be very few workers who would require health and social care, and so the effect is scoped out of the assessment.

Access to open space and Public Rights of Way (PRoW)

- 16.7.14 The Scheme could impact access to open space and PRoWs during the Construction and Decommissioning Phases. An initial review suggests that there are currently three PRoW on the

¹⁹ The North Norfolk Retail and Main Town Centres Uses Study Final Report finds that Swaffham residents typically spend their money in Zone 1 and Zone 4 of this study. Please refer to this for exact details of the wards which are directly related to Zone 1 and 4.



Site. These PRoW are mostly located along access routes used by vehicles and are unlikely to be impacted during the Construction Phase, except where vehicular access is required.

- 16.7.15 The PRoWs would primarily affect residents of South Acre and Narford. However, these two parishes only contain 29 households in total, meaning the magnitude of this impact is anticipated to be small [Ref 16-22]. Therefore, it is unlikely that access to open space and PRoW would be significantly impacted during construction. As such, it is scoped out of this assessment.

Changes in crime and community safety

- 16.7.16 Norfolk Constabulary, which covers the area where the Site is located, reported 1,061 crimes between August 2023-July 2024 [Ref 16-23]. This is a rate of 62 crimes per 1,000 residents which is significantly below the regional (79 crimes per 1,000 residents) and national (85 crimes per 1,000 residents) level [Ref 16-24]. In addition, Norfolk Constabulary reported no crime on the Site itself. The Proposed Development would include security measures during the Construction and Decommissioning Phase including a ring fence and CCTV coverage. It is therefore not anticipated that there would be any significant changes to crime and community safety because of the Scheme. As such, this effect is scoped out.

Changes in commuting patterns

- 16.7.17 As discussed in paragraph 16.7.12, the area around the Site, and namely the nearby town of Swaffham, is serviced by two A roads and so has a good level of transport capacity. Furthermore, any traffic and congestion impacts created by the Scheme would be mitigated by the CTMP. It is therefore expected that there would not be any significant traffic or congestion impacts as a result of the Construction and Decommissioning Phases. Accordingly, it is not expected that the Scheme would significantly affect commuting patterns during the Construction and Decommissioning Phases. As such, this effect is scoped out.

Operation

Operational employment

- 16.7.18 The Scheme will create jobs during its operation, with direct employment on-site. While additional indirect and induced jobs in the wider economy are expected to be supported by the Scheme's economic activity, solar farms are not worker-intensive developments and are unlikely to significantly support a large number of indirect or induced jobs. Furthermore, the Scheme will also require temporary staff for periodic replacement activities of the Scheme's infrastructure such as the panels, and the BESS, however, these activities are not expected to necessitate a substantial workforce. Therefore, the number of direct and temporary operational workers are expected to be very low. As such, this effect is scoped out.

Provision of education, skills and training

- 16.7.19 The Scheme could provide education, skills, and training initiatives for the population of nearby areas. The Applicant has the intention to do so and this would be summarised in an Employment and Skills strategy. As such, this effect is therefore scoped in.
- 16.7.20 Consideration will be given to how increased provision of education, skills and training could translate into human health effects

Effect on land uses

- 16.7.21 The Operational Phase of the Scheme will lead to a change in land uses. The use of this land for solar energy would support the diversification of existing agricultural businesses by



incorporating practices, such as sheep grazing, which manages the land while maintaining some agricultural use.

- 16.7.22 The agricultural land on the Site represents 0.007% of the UK's utilised agricultural area. Although the Site will lead to a temporary and/or permanent loss of agricultural land, it is unlikely that the changes in agricultural land are sufficiently extensive to substantially constrain local food supply.
- 16.7.23 For these reasons, the effect on agricultural land is not likely to be significant and is proposed to be scoped out.

Changes to local tourism assets

- 16.7.24 As stated in paragraph 16.3.9, tourism is important to the local and county economy. With regards to tourism assets, Swaffham Museum is unlikely to be impacted by the Scheme, not being reliant on views, noise, or any other factors that the Scheme could impact. The Scheme is in close proximity to Castle Acre Priory, in which case it may negatively impact the attractiveness and offering of the attraction.
- 16.7.25 Breckland Local Plan (2023) identifies that *"it is important that tourist related development takes place in a sustainable manner in line with local and national policies in order that it does not adversely affect the Breckland environment which attracts the tourist activity. There are a wide network of footpaths, cycleways, bridleways, and public rights of way that provide excellent leisure and recreational opportunities... Tourism is a growing part of the local economy... and the challenge is to enable and manage sustainable tourism, which will safeguard the countryside, heritage and culture for future generations while providing benefits to the local economy"* [Ref 16-25]. This shows the importance of tourism to Breckland LAD.
- 16.7.26 For these reasons, the effect on changes to local tourism assets has the potential to be significant and is proposed to be scoped in.

Spending generated by workers

- 16.7.27 It is not anticipated that there would be large amounts of operational employment. Additionally, while temporary staff will be required for periodic replacement activities of the Scheme's infrastructure such as the panels, and the BESS, these activities are not expected to necessitate a substantial workforce or extend over a prolonged period of time. Therefore, it is not anticipated that there would be large amounts of worker expenditure during the Operational Phase. As such, this effect is scoped out.

Changes in crime and community safety

- 16.7.28 The Scheme would be bounded by a 2.5-metre-high perimeter fence, which would increase to 3 metres around the Conversion Units, BESS, Customer Substation and National Grid Substation. Furthermore, the Site would incorporate CCTV cameras around its perimeter, ensuring that the Site is secure and well monitored. As such, it is not anticipated that the Scheme would create any large changes to the amount of crime or the level of community safety. As such, this effect is scoped out.

Impact on local property value

- 16.7.29 There is little conclusive evidence that property value is significantly affected by the development of utility scale solar farms. The Site is not located close to any major housing developments. It is not visible from the nearest major clusters of housing in Swaffham and would remain so



throughout the lifetime of the Scheme. As such, there is no potential avenue for it to impact property value.

16.7.30 The Site could be visible to houses in South Acre or Narford, however, there are only 29 households in total across these two parishes, and so the magnitude of any such impact (were there to be one) is anticipated to be minimal [Ref 16-26].

16.7.31 Overall, the Scheme would not have a large visual impact on any substantial numbers of houses, and so would be unlikely to significantly impact property value in the area. As such, this effect is scoped out.

Access to open space and PRow

16.7.32 As discussed in the Construction Phase, there are currently only a limited number of routes on the Site. These include several walking routes, such as Fincham Drove, Petticoat Drove, and various paths throughout the Site. Most of these Public Rights of Way (PRow) are located along access routes that can also be used by vehicles, and they are unlikely to be affected during the Operational Phase, except for vehicular access. Since the photovoltaic (PV) panels will be situated in the fields, they will not obstruct access to the PRow. During the replacement activities of the Scheme's infrastructure, there may be a level of activity required to replace onsite equipment. An Operational Environmental Management Plan (OEMP) would include control measures to ensure no significant impacts would arise during the replacement activities.

16.7.33 As the Scheme progresses, the applicant will explore opportunities to improve the existing PRow on the Site, based on feedback from consultation. This will help ensure that local communities can continue to access and enjoy the local environment and its amenities. These improvements are expected to have a positive impact, although it is unlikely to be significant. Therefore, as access to the existing PRow will be maintained and no substantial impact on the area is expected, this effect is scoped out.

Impact on commuting patterns

16.7.34 It is not anticipated that the Scheme would support large amounts of employment in the Operational Phase. A small amount of service vehicles, would periodically access the Site during the replacement activities of the Scheme's infrastructure however, the impacts of these would be mitigated by measures set out in the OEMP. As such, it is unlikely that the Scheme would significantly impact commuting patterns in the areas around the Site. As such, this effect is scoped out.

16.8 Issues Proposed to be Scoped In and Out

16.8.1 The potential effects scoped in and out of the assessment are summarised in **Table 16.4** as follows:


Table 16.4 Socio-economics Scoping Summary

Effect	Construction	Operation	Decommissioning	Surveys Required
Employment	Scoped in	Scoped out	Scoped in	No
Provision of education, skills and training	Scoped in	Scoped in	Scoped in	No
Changes in demand for temporary workers accommodation	Scoped out	Scoped out	Scoped out	No
Effect on land uses	Scoped out	Scoped out	Scoped out	No
Spending associated with the workers	Scoped in	Scoped out	Scoped in	No
Disruption to local businesses	Scoped out	Scoped out	Scoped out	No
Changes in demand for health and social care	Scoped out	Scoped out	Scoped out	No
Access to open space and Public Rights of Way (PRoW)	Scoped out	Scoped out	Scoped out	No
Changes in crime and community safety	Scoped out	Scoped out	Scoped out	No
Changes in commuting patterns	Scoped out	Scoped out	Scoped out	No
Changes to local tourism assets	Scoped out	Scoped in	Scoped out	No
Impact on local property value	Scoped out	Scoped out	Scoped out	No

16.9 Cumulative Effects

- 16.9.1 A Cumulative Effect Assessment will be undertaken. This will consider the extent to which the assessment could change once the cumulative effect of other projects in the area surrounding the Scheme are considered. It is expected that construction and decommissioning jobs, and changes to local tourism assets are the effects most likely to be sensitive to change in



significance following the cumulative effects of nearby projects. For any effects which have been scoped out of the non-cumulative effect assessment, consideration will be given at a later stage, once more information has been gathered about local schemes, whether any of these effects should be scoped into the cumulative effect assessment. A key component of this decision will be consideration of whether the significance of other technical effect assessments related to socioeconomic effects (e.g., transport) change in significance, once the cumulative effect of nearby projects is considered.

- 16.9.2 The Applicant is actively engaging with the developer of the adjacent High Grove Solar DCO scheme proposed to the south of The Drovers. It is intended that ongoing collaboration and information sharing between the two projects will ensure that both assessments are cognisant of each other and minimise likely significant effects arising cumulatively insofar as possible.

16.10 Consultation

- 16.10.1 As part of preparing the local needs assessment and baseline assessment, engagement will be carried out with relevant public bodies and community facilities and groups to supplement the desk-based findings. This will include the Breckland Council development team, local education providers, local residents, and community groups. Collectively, these findings will be used to inform the evolving design of the Project ahead of the ES being prepared in support of the DCO Application.



17 Health

17.1 Introduction

- 17.1.1 This chapter sets out the scope and methodology for the assessment of likely significant effects arising from the Scheme on human health during the Construction, Operation and Decommissioning Phases.
- 17.1.2 The baseline conditions are first established through a desktop review followed by the proposed assessment methodology for the assessment of likely significant effects. The potential impacts are then presented which form the basis of the identification of the effects proposed to be scoped in and out of the ES. The consultation undertaken to date and proposed further consultation is then set out.
- 17.1.3 The scope of the assessment will consider the World Health Organisation (WHO) definition of health: *“a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity”* [Ref 17-1]. The focus of the human health assessment within the ES will be on community (i.e. human) health and wellbeing and not on occupational health and safety, in line with EIA guidance on assessing health as outlined in referenced standards and guidance in this chapter.
- 17.1.4 As is set out in this chapter, given the small number of likely significant human health effects, and their nature (i.e., often closely related to socio-economics), it is proposed that human health is scoped out as a standalone topic. Instead, likely significant health effects which relate also to socio-economics will be assessed in a combined Socio-economics and Human Health chapter. Likely significant health effects which relate to a combination of physical environment technical disciplines (such as Noise and Climate Change) will be assessed through the In-combination chapter. As such, Human Health is proposed to be scoped out as a standalone topic.
- 17.1.5 The methodological details outlined below relate to the assessment of Human Health effects. Relevant aspects of these details will be incorporated into the Socio-economics and Human Health chapter. The combined Socio-economics and Human Health chapter will also include relevant baseline health information.

17.2 Study Area

- 17.2.1 Health effects are considered at varying spatial levels according to the nature of the effect and the aspect of the Scheme that gives rise to that effect. The core Study Areas are likely to include:
- The Local Area surrounding the Site - likely to be a collection of wards (2022) or Lower Layer Super Output Areas (LSOAs) containing the Site²⁰

²⁰ Lower Layer Super Output Areas (LSOAs) are small areas that comprise between 400 and 1,200 households, and usually contain between 1,000 and 3,000 residents. Wards are small electoral districts that elect one or more councillors to a local government.



- The Local Authority Districts (LAD) (Breckland and the neighbouring Kings Lynn and West Norfolk)²¹
- The ceremonial county (Norfolk)
- The region (East of England); and
- The nation, if required for comparative purposes (England).

17.2.2 The relevant technical assessments of the EIA will inform the Study Area for specific health impacts. For example, where noise and vibration impacts are defined within a given Study Area of the Site, this same Study Area will be considered when assessing the health impacts associated with the changes in noise and vibration identified.

17.3 Baseline conditions

- 17.3.1 The populations of Breckland, and the neighbouring King's Lynn and West Norfolk perform relatively well with respect to key health indicators. Breckland has a life expectancy for men and women of 80 and 84 years respectively, marginally higher than the national averages of 79 and 83 years. Likewise, King's Lynn and West Norfolk has a life expectancy of 79 years for men and 83 years for women [Ref 17-2].
- 17.3.2 The mortality rate per 100,000 residents for Breckland and King's Lynn and West Norfolk is 326 and 341 respectively, lower than the national rate of 342 but higher than the regional average of 311 [Ref 17-3]²².
- 17.3.3 The populations of Breckland and King's Lynn and West Norfolk have a higher proportion of residents aged 65 and over with 25% and 26%, respectively, compared to the regional (19%) and national (20%) averages. Additionally, both Breckland and Kings Lynn and West Norfolk have a lower proportion of residents aged 0-24 with 25% in both LADs, compared to 29% regionally and 28% nationally [Ref 17-4]. Approximately 43% of residents in Breckland and 42% of residents in King's Lynn and West Norfolk report having 'Very good' health, which is significantly lower than the regional and national level of 48%. Conversely, the proportion of the population in Breckland and King's Lynn and West Norfolk who report having 'bad' or 'very bad' health is 4%, and 5%, respectively, which is similar to the regional and national average of 4% [Ref 17-5].
- 17.3.4 The population of Breckland performs well across a number of metrics covering mental health. It has a mean anxiety score of 3.05, lower than the national average of 3.24. Likewise, 85% of the population report having 'Good' or 'Very good' levels of life satisfaction, greater than the national average of 78% [Ref 17-6]. King's Lynn and West Norfolk faces greater challenges in this regard, having a mean anxiety score of 3.31 and just 73% of the population reporting that they have 'Good' or 'Very good' levels of life satisfaction, both of which are worse than the national average [Ref 17-7].

²¹ Note: Although the site is fully within Breckland, it lies close to the boundary with King's Lynn and West Norfolk. As a result, the Local Area may include LSOAs from both Breckland and King's Lynn and West Norfolk. When assessing health effects at the local authority level, it may be appropriate to analyse data for Breckland and King's Lynn and West Norfolk separately, and in some cases, to consider a combined assessment. This approach will be outlined in the relevant sections.

²² Directly age-standardised mortality rate for all deaths, per 100,000 population, in those aged under 75 years.



17.3.5 A report by Norfolk County Council summarises the following in relation to health in the two LADs [Ref 17-8]:

- Breckland – *“Health in Breckland is strongest among measures relating to living conditions including air pollution, household overcrowding, noise complaints and road safety. On many health issues, Breckland is similar to the national averages – like for mental health conditions, suicide rates and alcohol misuse”*; and
- King’s Lynn and West Norfolk – *“Health in King’s Lynn and West Norfolk fares better when it comes to living conditions. People’s wellbeing is better compared to the national average: happiness, life satisfaction and the number of people who think their activities in life are worthwhile are better than England as a whole. The proportion of people with physical and mental health conditions is higher than in England... people are more likely to suffer from cancer, heart conditions, and diabetes at a greater rate”*.

17.4 Assessment Methodology

Overview

17.4.1 There is no specific guidance available which establishes a methodology for assessing the health effects of a solar farm. This section therefore provides a summary of the assessment methodology including the baseline analysis, and the relevant standards and guidance that will be used.

Establishing the baseline

17.4.2 The health baseline will be informed by the Breckland Technical Health and Wellbeing Paper [Ref 17-9], the Norfolk County Council Health by Place Report [Ref 17-10], and an assortment of Office for National statistics (ONS) and NHS data sources. It will also present data on the receptor populations (including residents, workers and visitors) within relevant study areas to understand the extent to which vulnerable groups are present in each study area. In line with Health Impact Assessment (HIA) guidance, vulnerable groups include age-related groups, income-related groups, groups who suffer discrimination or other social disadvantage and geographical groups. Identified vulnerable groups will depend on the characteristics of the local population and the nature of the Scheme.

17.4.3 The ES will then present a baseline for each health determinant within the relevant Study Areas and will be established with reference to the following sources:

- A desktop review of the characteristics of the local area with information available from published database records such as the Department for Health, the NHS and the Office for National Statistics (ONS). This will also consider the health characteristics of the local authority as a whole and other information on local deprivation levels, health facilities, crime, obesity rates, and available open space; and
- Other technical pieces of work that either comprise part of the ES or are standalone documents will be prepared and submitted in support of the DCO Application. This will include ES chapters (socio-economics, transport, air quality and noise etc.) and also other deliverables (Design Approach Document, Planning Statement etc.).



Assessment approach

- 17.4.4 The assessment of health will cross-reference to the technical assessments undertaken for the other technical disciplines in the EIA, highlighting any conclusions reached which are relevant to human health. Rather than simply repeating the conclusions reached in these other disciplines however, the focus of the health assessment will be on considering the extent to which these conclusions have any effect upon the health of the local population. The thresholds for significance in these technical chapters are not always based upon population health, whereas this will be the focus of the health assessment.
- 17.4.5 To do this, it will be important to establish health pathways – these determine the relationships between the Scheme and potential health impacts on the population. Health pathways will be assessed through a literature review of a wide range of academic publications/studies that assess the determinants of health and relevant pathways. For example, the literature review will consider the relationship between air quality and health effects, and how this differs by receptor group. The literature review will be supplemented by stakeholder engagement where relevant.
- 17.4.6 With respect to phasing, an assessment will be undertaken to assess the impact of the Scheme on the baseline health conditions, at both (i) the Construction and Decommissioning Phases (C&D) and (ii) Operational (O) Phase. The core assessment year(s) will be confirmed within the ES and will be determined to represent a worst-case scenario from a health perspective. The core assessment year(s) refer to key points in time selected for estimating the future baseline health conditions, rather than projecting impacts far into the future (up to 60 years) which would be highly speculative and uncertain. The periods representing the most likely worst case scenario from a health perspective are at the beginning of the Construction Phase, the year of peak construction activity, and the first year of operation as a minimum. These points in time are critical as they likely present the highest health risks due to factors such as maximum workforce numbers and the greatest level of disruption from construction and early operational activities. This approach ensures that the assessment will capture the most significant potential health impacts. Where impacts will persist (for example for up to 60 years of operation) this will be clearly stated and the effects will be assessed on the basis of duration (temporary or permanent).
- 17.4.7 The Scheme is proposed to operate for a 60-year lifespan, with the Decommissioning Phase of the Scheme then taking place. The Decommissioning Phase of the Scheme will generate direct and indirect health effects similar or less to those anticipated at the Construction Phase. Given similar impacts are expected during the Construction and Decommissioning Phases, it will be assessed together with the Construction Phase with the same proposed scope.

Receptors

- 17.4.8 An initial list of the receptors that could experience likely significant health effects are outlined in **Table 17.1**. Receptor groups include the general population as well as vulnerable groups as detailed below. This will ensure that the assessment considers the ways in which the Scheme may affect health inequalities. The identified receptor population groups reflect the make-up of the relevant study area.
- 17.4.9 Additional receptor groups may be identified following consultation and the completion of a health baselining exercise.

**Table 17.1 Receptor Groups**

Receptor population group	Definition
General population	Existing residents
	Existing workers in the area
	Future workers onsite
Vulnerable groups	Children and young people (aged under 18)
	Older people (Aged over 65)
	Income-related groups: low-income groups, unemployed, economically inactive, people unable to work due to ill health
	People with disability and long-term illness (including mental health issues, dementia, autism and epilepsy)
	Refugee groups or those seeking asylum
	Travellers
	Single-parent families
	LGBTQ+ people
	Black and minority ethnic groups
	Religious groups
	People living in areas known to exhibit poor economic and/or health indicators
	People living in isolated or over-populated areas
	People unable to access services and facilities

17.4.10 The health assessment will also consider sensitive physical receptors - i.e. community facilities such as schools, care homes and healthcare facilities - which may contain populations particularly vulnerable to potential health effects relating to changes in their environmental conditions. It is standard practice in health assessments to understand any localised effects on sensitive physical receptors. This is because it is possible that across the relevant study area there won't be an overall significant effect on a receptor group, but there could be a localised



and specific health impact on an individual physical receptor that needs to be assessed and considered for robustness.

17.5 Overview of Legislation, Policy and Guidance

National Policy

- 17.5.1 The National Planning Policy Framework sets out the Government's planning policies for England and how these should be applied [Ref 17-11]. Chapter 8 of NPPF emphasises the importance of promoting healthy and safe communities. It highlights the need to encourage social interaction, promote healthy lifestyles, and ensure that local facilities and services are provided to meet the needs of the community, contributing to overall well-being and social cohesion.
- 17.5.2 The assessment is informed by the planning policy requirements set out within the Overarching National Policy Statement for Energy (EN-1), which identifies that energy infrastructure has the potential to impact on the health and wellbeing of the population [Ref 17-12].
- Paragraph 4.4.3 states that *“where the proposed project has an effect on humans, the ES should assess these effects for each element of the project, identifying any potential adverse health impacts, and identifying measures to avoid, reduce or compensate for these impacts as appropriate.”*
 - Paragraph 4.4.6 states that *“Opportunities should be taken to mitigate indirect impacts, by promoting local improvements to encourage health and wellbeing this includes potential impacts on vulnerable groups within society and impacts on those with protected characteristics under the Equality Act 2010, i.e. those groups which may be differentially impacted by a development compared to wider society as a whole.”*

Regional Policy

- 17.5.3 The following are key local policy documents relevant for considering the impact of development on health outcomes of the Scheme.
- 17.5.4 Breckland Council's Local Plan identifies 19 strategic objectives for all new development [Ref 17-13]. The objectives relevant to the Scheme include:
- Strategic objective 14 – *“Promote a safe and healthy environment, and high quality design minimising the impacts of development and ensuring quality of life and sense of place.”*; and
 - Strategic objective 17 – *“To improve the health and well-being of our communities by reducing health inequalities, promoting healthy living and supporting locally accessible, high quality health care.”*
- 17.5.5 Breckland's Health and Wellbeing Strategy 2023-2025 highlights the local authority's vision of transforming the way in which people access the right opportunities to improve their health and wellbeing [Ref 17-14]. Similarly, King's Lynn and West Norfolk's Health and Wellbeing Strategy 2023-2026 highlights the local authority's vision to improve the health and wellbeing of the communities of west Norfolk through effective collaborative working with partners, service providers and the communities themselves.
- 17.5.6 Norfolk and Waveney have developed an integrated care strategy and Norfolk joint health and wellbeing strategy [Ref 17-15]. One of the key aims of the strategy is to ensure that people can



live as healthy a life as possible. This means preventing avoidable illness and tackling the root causes of poor health. They are aware that the health and wellbeing of people living in some parts of Norfolk and Waveney are particularly poor and aim to change the fact how healthy you are should not depend on where you live.

Guidance

- 17.5.7 The human health assessment will be undertaken in line with the latest best practice guidance on HIA. The following standards and guidelines will inform the health assessment:
- Public Health England, 2020. Health Impact Assessment in spatial planning: a guide for local authority public health and planning teams
 - Norfolk and Waveney Integrated Care Board, 2022. Planning in health
 - Institute of Environmental Management and Assessment (IEMA) Effective Scoping of Human Health in Environmental Impact Assessment (IEMA, 2022)
 - IEMA Health in Environmental Impact Assessment - A Primer for a Proportionate Approach (IEMA, 2017)
 - International Association for Impact Assessment (IAIA), Human Health: Ensuring a high level of protection (IAIA, 2020); and
 - Mental Well-being Impact Assessment: a Toolkit (National MWIA Collaborative, 2011).

17.6 Overview of Assessment of Significance

- 17.6.1 Effects are identified from the interaction between the magnitude of impacts and the sensitivity of receptors. Specifically, the assessment of significance of effects is based on the magnitude of the predicted change to the baseline position, as well as the sensitivity of the health receptors. It also takes into consideration any embedded mitigation that forms part of the Scheme (which is explained further below).
- 17.6.2 Embedded mitigation refers to mitigation measures integrated into a scheme's design to address potential environmental impacts and reduce negative effects. These measures are designed to reduce negative effects. The assessment of potential effects within the ES will be undertaken on the basis that embedded mitigation measures are in place, as they form part of the Scheme. Additional mitigation refers to measures outside the Scheme's design, implemented to further minimise or enhance effects identified through the assessment of potential effects. The subsequent residual effects are those that remain after the additional mitigation has been accounted for in the assessment of effects. Additional mitigation are considered during the Preliminary Environmental Information Report (PEIR) and the ES stages to determine the residual effect and are not considered in this scoping chapter.

Receptor Sensitivity

- 17.6.3 The receptor sensitivity will be assessed on a case-by-case basis, using professional judgement informed by the baseline statistics and stakeholder engagement. **Table 17.2** sets out the types of criteria used to determine the sensitivity of receptors. The weight that different criteria hold will be dependent on the effect being assessed. For example, when assessing the effect of changes in air quality on health, important criteria that would be used to determine the receptor sensitivity would be baseline air quality levels, cardiovascular health, and levels of population groups vulnerable to changes in air quality (such as young people and old people).

**Table 17.2 Sensitivity Criteria**

Sensitivity	Criteria
High	High levels of deprivation (including pockets of deprivation); reliance on resources shared (between the population and the project); existing wide inequalities between the most and least healthy; a community whose outlook is predominantly anxiety or concern; people who are prevented from undertaking daily activities; dependants; people with very poor health status; and/or people with a very low capacity to adapt.
Medium	Moderate levels of deprivation; few alternatives to shared resources; existing widening inequalities between the most and least healthy; a community whose outlook is predominantly uncertainty with some concern; people who are highly limited from undertaking daily activities; people providing or requiring a lot of care; people with poor health status; and/or people with a limited capacity to adapt.
Low	Low levels of deprivation; many alternatives to shared resources; existing narrowing inequalities between the most and least healthy; a community whose outlook is predominantly ambivalence with some concern; people who are slightly limited from undertaking daily activities; people providing or requiring some care; people with fair health status; and/or people with a high capacity to adapt.

Magnitude of Impact

17.6.4 Magnitude of impacts will be determined with reference to the baseline conditions, using the criteria provided in **Table 17.3** and classified as high, medium, low, or negligible. The assessment of magnitude of impact will be undertaken based on professional judgment as there are no industry standard criteria. But, in general, the assessment of health impacts will consider factors such as the strength of the evidence base, the exposure, whether regulatory standards are met and change from the baseline position.

17.6.5 Impacts will be identified as either beneficial or adverse.

Table 17.3 Magnitude of Impact

Magnitude of Impact	Description
High	High exposure or scale; long-term duration; continuous frequency; severity predominantly related to mortality or changes in morbidity (physical or mental health) for very severe illness/ injury outcomes; majority of population affected; permanent change; substantial service quality implications.
Medium	Low exposure or medium scale; medium-term duration; frequent events; severity predominantly related to moderate changes in



Magnitude of Impact	Description
	morbidity or major change in quality-of-life; large minority of population affected; gradual reversal; small service quality implications.
Low	Very low exposure or small scale; short-term duration; occasional events; severity predominantly related to minor change in morbidity or moderate change in quality-of-life; small minority of population affected; rapid reversal; slight service quality implications.
Negligible	Negligible exposure or scale; very short-term duration; one-off frequency; severity predominantly relates to a minor change in quality-of-life; very few people affected; immediate reversal once activity complete; no service quality implication.

Significance of Effects

17.6.6 Health effects are a reflection of the relationship between the sensitivity of the affected receptor and the magnitude of the impact. **Table 17.4** shows how the assessment of the significance of effects will be determined.

Table 17.4 Significance Matrix

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

17.6.7 Moderate or Major effects are generally classed as 'significant', Minor and Negligible effects are generally classed as not 'significant' (although Minor effects may be a matter of local concern). However, this is tested with professional judgement, and a conclusion is drawn.

17.7 Potential effects

17.7.1 This assessment considers the following potential health determinants, which align with the determinants outlined in the IEMA guidance:

- Physical activity
- Risk-taking behaviour



- Diet and nutrition
- 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
- Education and training
- Employment and income
- Climate change and adaptation
- Air quality
- Water quality or availability
- Land quality
- Noise and vibration
- Radiation
- Health and social care services
- Built environment; and
- Wider societal infrastructure and resources.

17.7.2 Determinants that are likely to be relevant to the Scheme are then scoped into the health assessment. These potential health effects will be assessed during the Construction, Operation and Decommissioning Phases of the Scheme.

17.7.3 The consideration of health impacts with respect to solar farms is a relatively new and emerging area of knowledge. In broad terms, the potential adverse health effects of solar farms are typically considered to be related to harms that could arise on residential amenity, visual amenity, landscape character and the loss of land uses that the land could have been used for otherwise (such as agricultural land). From a beneficial perspective, the potential health effects of solar farms are related to positive impacts on climate change outcomes, and the impacts associated with opportunities to improve both access to public rights of ways through good design, and access to employment.

17.8 Issues Proposed to be Scoped In and Out

17.8.1 In line with IEMA guidance, this scoping exercise is proportionate. Health effects that are not likely to significantly affect population health are proposed to be scoped out, focusing only of those effects that are likely to be significant in EIA terms [**Ref 17-12**].

17.8.2 A combination of the health determinants identified in the IEMA guidance and the Public Health England HIA guidance have been reviewed and will be used to assess the impact of the Scheme on human health.



17.8.3 A review of the Public Health England HIA guidance [Ref 17-16] and IEMA guidance, shows that both guidance documents capture the same health determinants, which fall under the following six broad categories with the wider determinant health used in this scoping report in brackets:

- Lifestyles (Healthy related behaviours);
- Social and community influences on health (Social environment);
- Economic conditions affecting health (Economic environment);
- Living/environmental conditions affecting health (Bio-physical environment);
- Access and quality of services (Institutional and built environment); and
- Macro-economic, environmental and sustainability factors.

17.8.4 Table 17 5 both justifies effects which are proposed to be scoped out, as well as identifying the likely significant health effects which will be assessed in a combined Socio-economics and Human Health chapter.

Table 17.5 Potential effects, whether they are scoped in or out, and why

Health effect	Scoped in/out (Construction and Decommissioning (C&D) and Operational (O))	Justification, based on health determinants (split by phase of the Scheme)
Lifestyles (Health-related behaviours)		
Physical activity	C&D – Out O – Out	<p>The Site contains multiple PRowS which promote physical activity.</p> <p>Construction and Decommissioning</p> <p>The Scheme could impact access to open space and PRowS during the Construction and Decommissioning Phases. An initial review suggests that there are currently only four PRowS used on the Site, although we understand through engagement with local political and community organisation stakeholders that there are a number of unofficial walking routes in the local area which are not captured by Ordinance Survey's statistical data sets. Access to routes are important in promoting active lifestyles. Walking and cycling along these routes contributes to improved physical health and fitness. However, the routes primarily affect residents of South Acre and Narford, who have a combined total of 29 households, meaning the magnitude of this impact is anticipated to be small. In addition to the low number of households likely to be impacted, any such disruption would only occur for a temporary period. The Construction Phase is planned to be 24 months, and it is expected that the access constraints and disruptions to the PRow would be</p>



Health effect	Scoped in/out (Construction and Decommissioning (C&D) and Operational (O))	Justification, based on health determinants (split by phase of the Scheme)
		<p>minimal and temporary. Given the short duration of these disruptions and the low number of people likely to be impacted, the resulting magnitude of the impact is expected to be insufficient to lead to any significant effect on human health [Ref 17-17]. Therefore, this effect is not considered to lead to a significant population health effect and is proposed to be scoped out.</p> <p>Operation</p> <p>As discussed, there are currently a limited number of routes on the Site. As the Scheme progresses, the Applicant will explore opportunities to improve the existing PRowS on the Site, based on feedback from consultation. This will help ensure that local communities can continue to access and enjoy the local environment and its amenities. These improvements are expected to have a positive impact on health as it would encourage physical activity, however, it is unlikely to be significant, given the size of the population likely to be affected. Therefore, this effect is not considered to lead to a significant population health effect and is proposed to be scoped out.</p>
Risk-taking behaviour (including use of alcohol, cigarettes, non-prescribed drugs, sexual activity and other risk-related activity)	<p>C&D – Out</p> <p>O – Out</p>	<p>Construction and Decommissioning</p> <p>The number of construction workers is unlikely to be significant enough to affect the local community to an extent where the workers could significantly alter community health behaviours. The expected construction workforce will be estimated and presented in Chapter 16: Socio-economics. Healthy workforce behaviour, such as encouraging positive social interaction in the local community, initiatives to minimise community disruption and good conduct, would be encouraged through measures put in place by the Applicant and their appointed construction contractor. Therefore, this effect is not considered to lead to a significant population health effect and is proposed to be scoped out.</p> <p>Operation</p> <p>Solar farms are not worker-intensive developments. The Scheme would also require periodic temporary staff to replace the Scheme's infrastructure including</p>



Health effect	Scoped in/out (Construction and Decommissioning (C&D) and Operational (O))	Justification, based on health determinants (split by phase of the Scheme)
		the panels, and BESS, however, these activities are not expected to necessitate a substantial workforce. Overall, the direct and temporary operational workforce will comprise a very small number of staff which would be unlikely to significantly alter community health behaviours. Therefore, this effect is not considered to lead to a significant population health effect and is proposed to be scoped out.
Diet and nutrition	C&D – Out O – Out	<p>Construction, Operation and Decommissioning</p> <p>The construction, operation and decommissioning phases of the Scheme will lead to a temporary and/or permanent loss of agricultural land. This will be investigated further as the Scheme is refined. A survey will be carried out to assess the Site's Agricultural Land Classification, with the findings to be presented in Chapter 12: Soils and Agriculture. The use of this land for solar energy would support the diversification of existing agricultural businesses by incorporating practices, such as chicken and sheep grazing, which manages the land while maintaining some agricultural use. The agricultural land on the Site represents 0.007% of the UK's utilised agricultural area. Although the Site will lead to a temporary and/or permanent loss of agricultural land, it is unlikely that the changes in agricultural land are sufficiently extensive to substantially constrain local food supply, or cause any human health effects to occur.</p> <p>Therefore, this effect is not considered to lead to a significant population health effect and is proposed to be scoped out.</p>
Social and community influences on health (Social environment)		
Housing	C&D – Out O – Out	<p>Construction and Decommissioning</p> <p>As described in Chapter 16: Socio-economics, using a worst-case scenario of 700 peak workers, the Scheme would approximately require 1.3% of the construction workers who live in a collection of local authorities within a 60-minute drive of the Site. Therefore the construction of Scheme is expected to draw upon only a relatively small proportion of construction workers within a commutable distance. As a result, it is unlikely that this will place significant pressure on local accommodation</p>



Health effect	Scoped in/out (Construction and Decommissioning (C&D) and Operational (O))	Justification, based on health determinants (split by phase of the Scheme)
		<p>providers. Therefore, this effect is not considered to lead to a significant population health effect and is proposed to be scoped out.</p> <p>Operation</p> <p>It is expected that there would only be a very small number of permanent staff, and only a small number of temporary staff who would be required periodically for the replacement activities of panels, and BESS, and so they are not expected to adversely impact the availability of housing. Therefore, this effect is not considered to lead to a significant population health effect and is proposed to be scoped out.</p>
Relocation	C&D – Out O – Out	<p>Construction, Operation and Decommissioning</p> <p>The Scheme would not involve the relocation of any residents. As such, this potential effect is scoped out.</p>
Open space, leisure and play	C&D – Out O – Out	<p>Construction, Operation and Decommissioning</p> <p>There is currently no open space, leisure space, or play space on the Site. While the Site contains multiple PRoW, these are not considered relevant to leisure space for the purposes of this assessment. Therefore, this effect is not considered to lead to a significant population health effect and is proposed to be scoped out.</p>
Transport modes, access and connections	C&D – Out O – Out	<p>Construction and Decommissioning</p> <p>The peak Construction phase of the Scheme is where the greatest impact will be in terms of increased amount of traffic, including HGVs, around the Site, with the effects during decommissioning to be similar or of lesser magnitude. The area around the Site has a strong road network, with both the A47 and A1065 being adjacent or close to the Site. Chapter 9: Transport has scoped in fear and intimidation and road safety into their assessment, however, the traffic to and from the Site would be managed with mitigation measures to be outlined within the Construction Traffic Management Plan (CTMP). Given the mitigation that will be outlined in the CTMP, it is unlikely that Construction and Decommissioning Phases would impact transport modes, access and connections such that there are</p>



Health effect	Scoped in/out (Construction and Decommissioning (C&D) and Operational (O))	Justification, based on health determinants (split by phase of the Scheme)
		<p>significant health impacts. The Scheme will ensure safe access for pedestrians and cyclists and aim to reduce the risk of traffic accidents. With these mitigation measures in place, the potential for adverse health outcomes related to transport are not likely to be significant, and therefore this effect is scoped out.</p> <p>Operation</p> <p>The traffic impacts of the Operational Phase are expected to be much lower than that of the Construction and Decommissioning Phases. However, a low-level of HGV and service vehicle activity would be required periodically during the replacement activities of the Scheme's infrastructure. The impact of this activity would be managed by the Operational Environmental Management Plan (OEMP). Given the lower level of traffic and the mitigation measures in place, it is unlikely that this Phase will significantly impact transport modes, access, or connections with regards to health. The Scheme will ensure safe access for pedestrians and cyclists and aim to reduce the risk of traffic accidents, both of which are key for health. With these mitigation measures in place, the potential for adverse health outcomes related to transport is not likely to be significant, and therefore this effect is scoped out.</p>
Community safety	<p>C&D – Out</p> <p>O – Out</p>	<p>Construction and Decommissioning</p> <p>A perimeter fence will enclose the operational area of the Scheme. The fence is likely to be a 'deer fence' (wooden or metal posts with a wire mesh) and up to 2.5m in height. Palisade fencing up to 3m in height would be required around the perimeter of the Conversion Units, BESS, Customer Substation and National Grid Substation. Pole mounted internal facing closed circuit television (CCTV) systems installed at a height of up to 3m are also likely to be deployed around the perimeter of the operational areas. As such, access to and from the Site would be managed through the Construction Environment Management Plan (CEMP), and so the Site is not expected to have an impact on community safety with regards to health. Therefore, this effect is not considered to lead to a significant</p>



Health effect	Scoped in/out (Construction and Decommissioning (C&D) and Operational (O))	Justification, based on health determinants (split by phase of the Scheme)
		<p>population health effect and is proposed to be scoped out.</p> <p>Operation</p> <p>The aforementioned fencing and Site security would be maintained during the Operational Phase of the Scheme. Therefore, this effect is not considered to lead to a significant population health effect and is proposed to be scoped out.</p>
Community, identity, culture, resilience and influence	<p>C&D – Out</p> <p>O – Out</p>	<p>Construction and Decommissioning</p> <p>During the Construction Phase, the Scheme has the potential to impact community identity, culture, and resilience in several ways. Temporary changes to the visual landscape, such as construction activity and infrastructure development, could affect how residents perceive their community, particularly if the Scheme results in noise, or disruption to local spaces. However, any potential negative impacts on this would be managed by measures set out in the CEMP.</p> <p>The Construction and Decommissioning Phases would lead to an influx of construction workers in the areas surrounding the Site. This may be particularly pronounced in Swaffham, where construction workers are most likely to access shops, cafes and other services. This influx would be temporary in nature, and would unlikely extend beyond the working day. Clear communication would be open through the role of a community liaison office who will be secured in the CEMP. This will provide opportunities for the community to feedback and to help residents feel involved and maintain a sense of control over their environment. The Site would not directly impact any local community centres or meeting spaces and as such would not have an effect on health.</p> <p>Overall, the mitigation measures and regular communication would occur to ensure the community, identity, culture, resilience and influence of the local area is maintained and not affected by the Scheme and as such it is not likely to have a significant impact on health. As such, this effect is scoped out.</p> <p>Operation</p>



Health effect	Scoped in/out (Construction and Decommissioning (C&D) and Operational (O))	Justification, based on health determinants (split by phase of the Scheme)
		<p>Once operational, the Scheme has the opportunity to positively contribute to community identity, culture, and resilience. The International Renewable Energy Agency highlights that the presence of a renewable energy source within the local area may promote community pride, particularly as the project contributes to broader efforts in climate change mitigation [Ref 17-18]. This can align with the community's cultural and environmental values, reinforcing a sense of shared identity and purpose.</p> <p>The Operational Phase will also impact the visual landscape, with solar panels and related infrastructure becoming permanent fixtures in the environment. Existing hedging and green barriers around the edge of the Site will be maintained where possible, minimising the visual impact of the Scheme and construction process. Though the Scheme is expected to support only a small amount of employment during operation (outside of replacement activities), the Scheme supports local investment through employment and skills initiatives which can contribute to a positive community identity, providing long-term social and economic benefits that strengthen the community's resilience. In addition, the Scheme would not impede or replace any area or venue that is currently used by the community, and so would be unlikely to disrupt any community cultural activities.</p> <p>Overall, there would be a variety of mitigation measures and regular communication to ensure the community, identity, culture, resilience and influence of the local area is maintained and not effected by the Scheme. As such, it is not anticipated to have a significant effect, and this effect is scoped out.</p>
Social participation, interaction and support	C&D – Out O – Out	<p>Construction, Operation and Decommissioning</p> <p>The Scheme would not directly impact any local community centres or meeting spaces where social participation, interaction or support takes place. As such, this effect is scoped out.</p>
Economic conditions affecting health (Economic environment)		



Health effect	Scoped in/out (Construction and Decommissioning (C&D) and Operational (O))	Justification, based on health determinants (split by phase of the Scheme)
Education and training	C&D – In O – In	<p>Construction, Operation and Decommissioning</p> <p>The Scheme could provide educational and training opportunities over the course of the Construction, Operation and Decommissioning Phases. As outlined in Chapter 16: Socio-economics, the LADs have a low level of qualification levels and there is potential for education and training initiatives (e.g., school programmes, adult learning and apprenticeships) which are to be developed as the Scheme design progresses, there is potential that this effect could lead to a significant population health effect.</p> <p>Such health effects will be assessed as part of the “Provision of education, skills and training” effect (construction, decommissioning and operational phases) identified in Chapter 16: Socio-economics in what will be a combined Socio-economics and Human Health chapter.</p>
Employment and income	C&D – In O – Out	<p>Construction and Decommissioning</p> <p>The Scheme is expected to support a large amount of employment over the Construction and Decommissioning Phases. Employment and income is strongly linked to improved health outcomes, as they reduce financial stress and allow individuals better access to healthcare, nutritious food, and secure housing [Ref 17-19]. Additionally, stable employment can improve mental health by enhancing a sense of purpose and social well-being. Therefore, this effect has the potential to lead to a significant population health effect.</p> <p>Such health effects will be assessed as part of the “Construction and decommissioning jobs” effect (construction and decommissioning phases only) identified in Chapter 16: Socio-economics in what will be a combined Socio-economics and Human Health chapter.</p> <p>Operational</p> <p>The Scheme is expected to support only a small amount of employment during the Operational Phase (outside of replacement activities). Desk based research of similar projects suggests that the</p>



Health effect	Scoped in/out (Construction and Decommissioning (C&D) and Operational (O))	Justification, based on health determinants (split by phase of the Scheme)
		operational workforce of the Scheme would fall somewhere in the range of 10-15 workers. Therefore, this effect is not considered to lead to a significant population health effect and is proposed to be scoped out.
Living/environmental conditions affecting health (Bio-physical environment)		
Climate change and adaptation	C&D – Out O – In	<p>Construction and Decommissioning</p> <p>Carbon and climate altering pollutant emissions are not expected to be of the scale to have significant health effects during this temporary phase. Therefore, this effect is not considered to lead to a significant population health effect and is proposed to be scoped out.</p> <p>Operation</p> <p>The Scheme would provide positive climate adaptation in the form of renewable energy generation. The Scheme has the potential to impact health outcomes through climate change in a number of ways. First, the Scheme helps to create resilience to climate change impacts, as well as greater flexibility with it being part of a mixed-approach to renewable energy generation. Secondly, and at a local level, the Scheme creates opportunities for behaviours with respect to climate change to be altered, as residents and businesses learn more about renewable energy. Current research indicates that vulnerable individuals, like individuals with pre-existing health conditions, may experience varied effects due to climate change [Ref 17-20].</p> <p>Chapter 14: Climate Change will assess effects of the Scheme on changes in the climate. The potential for such changes to lead to significant human health effects, in combination with other changes in the physical environment (such as noise) will be assessed in the In-combination chapter.</p>
Air quality	C&D – Out O – Out	<p>Construction and Decommissioning</p> <p>The Scheme has the potential to have a negative impact on air quality through increased traffic during the Construction and Decommissioning Phases. Chapter 10: Air Quality concludes that a dedicated air quality</p>



Health effect	Scoped in/out (Construction and Decommissioning (C&D) and Operational (O))	Justification, based on health determinants (split by phase of the Scheme)
		<p>chapter will not be required as part of the ES, as significant air quality effects are not anticipated. Dust and particulate matter emissions produced during Construction Phase activities would be controlled thorough the implementation of an outline Construction Environmental Management Plan (oCEMP), ensuring there are no likely significant environmental effects. As such, it is not likely that the Scheme will lead to significant health impacts related to air quality. Therefore, this effect is not considered to lead to a significant population health effect and is proposed to be scoped out.</p> <p>Operation</p> <p>Traffic volumes associated with the Scheme, and thus air quality impacts, are expected to be lower in the Operational Phase than the construction and Decommissioning Phases. Any potential negative impacts on air quality would be managed by measures set out in the OEMP. In addition, Chapter 10: Air Quality concludes that a dedicated air quality chapter will not be required as part of the ES, as significant air quality effects are not anticipated. As such, it is not likely that the Scheme will lead to significant health impacts related to air quality. Therefore, this effect is not considered to lead to a significant population health effect and is proposed to be scoped out.</p>
Water quality or availability	C&D – Out O – Out	<p>Construction and Decommissioning</p> <p>The surrounding presence of agricultural land means there could be a risk of contamination agricultural and private water sources. Chapter 13: Water Resources and Ground Conditions has scoped in Groundwater Quality and Quantity, which is particularly relevant for this assessment as contamination of groundwater could pose a risk to human health. However, any potential negative impacts on water quality or availability would be managed by measures set out in the CEMP and the impact of the Scheme on water quality and availability will be analysed in Chapter 13: Water Resources and Ground Conditions. In addition, Chapter 13: Water Resources and Ground Conditions does not identify any human receptor impacts. As a result, it is unlikely that</p>



Health effect	Scoped in/out (Construction and Decommissioning (C&D) and Operational (O))	Justification, based on health determinants (split by phase of the Scheme)
		<p>there would be any significant effects and as such, this effect is scoped out.</p> <p>Operation</p> <p>The potential for contamination is anticipated to be much lower in the Operational Phase than during the Construction and Decommissioning Phases. Chapter 13: Water Resources and Ground Conditions has scoped in Groundwater Quality and Quantity, which is particularly relevant for this assessment as contamination of groundwater could pose a risk to human health. However, any potential negative impacts on water quality or availability would be managed by measures set out in the CEMP and the impact of the Scheme on water quality and availability will be analysed in Chapter 13: Water Resources and Ground Conditions. There is also the potential for the Scheme to include a surface water drainage system to manage fire water run-off in the event of a fire. In addition, Chapter 13: Water Resources and Ground Conditions does not identify any human receptor impacts. Therefore, it is unlikely to lead to any significant impact on water quality or availability. As such, this effect is scoped out.</p>
Land quality	<p>C&D – Out</p> <p>O – Out</p>	<p>Construction and Decommissioning</p> <p>It is considered unlikely that the construction phase will significantly affect the agricultural land quality or soil resource, particularly given that construction and decommissioning activities will involve limited excavation. In addition, Chapter 13: Water Resources and Ground Conditions has scoped out Ground Conditions due to the limited ground disturbance during the Construction Phase and absence of sensitive superficial geology receptors. As a result it is unlikely that there would be any significant effects and as such, this effect is scoped out.</p> <p>Operation</p> <p>It is unlikely that maintenance and routine operations during the Operational Phase would significantly impact land quality. As a result it is unlikely that there would be any significant effects and as such, this effect is scoped out.</p>



Health effect	Scoped in/out (Construction and Decommissioning (C&D) and Operational (O))	Justification, based on health determinants (split by phase of the Scheme)
Noise and vibration	C&D – Out O – Out	Construction, Operation and Decommissioning Chapter 11: Noise identifies a number of likely significant noise effects in the Construction, Operation, and Decommissioning Phases that have been scoped in to the assessment such as the noise from traffic and from the Solar PV Site, BESS, Customer Substation and National Grid Substation. The potential for such changes to lead to significant human health effects, in combination with other changes in the physical environment (such as climate change) will be assessed in the In-combination Chapter. As such, this effect is scoped out.
Radiation	C&D – Out O – Out	Construction, Operation and Decommissioning Chapter 18: Other Matters details how Electromagnetic Fields (EMF) radiation is proposed to be scoped out of the EIA as the EMF levels are predicted to be below International Commission on Non-Ionizing Radiation Protection reference levels for magnetic fields. In addition, where the Scheme has cables exceeding 132kV mitigating techniques such as minimum stand-off distances between receptors will be implemented to mitigate the risk to human health. It is therefore unlikely that EMF radiation would lead to significant effects on human health and is therefore scoped out.
Access and quality of services (Institutional and built environment)		
Health and social care services	C&D – Out O – Out	Construction and Decommissioning There is the potential for construction workers to become injured and so place additional demand on local health infrastructure. This additional demand would be temporary and would not be expected to be significant for two reasons. First, just 3% of construction workers are injured at work, on average, a year, and so the number of construction workers who would be injured at the Site would likely be very low [Ref 17-21]. Second, the CEMP will outline how the Construction phase will follow best practice measures, thus minimising the risk of accidents or injury. Therefore, it is not likely that the scheme will have a significant impact



Health effect	Scoped in/out (Construction and Decommissioning (C&D) and Operational (O))	Justification, based on health determinants (split by phase of the Scheme)
		<p>on health and social care services as such this effect is scoped out.</p> <p>Operation</p> <p>It is not anticipated that there would be large amounts of operational employment. Additionally, while temporary staff will be required for periodic replacement activities of the Scheme's infrastructure such as the panels, and the BESS, these activities are not expected to necessitate a substantial workforce or extend over a prolonged period of time. Therefore, it is unlikely that the Scheme would place significant levels of additional strain on local health infrastructure during the operational phase. As such, this effect is scoped out.</p>
Built environment	C&D – Out O – Out	<p>The built environment in the context of the Scheme refers to how the installation of solar infrastructure interacts with existing buildings, public spaces, and transport systems. It includes considerations such as how the placement of solar panels might influence community spaces, whether buffer zones are needed between solar infrastructure and residential areas, and how the Scheme contributes to sustainable resource management and energy resilience, promoting long-term health and wellbeing for the local population.</p> <p>Construction and Decommissioning</p> <p>During the Construction and Decommissioning Phases of the Scheme it is unlikely that there will be significant effects on existing features of the built environment in terms of population health given the location of the Site. In addition, there are no community facilities on-site which would be affected by the construction and decommissioning phase. The CEMP also outlines measures that will mitigate any negative effects with respect to the bio-physical environment. As such, it is not likely that the Scheme will have a significant impact and as such this effect is scoped out.</p> <p>Operation</p> <p>The Scheme would introduce new elements into the built environment. The UK has set ambitious climate change targets, aiming for net zero carbon emissions by 2050, which includes increasing solar capacity to</p>



Health effect	Scoped in/out (Construction and Decommissioning (C&D) and Operational (O))	Justification, based on health determinants (split by phase of the Scheme)
		70GW by 2035 [Ref 17-21]. The Drovers Solar Farm could generate approximately 500MW of electricity, enough to power around 115,000 homes annually. The BESS will manage surplus energy for the national grid. The Scheme is expected to have a positive land-use effect and will not impact local community spaces. Any potential air quality impacts will be mitigated through the measures outlined in the OEMP and therefore, not likely to be significant. As such, this effect is scoped out.
Macro-economic, environmental and sustainability factors		
Wider societal infrastructure and resources	C&D – Out O – Out	Construction, Operation and Decommissioning The alignment of the Scheme with government policy to secure wider societal health benefits through infrastructure, and the potential health benefits of this, will be addressed in the Planning Statement to be submitted with DCO application. In addition, the scheme benefits on employment and income will be assessed in the Chapter 16: Socio-economics in what will be a combined Socio-economics and Human Health chapter. Therefore, this effect is not considered likely to lead to a significant population health effect and is proposed to be scoped out.

17.9 Cumulative Effects

- 17.9.1 A cumulative effect assessment will also be undertaken for the ES. This will consider the extent to which the assessment could change once the cumulative effect of other projects in the area surrounding the Scheme are considered. For any effects which have been scoped out of the non-cumulative effect assessment, consideration will be given as to whether any of these effects should be scoped into the cumulative effect assessment.
- 17.9.2 The Applicant is actively engaging with the developer of the adjacent High Grove Solar DCO scheme proposed to the south of The Drovers Solar Farm. It is intended that ongoing collaboration and information sharing between the two projects will ensure that both assessments are cognisant of each other and minimise likely significant effects insofar as possible.



17.10 Consultation

- 17.10.1 As part of preparing the local needs assessment and baseline assessment, engagement will be carried out with relevant public bodies and community facilities and groups to supplement the desk-based findings. This will include the Breckland Council development team, local education providers, local residents and community groups. Collectively, these findings will be used to inform the evolving design of the Project and the assessment methodology of this assessment, ahead of the ES being prepared in support of the DCO Application.



18 Other Environmental Matters

18.1 Introduction

- 18.1.1 The purpose of the scoping stage is to identify environmental topics that may be significantly affected by the Scheme and those that can be scoped out. The following sections of this 'Other Environmental Matters' chapter of this EIA Scoping Report provide a summary of other environmental topics which are considered to not warrant individual chapters, either due to the brevity of the assessment or due to the potential for less than significant impacts associated with the Scheme.
- 18.1.2 It is considered appropriate for these topics to be addressed adequately and in a proportionate manner within the 'Other Environmental Matters' chapter of the ES associated with the Scheme. The Other Environmental Matters chapter of the ES will include a brief assessment of each of the topics covered below, supported by cross referencing to where relevant matters are addressed elsewhere in the application, ES and/or within the technical notes/assessments that will be appended to the ES, containing further information that evidences the conclusion for each topic. Where technical notes are required, this is set out in the topic sections below. The generic EIA methodology set out in Chapter 4 of this Scoping Report does not apply to the Other Environmental Matters chapter.
- 18.1.3 For clarity, those topics covered below are not scoped out of the EIA unless otherwise stated. The topics included within this chapter are:
- Electromagnetic Fields (EMF)
 - Major Accidents and Disasters (MADs)
 - Telecommunications, Utilities and Television Receptors; and
 - Waste.

18.2 Electromagnetic Fields (EMF)

Introduction

- 18.2.1 This section of the chapter considers the potential impacts that may result in likely significant effects to receptors of relevance arising from the Scheme regarding Electromagnetic Fields (EMF) during construction, operation and decommissioning, with a specific focus on risk to human health.
- 18.2.2 EMFs arise from the generation, transmission, distribution, and use of electricity and occur around all electronic infrastructure. EMFs consist of both electric and magnetic fields, generated by the application of voltage to electrical conductors and equipment. In this instance, the most significant EMF sources could be considered to be the National Grid and Customer Substations, BESS and Low and High Voltage Cables (ranging up to 400kV (kilovolt)) including those which connect the Scheme to the National Grid and interconnect Scheme infrastructure across the Site.
- 18.2.3 While electric fields can be easily blocked by objects like fences, shrubs, and buildings, magnetic fields are produced by the flow of electric current and are not as easily obstructed by most



materials. The strength of both electric and magnetic fields decreases as the distance from the source increases. EMF can have direct as well as indirect effects on human health and ecology.

- 18.2.4 The levels of EMF emitted by the PV Panels themselves, associated infrastructure and Low Voltage Cables below 132kV are not expected to exceed the International Commission on Non-Ionizing Radiation Protection (ICNIRP) exposure guidelines for limiting exposure to time-varying electric, magnetic and electromagnetic fields (up to 300 GHz) published in 1998 [Ref 18-1]. These levels are comparable to those produced by common household appliances and are not anticipated to pose a risk or harmful to human health.
- 18.2.5 Where feasible cables will be buried underground; buried cables typically have their electric fields fully attenuated by cable sheathing and the substrate under which they are buried. However, magnetic fields and induced electric fields are not attenuated in this way, and there lies a risk of impacts on receptive wildlife species, particularly on a number of fish species which are known to have evolved sensitivity to electric and/or magnetic fields. In terms of terrestrial species, it is important to note that there is no evidence to suggest that typical solar array infrastructure can cause impacts and, due to the burial, sheathing and relatively low voltage of cabling within generating stations, the overall risk of EMFs resulting in significant effects on terrestrial wildlife is considered highly unlikely. There is some risk of EMFs affecting fish in the vicinity of and within the Grid Connection Corridor and Cable Route Corridor and where Low and High Voltage Cables exceed 132kV (i.e. where the Grid Connection Cables/Cable Route Corridor cables are required to cross and/or in vicinity of watercourses/surface water features). Consequently, the potential effects of this will be considered within the EMF Risk Assessment.
- 18.2.6 The Other Environmental Matters chapter of the ES will be supported by a High-Level Electromagnetic Field Risk Assessment. This will be appended to the ES and include information regarding the routing and voltages of Low and High Voltage Cables (ranging up to 400kV (kilovolt)) and infrastructure over 132kV.
- 18.2.7 The EMF Risk Assessment will consider EMF in relation to the following Scheme infrastructure:
- Underground and overground cables (specifically those that exceed 132kV up to 400kV);
 - Customer and National Grid Substations; and
 - Battery Energy Storage System (BESS).
- 18.2.8 No consultation has been undertaken to date to inform the approach of the EMF Risk Assessment. Should the need for consultation be identified, expert guidance with the necessary undertakers will be obtained.

Study Area

- 18.2.9 The Scheme will consist of the Solar PV Site, an area comprising numerous PV Panels with varying distances between them. The Scheme will be interconnected via Low and High Voltage Cables (ranging up to 400kV (kilovolt)) and the Cable Route Corridor and to the National Grid at the Point of Connection within the Site. The Grid Connection Cables will connect into the existing electrical infrastructure, as well as a proposed BESS to store energy. There is a Grid Connection Corridor that will be refined as the Scheme design progresses.
- 18.2.10 Intensity of both electric fields and magnetic fields diminishes as distance increases from the source. A conservative Study Area, informed by guidance from Energy Networks Association (2012) [Ref 18-2], of 5m from any EMF generating infrastructure such the Client and National Grid Substations will be focused upon, which for the purposes of the EMF Risk Assessment is considered to be the Site Boundary at this stage.



Baseline Conditions

- 18.2.11 The land within the Site is predominately in agricultural use, being utilised in part for pig farming, chickens and other livestock, and in part for arable crop production across a series of agricultural fields.
- 18.2.12 There is no existing solar farm related infrastructure present within the Site which will be used as part of the Scheme.
- 18.2.13 Necton Onshore Substation operated by the National Grid is located outside the Site boundary, approximately 7.1km east of the Site. Utilities run through the Site boundary. An owned and maintained by National Grid Electricity Transmission plc overhead line (OHL) and associated pylons runs through the northern area of the Site.
- 18.2.14 No field work/site surveys were undertaken as part of the Scoping Report in relation to EMF and no additional survey work has been identified at this stage.

Methodology

- 18.2.15 The proposed Grid Connection Corridor, Cable Route Corridor, Grid Connection Infrastructure, locations of Conversion Units, elements of the Associated Development, and locations of potential receptors will be considered. Within the EMF Risk Assessment, reference calculations will be undertaken to determine whether setback distances from sensitive receptors are required.

Overview of Legislation, Policy and Guidance

- 18.2.16 The Scoping Report has considered the ICNIRP [Ref 18-1] and the NSIP Technical Advice Page for Scoping Solar Development (a page on the gov.uk website²³, published 20 September 2024). These will also be considered in the High-Level Electromagnetic Field Risk Assessment along with relevant legislation, policy and guidance.
- 18.2.17 There is no direct statutory provision in the planning system relating to protection from EMFs.
- 18.2.18 Assumptions at this stage will be made regarding the type of infrastructure that is to be implemented, where required. Reference limits presented within the ICNIRP Advice guidelines [Ref 18-1] when determining recommended setback distance from residential and non-residential properties and other locations where the general public may congregate will be laid out in the assessment of EMF in the ES.
- 18.2.19 The EMF Risk Assessment will consider the compliance with EMF public exposure guidelines as set out by the Department of Energy and Climate Change (DECC) guidance 'Power lines: demonstrating compliance with EMF public exposure guidelines, a voluntary code of practice' [Ref 18-3].

Overview of Risk Assessment

- 18.2.20 The nature or sensitivity of all identified environmental receptors, as well as the risk on identified receptors will be described in the EMF Risk Assessment.

²³ Nationally Significant Infrastructure Projects: Technical Advice Page for Scoping Solar Development. See <https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-technical-advice-page-for-scoping-solar-development>



Potential Effects

18.2.21 Potential direct effects during construction and operation on the following receptors have been identified at the scoping stage for consideration in the EMF Risk Assessment:

- Local residents
- People located in non-residential properties
- The general public on the adopted highway, permissive paths and/or PRow
- Ecological receptors; and
- There are no known indirect effects predicted during construction or operation from EMF. This is because EMF produce no physical output meaning there can be no downstream emissions/waste product which could lead to additional effects not already captured within the assessment of direct EMF effects.

18.2.22 It is considered EMF during the Decommissioning Phase of the Scheme is likely to pose no risk of EMF generation over and beyond that already captured within the EMF Risk Assessment, and in turn no likely significant effects are predicted. Dismantling the Scheme and the associated electrical infrastructure eliminates any potential EMF source.

18.2.23 The maximum levels of electromagnetic radiation from the proposed underground Low Voltage Cables below 132kV, are predicted to be below ICNIRP [Ref 18-1] reference levels for magnetic fields. However, some Low and High Voltage Cables (those that exceed 132kV), the Grid Connection Cables and Cable Route Corridor cables are likely to be greater than 132kV and therefore the impact of electromagnetic fields exceeding 132kV and Scheme infrastructure retained post decommissioning will be considered within the EMF Risk Assessment. No likely significant effects are predicted during Construction and Decommissioning Phases for these components of the Scheme as they will not be operational.

18.2.24 It is feasible to reason that EMFs from electrical cables could impact certain species which utilise naturally generated EMFs. The size of generated fields is highly contingent on geometry, voltage and current, and, it is considered that EMFs associated with the High Voltage Cables (ranging up to 400kV (kilovolt)) are more likely to risk impacts than those potentially emanating from interconnecting Low Voltage Cables.

18.2.25 There is a lack of evidence on the effects of magnetic and induced electrical fields on wildlife. However, some cables to be used within the Scheme are likely expected to be lower voltage cables than that used for the Grid Connection Corridor and Cable Route Corridor and the size of generated fields will be consequently smaller. The risk of EMFs resulting in significant impacts is therefore considered highly unlikely due to the burial, sheathing and relatively lower voltage of cabling within the Site. The overall risk of EMFs resulting in significant effects on terrestrial wildlife and some fish species is considered highly unlikely. It is therefore proposed to be scoped out of the assessment. This is considered proportionate to the potential for significant effects in this instance.

18.2.26 It is recognised that potential effects of EMFs generated along the length of the Grid Connection Corridor, Cable Route Corridor and some High Voltage Cables (ranging up to 400kV (kilovolt)) poses potential risks to certain ecological receptors. It is feasible to assume a number of fish species may be sensitive to EMFs. However, it is feasible that fish species with sensitivity to EMFs could be subject to disturbance to which the effects of EMF will be considered within the assessment. No site-specific surveys for fish have or are being undertaken, however fish will be considered at the assessment stage to ensure that any potential impacts, such as electro magnetic fields, are taken into account.



- 18.2.27 In respect of terrestrial species along the length of the Grid Connection Corridor and Cable Route Corridor and where some High Voltage Cables (ranging up to 400kV (kilovolt)), the burial of the 400kV cable will provide a degree of attenuation of the possible impacts consistent with that provided by other schemes of a similar nature. Thus, terrestrial species is proposed to be scoped out of the assessment on this basis.
- 18.2.28 Overall, no likely significant effects are expected for EMF from the Scheme; therefore, this whole topic is proposed to be scoped out of the EIA, albeit an EMF Risk Assessment will be undertaken and submitted as a technical appendix to the ES.
- 18.2.29 The Scheme will be designed in a way that will mitigate any EMF impacts with respect to human health and ecology, with mitigating techniques such as minimum stand-off distances between receptors, where feasible and required and underground cables to reduce the risk of significant EMF impacts upon human health and ecological receptors considered. Set-back distances can significantly differ based on whether the cable is above ground or below ground, as well as its voltage.

Cumulative and In-combination effects

- 18.2.30 Should cumulative effects be identified by the EMF Risk Assessment then they will be addressed within the EMF section of the Other Environmental Matters Chapter of the ES.
- 18.2.31 A separate chapter will be presented within the ES which will provide a summary of effect interactions between topics, setting out the inter-relationship arising as a result of direct effects from other environmental topics

18.3 Major Accidents and Disasters

Introduction

- 18.3.1 Schedule 4, Paragraph 5 and 5(d) of the EIA Regulations [Ref 18-4] states that EIA is to contain a description of the likely significant effects of the development on the environment resulting from the:
- “risks to human health, cultural heritage or the environment (for example due to accidents or disasters)”.*
- 18.3.2 Further, Schedule 4, Part 8 of the EIA Regulations [Ref 18-4] requires that the EIA contain:
- “A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned.”*
- 18.3.3 This section outlines the scope and methodology for the assessment of the likely significant effects arising from the Scheme in respect of Major Accidents and Disasters (MADs). The section further outlines receptors of relevance and the assessment approach to the Scheme’s impacts during the Construction, Operation and Decommissioning Phases.
- 18.3.4 Further, the aim of the scoping stage in relation to MADs, as described by the Institute of Environmental Management and Assessment (IEMA) Primer [Ref 18-5], is:
- “to determine in more detail whether there is potential for significant effects as a result of major accidents and/or disasters associated with a development, and the resulting scope of and approach to the assessment if required.”*



Study Area

- 18.3.5 No specific regulatory guidance or standardised methodology for defining a study area for the assessment of MADs is available. Therefore, professional judgment has been applied to determine the Study Area for MADs which covers the Site and any immediately adjoining assets that could be considered to give rise to, or be impacted by, a potential major accident and/or disaster (hereafter referred to as the Study Area).
- 18.3.6 The assumed MADs that could be relevant to the Scheme and thus are taken forward for further consideration in the ES are shortlisted below in Table 18.2, these are:
- Flooding
 - Fires and explosion
 - Road Accidents
 - Aviation Incidents
 - Damage or cut-off of utilities
 - Unstable ground conditions; and
 - Vegetation pests and diseases.

Baseline Conditions

- 18.3.7 The potential receptors that could be impacted by MADs will be reported in the ES in accordance with the assessment methodology presented below and will be prepared with reference to relevant legislation, policy and guidance. There is no direct statutory provision in the planning system relating to protection from MADs.

Assessment Methodology

- 18.3.8 The definition of MADs according to the IEMA Primer [Ref 18-5] is presented in **Table 18.1**.

Table 18.1 IEMA Definitions for Major Accidents and Disasters (MADs)

Term	Definition
Major Accident	A major accident is an event, such as a train derailment or major road traffic accident, which threatens immediate or delayed serious environmental effects to human health, welfare and/or the environment, and requires the use of resources beyond those of the client or its appointed representatives (i.e. contractors) to manage. Major accidents can be caused by disasters resulting from both man-made and natural hazards.
Disaster	A disaster is a manmade/external hazard such as an act of terrorism, or a natural hazard such as an earthquake or extreme weather event, with the potential to cause an event or situation that meets the definition of a major accident (for example, a weather-triggered landslide which results in a train derailment).



Potential Effects

- 18.3.9 The Scheme is a solar development utilising established technology that is widely implemented across the UK and beyond. The market is rigorously regulated with specific design standards and operational procedures. While there is a potential risk of on-site fires related to energy storage systems like batteries, inverters, and substations, the technology is equipped with built-in safety features. These include fire-resistant construction, fire detection and suppression systems, emergency stop functions, and isolation monitoring. Although fires and explosions are rare, they can pose safety risks to human health, particularly for those working within the designated area or near potential fire spread and contamination. Additionally, fires can negatively affect the natural environment, impacting nearby habitats and species.
- 18.3.10 The proposed Battery Energy Storage System (BESS) has the potential for air quality impacts in the event of a fire. Therefore, the Air Quality Assessment submitted in support of the ES will include point source emissions modelling of a worst-case scenario of pollutants, in the event of a fire, and predict concentrations at nearby sensitive receptors. Mitigation measures as a result of this assessment will be discussed where appropriate. A standalone Battery Risk Assessment will be undertaken to determine the potential impacts on the local area and inform the Outline Battery Safety Management Plan (oBSMP).
- 18.3.11 **Table 18.2** presents a short list of MADs that will be considered further within the environmental chapters within the ES and other documents submitted in support of the DCO Application. Where the MADs identified are not already being considered within the scope of existing technical assessments, they will be reviewed with the design team to ensure the risks are understood and addressed through design as necessary. Given this likelihood, it is proposed to scope out assessment of MADs from the ES.
- 18.3.12 The design of the Scheme will accord with design principles as described in Chapter 4 of this EIA Scoping Report. The Scheme is currently evolving through an iterative design process and will include embedded measures relevant to MADs. Good practice measures will also be included during all phases of the Scheme.
- 18.3.13 Where design mitigation is unable to remove the potential interaction between a major accident or disaster and a particular topic, the relevant ES chapter will identify the potential consequence for receptors covered by the topic and give a qualitative evaluation of the potential for the significance of the reported effect to be increased as result of a major accident or disaster.
- 18.3.14 In general the design, construction and operation and decommissioning of the Scheme will comply with relevant health and safety legislation, regulations and industry guidance helping to control any risks that could arise from the Scheme at acceptable levels. A suite of management plans will be in place, as outlined further below, to incorporate standard industry best practice and identify specific controls to limit adverse impacts to the environment.
- 18.3.15 The measures confirmed as part of the EIA process, will be described in the outline management plans and their implementation secured by a Requirement of the DCO Application.
- 18.3.16 Further mitigation for major accidents and disasters, may be defined through the EIA process, options of such may include construction methods and plans to be choose to protect and minimise impacts to sensitive receptors. Therefore, given the above the overall risk of MADs resulting in significant effects is considered highly unlikely and MADs are proposed to be scoped out. This is considered proportionate to the potential for significant effects in this instance.


Table 18.2 Relevant Major Accidents and Disasters for Consideration

Major accident or Disaster	Potential Receptor	Comments
Flooding	Properties and people in areas of increased flood risk, workers during all phases.	<p>The potential effects related to flooding will be fully assessed in respect of the Scheme in the Water Resources chapter of the ES. This will include an assessment of the vulnerability of the Scheme to flooding, and its potential to exacerbate flooding.</p> <p>More details on the scope and methodology of the assessment of flood risk impacts have been provided in Chapter 13 of this EIA Scoping Report and will be further detailed in the ES. An Outline Drainage Strategy and Flood Risk Assessment (FRA) will be undertaken to accompany the DCO Application.</p> <p>The Scheme does not propose large expanses of hardstanding that would be likely to cause significant increase to surface water flooding and any areas of hardstanding will be designed with appropriate Sustainable Drainage System (SuDS) measures in place to reduce the risk of surface water flooding.</p>
Fires and explosions	Local residents, habitats and species.	<p>There is a potential, albeit rare, for fire risk as a result of the battery energy storage system (BESS) of the Scheme. The battery technology that will be used in the final design of the Scheme will have built in safety features including fire resistant construction, fire detection, suppression systems, emergency stop functions and isolation monitoring, which are designed to regulate temperatures to within safe conditions to minimise the risk of fire. A series of outline management plans will be prepared and submitted in support of the DCO Application to manage and mitigate the potential fire risk associated with the Scheme. This includes an Outline Battery Safety Management Plan (oBSMP), this management plan will specifically describe measures to ensure that all safety concerns around battery energy storage system, including fire risk, are addressed as far as reasonably practicable. The relevant local fire and rescue service will be consulted in the preparation of the management plan.</p> <p>Mitigation measures as a result of the Air Quality Assessment will be discussed and a standalone Battery Risk Assessment will be undertaken to determine the potential impacts on the local area and inform the Outline Battery Safety Management Plan (oBSMP).</p>



Major accident or Disaster	Potential Receptor	Comments
Road accidents	Road users	<p>The risk of road collisions and accidents will be addressed in the Traffic and Transport chapter and supporting Transport Assessment of the ES.</p> <p>Road accidents could occur during the Construction or Decommissioning phases these will all be controlled within the Outline Construction Environment Management Plan (oCEMP) the Outline Construction and Traffic Management Plan (oCTMP) which will carefully manage access and routing to ensure any potential risks are managed appropriately.</p> <p>The potential for glint and glare to affect road users during construction, operation and decommissioning will be considered within the Glint and Glare assessment appended to the Other Environmental Matters Chapter of the ES. If any risks are identified, mitigation will be considered and, where necessary, incorporated into the Scheme design.</p>
Aviation incidents	Pilots and aircrafts	<p>The National Policy Statement for Renewable Energy Infrastructure EN-3 [Ref 18-6] confirms that some evidence suggests glint and glare from solar farms can be experienced by pilots and air traffic controllers in certain conditions. Therefore, aviation receptors and the potential for aircraft incidents will be explored within the Glint and Glare assessment appended to the Other Environmental Matters chapter of the ES. Appropriate mitigation measures will be incorporated into the proposed design of the Scheme.</p>
Damage/cut-off of utilities	Employees and local residents	<p>The construction of the Scheme has the potential to cause utility accidents, potentially damaging or cutting off the supply of utilities such as gas, electricity, water, sewage, and telecommunications. Depending on the nature of the accident this could cause supply disruption to users, and/or present a risk of danger to people and the natural environment on Site and in the surrounding area via contamination or potential fire or explosion.</p> <p>Discussions will be undertaken with utility and infrastructure providers to ascertain the locations of all assets. Where required, protective provisions will be entered into. Contractor practice and working guidelines will also be implemented to minimise the risk of such accidents occurring, and to minimise the severity of an impact in the event an asset is disturbed. This will be addressed within the oCEMP.</p>



Major accident or Disaster	Potential Receptor	Comments
Unstable ground conditions	Employees and local residents	<p>Chapter 13 of this EIA Scoping Report sets out detail of the geology and ground conditions of the Corse Study Area (CSA) and proposes to scope out effects from ground conditions due to the homogenous nature of the underlying geology and absence of sensitive superficial geology receptors.</p> <p>However, the oCEMP and other supporting and associated as required management plans will include measures on how any potential risk to people working on-site in general will be managed during the Construction and Decommissioning Phase.</p>
Vegetation pests and diseases	Habitats and Species	<p>Mitigation and enhancement measures may include new planting, which can be susceptible to disease and pests. Changing conditions due to climate change may exacerbate this. The landscape planting strategy for the Scheme will take account of the need to plant a diverse range of species that will be tolerant to climate change. This will be addressed within the Outline Landscape Ecological Management Plan (oLEMP), that will be submitted with the DCO application</p>

Issues proposed to be Scoped Out

- 18.3.17 The probability, likelihood and frequency of a major accident and/or disaster is considered to be very low with respect to the Scheme and would be managed under established legislative requirements, good practice construction techniques, the design process and a suite of management plans. There is no direct statutory provision in the planning system relating to protection from MADS. As such, further assessment of the vulnerability of the Scheme to major accidents and disasters is scoped out of the EIA.
- 18.3.18 The potential receptors and risks of effects resulting from major accidents or disasters will be considered through other technical chapters of the ES such as within the Air Quality chapter of the ES) and where relevant appropriate management plans, and this will negate the need for a specific major accidents or disasters topic chapter in the ES.

Cumulative and In-combination effects

- 18.3.19 Cumulative effects are not anticipated in relation to MADs. Should cumulative effects be identified then they will be addressed within the Other Environmental Matters Chapter of the ES.
- 18.3.20 A separate chapter will be presented within the ES which will provide a summary of effect interactions between topics, setting out the inter-relationship arising as a result of direct effects from other environmental topics



18.4 Telecommunications, Utilities and Television Receptors

Introduction

- 18.4.1 Solar farms have the potential to affect existing below ground utility infrastructure, for example, through 'cable strike' when piling the Ground mounted PV Modules or excavating the cable trenches. It is however considered such developments are not at a height to affect above ground telecommunications.
- 18.4.2 Due to the nature of the Scheme as a solar farm, with proposed low level maximum heights across the Site as described in Chapter 3 it is considered that there is limited potential for likely significant effects on above ground infrastructure. Should overground Grid Connection Infrastructure be potentially required it would not be over and beyond a height of that of existing pylons on site. The details of the National Grid Substation and Grid Connection Infrastructure will be refined throughout the development of the Scheme and in consultation with the National Grid Electricity Transmission plc and necessary undertakers.
- 18.4.3 As a result, it is intended to scope out the impacts of the Scheme on all above ground telecommunications, utilities and television infrastructure.
- 18.4.4 The design of the Scheme will take into consideration any restrictions on working in proximity to any below ground infrastructure, which will be discussed with the relevant utility providers/undertakers who own and operate assets located within the Site. The outline Construction Environmental Management Plan (oCEMP) will set out mitigation measures during the Construction Phase so to minimise, as far as practicable, the potential for cable strike, and protective provisions agreed where required. It is therefore intended to scope out impacts on below ground infrastructure.

Baseline

- 18.4.5 A high-level desk-based review using freely available satellite imagery (Google Maps satellite imagery) has been undertaken, to identify utility assets within the Site in respect of telecommunications, utilities and television receptors for the purpose of this scoping input.
- 18.4.6 There are several cables, pylons and pipelines crossing the Site which are owned and operated by a number of different utilities providers.
- 18.4.7 The high-level review has identified a National Grid Electricity Transmission plc overhead line with associated pylons passing through the Site, in a general east to north-west direction entering and existing the Site. Should connection works be required to facilitate the Point of Connection, National Grid Electricity Transmission plc will be consulted on.
- 18.4.8 An Exolum Pipeline System and UK Power Networks utility services are located on Site.
- 18.4.9 The high-level review has not revealed the location of the nearest television transmission tower to the Site. No survey work has been identified at this stage however, if new evidence indicates a need guidance will be sought on survey needs.
- 18.4.10 Discussions and negotiations with the relevant undertakers will be undertaken prior to submission of the DCO Application, meaning safeguarding distances and measures for working in proximity will be incorporated into the development parameters for the Scheme and protective provisions agreed where required. These discussions will be undertaken as part of the design evolution of the Scheme and sufficient offsets and/or suitable mitigation measures (e.g buffers) will be embedded into the design to ensure that there is no potential for likely significant effects.



Any safeguarding areas that are in place for existing infrastructure will be observed and incorporated into the design of the Scheme assessed in the ES.

Issues Proposed to be Scoped Out

- 18.4.11 Taking the above into account, it is considered that significant effects on telecommunications, utilities and television receptors are not likely, with relevant measures will be captured within the Scheme design. Therefore, it is not considered necessary to include a separate chapter on Telecommunications, Utilities and Television Receptors within the ES and it is proposed to be scoped out of the ES.

Cumulative and In-combination effects

- 18.4.12 Should cumulative effects be identified then they will be addressed within Telecommunications, Utilities and Television Receptors section of the Other Environmental Matters Chapter of the ES.
- 18.4.13 A separate chapter will be presented within the ES which will provide a summary of effect interactions between topics, setting out the inter-relationship arising as a result of direct effects from other environmental topics

18.5 Waste

Introduction

- 18.5.1 The EIA Regulations [Ref 18-4] require an estimate, by type and quantity, of expected residues and emissions, with specific reference to quantities and types of waste produced during the Construction and Operation Phases. The Planning Inspectorate stipulate that this information should be provided in a clear and consistent fashion and may be integrated into the relevant aspect assessments.

Study Area

- 18.5.2 The proposed Study Area is within the administrative area of Norfolk County Council (NCC) as the Minerals and Waste Planning Authority to assess waste in relation to the Construction, Operation and Decommissioning Phases of the Scheme.
- 18.5.3 NCC area responsible for how the waste produced in the county is dealt with.

Baseline Conditions

- 18.5.4 The land within the Site is predominately in agricultural use, being utilised in part for pig farming, chickens and other livestock, and in part for arable crop production across a series of agricultural fields.

Assessment Methodology

- 18.5.5 The approach to the assessment of waste will be developed with NCC.

Overview of Legislation, Policy and Guidance

- 18.5.6 In the UK, the Waste Electrical and Electronic Equipment (WEEE) Regulations 2013 [Ref 18-7] mandate recycling responsibilities of manufacturers to take back decommissioned solar PV modules. This to ensure responsible disposal of solar PV modules and as increase recycling



of materials. Suppliers of solar PV modules for the Scheme will be registered with a producer compliance scheme that has an industry managed take-back and recycling scheme. The Applicant will ensure this is followed through.

- 18.5.7 Overarching National Policy Statement for Energy (EN-1) [Ref 18-8] sets broad national policy approach, specifically section 5.15 Resource and Waste Management will be considered with possibilities to re-use or recycle materials will be explored before resorting to landfill options in alignment with the Waste Management Plan for England 2021 [Ref 18-9].
- 18.5.8 NCC, at the time of writing this EIA Scoping Report, are preparing the Norfolk Minerals and Waste Local Plan (publication version 2022). This will consolidate the three existing adopted Development Plan Documents (DPDs) into one Local Plan ensuring policies remain up-to-date and extending the plan period to the end of 2038.
- 18.5.9 The current adopted Norfolk Minerals and Waste Development Framework comprises the Core Strategy and Minerals and Waste Development Management Policies DPD 2010-2026 (adopted September 2011) [Ref 18-10] and other supplementary DPDs and revised Policies Map.

Potential effects

Construction

- 18.5.10 At this stage, the exact quantities and types of waste likely to be generated during the construction, operation (including replacement activities) and decommissioning stages are not known as this will be dependent on the detailed design of the Scheme and chosen technology type.
- 18.5.11 It is expected that the waste streams will include:
- General waste from site offices and welfare facilities
 - Packaging waste (such as woods and plastics) and excess materials from incoming materials
 - Additional chemicals and inorganic materials (such as concrete) and potentially organic materials, including soils
 - Other waste from construction of fencing (such as woods and metals), access roads and other supporting infrastructure; and
 - WEEE.
- 18.5.12 All electrical infrastructure (such as but not limited to Ground mounted PV Modules, inverters, transformers, batteries and other Associated Infrastructure) will be manufactured off-site and delivered ready for installation. Construction and assembly waste is expected to be minimal, including packaging wastes (wood and plastics), fencing (metal and wood), WEEE and concrete. No demolition waste during the Construction Phase, is anticipated to be generated from the Scheme as the land within the Site is primarily agricultural land (arable and grazing). It is also expected that site preparation, excavation, and the installation of supporting footings will produce minimal waste including those as part of the Grid Connection Infrastructure. The underground cabling, which runs through both agricultural land and roads, is likely to generate minimal surplus soil arisings from these activities, which will be reused and or stored on-site.
- 18.5.13 An outline Construction Environmental Management Plan (oCEMP) will be developed and submitted with the DCO Application. The oCEMP will include measures to minimise waste, such as a waste hierarchy, and will set out site management procedures such as waste management,



recycling opportunities, and off-site disposal. This will include what will happen to any soil excavated during underground cabling or creation of temporary construction or permanent compounds. These will be assessed as part of the ES in the relevant chapter, such as vehicles removing waste as part of the Transport and Access chapter. All management of waste will be in accordance with the relevant regulations.

- 18.5.14 Good practice measures will be set in place to ensure responsible processing of waste is adhered to. This will be secured through the oCEMP, outline Operational Environmental Management Plan (oOEMP) and outline Decommissioning Environmental Management Plan (oDEMP). These management plans will include details on appropriate monitoring measures to ensure compliance with best practice measures as well as adherence to the waste hierarchy.
- 18.5.15 An outline Site Waste Management Plan (oSWMP) will be prepared and appended to the ES. The DCO Application will confirm how the oSWMP will be secured through the DCO Requirements procedure. All waste will be managed and disposed of in accordance with relevant legislation at the time and waste will be transported by licensed waste hauliers to waste management sites which hold the necessary regulatory authorisation and/or permits for those wastes consigned to them.

Operation

- 18.5.16 Waste generation will generally be low during the operation of the Scheme, Ground mounted PV Modules do not generate any waste as part of the energy production process. Once the Scheme is operational, materials and waste generation will include occasional maintenance and replacement activities of proposed infrastructure including the Ground mounted PV Modules, inverters, BESS and transformers. No replacement of cabling is expected during the proposed operational life of the Scheme.
- 18.5.17 The Scheme will operate for up to 60 years. The components of the Scheme at this stage are anticipated to have the following approximate lifespans:
- Photovoltaic Panels – 25 to 40 years; and
 - Batteries – 15 to 20 years.
- 18.5.18 It is therefore estimated that the PV panels could require replacement up to two times, and the batteries up to four times during the operation of the Scheme. The replacement of these will be considered within the assessment of operational impacts of the Scheme in the ES.

Decommissioning

- 18.5.19 At the end of the Scheme's operational life, it will be decommissioned. Decommissioning of the Scheme will involve the removal of all solar infrastructure, including but not limited to the PV Pannels, mounting structures, inverters, transformers, above ground cabling, BESS, switchgear, fencing and Ancillary Infrastructure with the exception of the Grid Connection Infrastructure (including the National Grid Substation), which is likely to remain in place. The land will be restored to agricultural use, as far as possible and practicable.
- 18.5.20 Recycling procedures for the Scheme at the end of its lifetime (including any installed energy storage) will be in line with good practice industry guidelines at the time. Possibilities to re-use or recycle materials will be explored. It is not possible to identify exact materials to be recycled however typical examples of materials to be expected to be recycle may include; aluminium, glass, crystalline silicon solar cells and copper wiring.



- 18.5.21 It is not possible to identify at the present time either the waste management routes or specific facilities that would be used in the Decommissioning phase. However, the oSWMP will contain estimates of by type and quantity, of expected residues and emissions and quantities and types of waste produced during the Construction and Operation Phases will be provided as required by Schedule 4 of the EIA Regulations.
- 18.5.22 As such, no likely significant effects are predicted during the Construction, Operation and Decommissioning Phases of the Scheme.

Issues proposed to be Scoped Out

- 18.5.23 Considering the above, it is concluded that significant effects arising from waste are not expected during either the Construction, Operational, or Decommissioning Phases of the Scheme, and hence the need for a separate waste chapter has been scoped out of the EIA.

18.6 Consultation

- 18.6.1 Statutory Consultees will be formally consulted by the Planning Inspectorate (PINS) to provide comment on this Scoping Report, these used to inform the Scoping Opinion produced.
- 18.6.2 Matters concerning Other Environmental Matters raised in the Scoping Opinion will be considered and addressed through the EIA process and reported in the ES, where relevant.
- 18.6.3 A process of non-statutory consultation is planned from Autumn 2024, this will publicly introduce the Scheme and invite feedback from both statutory and non-statutory consultees on the proposals. Feedback will be considered through the ongoing development of the design, and via the EIA process ahead of submission of the DCO Application in late 2025.

18.7 Additional Environmental Matters

- 18.7.1 As concluded in Chapter 15 of this EIA Scoping Report, the Glint and Glare Assessment will be appended to the Other Environmental Matters chapter of the ES. Also, as concluded in Chapter 10 of this EIA Scoping Report, Air Quality will be considered within the Other Environmental Matters chapter of the ES.



19 Summary

19.1 The Request

- 19.1.1 In accordance with the Environment Impact Assessment (EIA) Regulations, the Scoping process is a formal regulatory stage that helps define the scope and level of detail to be included within the Environment Statement (ES). The purpose of the Scoping process is to identify the main issues that will be the focus of the assessment and avoid the need for the assessment to cover every possible environmental impact to unwarranted detail.
- 19.1.2 This EIA Scoping Report represents notification under Regulation 8(1)(b) of the EIA Regulations that the Applicant confirms they will undertake an EIA in respect of the Scheme and produce an ES to report the findings of the EIA.
- 19.1.3 This EIA Scoping Report also represents a formal application to the Planning Inspectorate (PINS) under Regulation 10 of the EIA Regulations for a 'Scoping Opinion' as to the information to be provided within the ES that will form part of the DCO Application. This EIA Scoping Report has identified the environmental effects that are considered to have the potential to be significant and proposes the approach to be used in assessments that will be undertaken for the EIA to characterise and understand the significance of these effects. The prescribed consultees are invited to consider the contents of this report and comment accordingly within the statutory 42-day time period.

19.2 Summary of the EIA Scoping Report request

- 19.2.1 **Table 19.1** and **Table 19.2** summarises the scope of the environmental topic assessments included in this EIA Scoping Report through chapters 6 to 18, and thus presents a summary of elements to be scoped in and scoped out of the EIA.



Table 19.1 Elements to be Scoped In and Out of the Environmental Statement (ES)

Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
Chapter 6: Landscape and Visual	<p>Landscape and Visual Impact Assessment (LVIA) considering Local Landscape Character identified within the Study Area:</p> <ul style="list-style-type: none"> • (B) Settled Tributary Farmland LCT; (B7) River Nar Tributary Farmland LCA • (D) The Brecks – Heathland with plantation LCT; (D1) Swaffham Heath LCA • (E) Plateau Farmland LCT; (E6) North Pickenham Plateau LCA • (F) Chalk Rivers LCT; (F1) River Nar Valley LCA • (G) Farmland with Woodland and Wetland LCT; (G3) Gayton and East Winch LCA; and 	Scoped In – C, O and D	N/A



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
	<ul style="list-style-type: none"> (I) Rolling Open Farmland LCT; (I9) Little Massingham and Castle Acre LCA. 		
	LVIA considering Visual Receptor Groups (VRGs) within the Zone of Visual Influence (ZVI)	Scoped In – C, O and D	N/A
	LVIA considering key transport routes: <ul style="list-style-type: none"> A1065 Castle Acre Road (adjacent to eastern Site boundary); and A47. 	Scoped In – C, O and D	N/A
	LVIA considering Long Distance Recreational Trails (LDRT), National Cycle Routes and Accessible Landscapes considering: <ul style="list-style-type: none"> The Peddars Way and Norfolk Coast Path The Nar Valley Way 	Scoped In – C, O and D	N/A



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
	<ul style="list-style-type: none"> The Castle Acre Circular Walk Rebellion Way Cycling Route Castle Acre Priory Castle Acre Common; and Castle Acre Castle. 		
	Residential Visual Amenity Assessment (RVAA) considering residential properties within 800m distance of the Site Boundary	Scoped In – C, O and D	N/A
	<p>Amenity and Recreation Assessment (ARA) considering resources identified within the Study Area of the LVIA:</p> <ul style="list-style-type: none"> Local PRow located within the Site and those present within the ZVI 	Scoped In – C, O and D	N/A



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
	<ul style="list-style-type: none"> The Peddars Way and Norfolk Coast Path The Nar Valley Way The Castle Acre Circular Walk Castle Acre Priory Castle Acre Common; and Castle Acre Castle. 		
	<p>LVIA considering National and Regional Landscape Character:</p> <ul style="list-style-type: none"> National Character Areas and Suffolk Regional LCA. 	Scoped Out – C, O and D	The detailed local Landscape Character Areas will form the basis of the assessment of effects on landscape character, informed by the national and regional character assessments, where relevant.
	<p>LVIA considering Local Landscape Character identified within the Study Area:</p> <ul style="list-style-type: none"> (B) Settled Tributary Farmland LCT; (B5) River Wissey Tributary Farmland LCA 	Scoped Out – C, O and D	Not all LCAs would experience effects as a result of the Scheme. Those identified are scoped out when considering the baseline condition of the surrounding Site context and the limited visibility towards the Site, due to the local topography and presence of nearby mature landscape features. The preliminary ZTV indicates little to no potential visibility from these Local Landscape Character Types.



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
	<ul style="list-style-type: none"> (E) The Fens LCT; (E2) Saddlebow and Wormegay LCA (H) Settled Farmland with Plantations LCT; (H2) Fincham LCA; and (J) Plateau Farmland LCT; (J3) Great Massingham LCA. 		
	LVIA considering Visual Receptor Groups (VRGs) outside of the Zone of Visual Influence (ZVI)	Scoped Out – C, O and D	For those visual receptors located outside of the ZVI there would be very limited or no visibility of the Scheme, such that the effects would be Negligible at most. VRGs will only be defined for areas with potential visibility of the Scheme.
	LVIA considering Long Distance Recreational Trails (LDRT), National Cycle Routes and Accessible Landscapes considering: <ul style="list-style-type: none"> Broadmeadow Common Emanuel's Common 	Scoped Out – C, O and D	The preliminary ZTV indicates little to no potential visibility from the commons.



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
	<ul style="list-style-type: none"> Newton Common; and Bradmoor Common. 		
	Residential Visual Amenity Assessment (RVAA) considering residential properties beyond 800m distance of the Site boundary.	Scoped Out – C, O and D	Beyond this distance, the Scheme may be visible but it is unlikely that it would result in any overbearing effects such that living conditions would be affected to an unacceptable degree.
	<p>Amenity and Recreation Assessment (ARA) considering receptors identified within the Study Area of the LVIA:</p> <ul style="list-style-type: none"> Local PRow located outside of the ZVI, and those which are no longer used, accessible or identifiable on the ground Broadmeadow Common Emanuel's Common Newton Common; and Bradmoor Common. 	Scoped Out – C, O and D	It is considered such receptors are unlikely to experience environmental impacts which may affect overall experience of the amenity and recreational resource, due to lack of visibility, distance from the Scheme or lack of use.



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
	Night-Time Effects and Lighting – all receptors	Scoped Out – C, O and D	Construction and Decommissioning Phase lighting will be temporary and designed to minimise any light spill and sky glow and will not be continuously lit. During the Operational Phase, the Scheme will generally remain unlit with exception of the Customer and National Grid Substations (sensor and manual operation) for operational and security purposes. No visible lighting would be required along the perimeter fencing with use of Infra-Red for CCTV. Lighting design to limit any impacts on sensitive receptors would be secured through the Outline Operational Environmental Management Plan (oOEMP).
Chapter 7: Ecology and Biodiversity	Statutory Designations: <ul style="list-style-type: none">Breckland SPA.	Scoped In – C, O and D	
	Non-Statutory Designations: <ul style="list-style-type: none">River Road (U33086 RNR); andRiver Road (U22086 RNR).	Scoped In – C, O and D	



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
	Site Specific Species: <ul style="list-style-type: none"> Habitats and associated flora Bats Badger Breeding birds, Wintering birds; and Reptiles. 	Scoped In – C, O and D	
	Statutory Designations: <ul style="list-style-type: none"> River Nar SSSI Castle Acre Common SSSI Breckland Forest SSSI Narborough Railway Embankment SSSI Norfolk Valley Fens SAC East Walton and Adcock's Common SSSI Breckland SAC 	Scoped Out – C, O, and D	All designations are located in excess of 900m from the Site, whilst there is also an absence of pollution pathways (such as watercourses). Therefore construction, operation and decommissioning activities are unlikely to have a significant effect.



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
	<ul style="list-style-type: none"> Roydon Common Ramsar Roydon Common & Dersingham Bog SAC Dersingham Bog Ramsar River Wensum SAC The Wash SPA; and The Wash & North Norfolk Coast SAC. 		
	<p>Non-statutory Designation:</p> <ul style="list-style-type: none"> Land Adjacent to the River Nar CWS Priory Meadow CWS Lake West of Castle Acre CWS Mill House Lake CWS Castle Acre Castle CWS Priory Road U22074 RNR Mill House CWS Narford Lake CWS 	Scoped Out – C, O, and D	Scoped out due to all designations being located in excess of 10m from the Site and absence of pollution pathways/negligible risk of recreational pressure.



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
	<ul style="list-style-type: none"> The Carr CWS Castle Acre Castle CWS Lynn Road Disused Railway CWS; and Walton Road C65 RNR. 		
	<p>Site-Specific Species:</p> <ul style="list-style-type: none"> Great Crested Newt; and Otter and Water Vole. 	Scoped Out – C, O, and D	<p>Phase 1 Habitat Survey undertaken on the Survey Area (potential development footprint of Solar PV Site) across the Site during 2024.</p> <p>Specific Great Crested Newt (GCN) eDNA Survey work (undertaken June 2024) indicates GCN likely absent from all ponds within 250m of the Survey Area, including ponds within the Survey Area itself.</p> <p>Absence of suitable habitat to support otter and water vole species within the Survey Area.</p>
Chapter 8: Cultural Heritage	Direct impacts to below ground archaeology	<p>Scoped In – C and O</p> <p>Scoped Out - D</p>	<p>Embedded mitigation in the outline Decommissioning Environmental Management Plan (oDEMP) will ensure protections put in place during the Construction Phase and Operational Phase will apply during the Decommissioning Phase.</p> <p>It is considered that there are no further likely significant effects that would arise from the Decommissioning Phase</p>



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
			<p>of the Scheme than those that arise during the Construction Phase, as the infrastructure is removed, and the Site returned to the landowner.</p> <p>A suite of further assessments and surveys will be undertaken to accompany the DCO Application.</p>
	Indirect impacts to designated heritage assets	<p>Scoped In – O</p> <p>Scoped Out – C and D</p>	<p>There are no designated heritage assets within the Site boundary and thus, no direct impact upon such assets.</p> <p>Potential impacts to the settings of designated heritage assets during the Construction Phase would be temporary and low level.</p> <p>Refer to above row for scoped out reasoning of impact during the Decommissioning Phase.</p> <p>A Settings Assessment will be undertaken to accompany the DCO Application.</p>
	Indirect impacts to non-designated heritage assets	<p>Scoped In – O (should assets be identified)</p> <p>Scoped Out – C and D</p>	<p>Indirect effects to non-designated heritage assets may occur as a result of temporary changes within their setting, but significant effects are unlikely due to the short-term and reversible nature of these changes.</p> <p>Refer to above row for scoped out reasoning of impact during the Decommissioning Phase.</p>



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
			A Settings Assessment will be undertaken to accompany the DCO Application.
Chapter 9: Transport and Access	Transport effects: <ul style="list-style-type: none"> • Severance • Driver delay • Pedestrian delay • Non-motorised user amenity • Fear and intimidation; and • Road safety. 	Scoped In - C Scoped out – O and D	<p>It is considered that the significance of the environmental effects during the Operational Phase of the Scheme would be negligible and not significant in EIA terms with respect to Transport and Access.</p> <p>It is assumed that any operational traffic flows would fall within the IEMA Guidance thresholds of less than a 30% change in total vehicle flows or 10% change in daily HGV flows and would therefore not be significant in EIA terms and not require further assessment.</p> <p>Mitigation measures, including travel planning, HGV management and pedestrian and cyclist management will be incorporated into Outline Construction Traffic Management Plan (oCTMP), Outline Operational Environmental Management Plan (oOEMP), Outline Travel Plan (oTP) and Outline Decommissioning Traffic Management Plan (oDTMP).</p> <p>It is assumed that the assessment of the Construction Phase would already present the worst-case in Transport and Access terms and capture all effects associated with the Decommissioning Phase.</p>



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
	Hazardous and large loads	Scoped Out – C, O and D	<p>Within the Study Area it is indicated that there are no particular features, such as significant vertical drops immediately beyond the carriageway, which would suggest that the transfer of materials poses a particular risk beyond that which would be expected on the general highway network. It is not expected that there would be any Hazardous Loads associated with the Scheme.</p> <p>Large Load vehicles will be managed by National Highways, the local highway authorities and the Police through the Electronic Service Delivery for Abnormal Loads (ESDAL) system.</p> <p>It is an explicit requirement of the local highway authority that any proposals subject to a planning application or DCO do not unacceptably increase safety risk. This will be ensured through appropriate design standards therefore accidents, road user and pedestrian safety is scoped out of further assessment.</p>
Chapter 10: Air Quality - Topic scoped out of ES	Dust and Particulate Matter	Scoped Out – C, O and D	Impacts during the Decommissioning Phase are expected to be similar to, or of a lesser magnitude than that during the Construction Phase, thus the Construction Phase is considered to represent a worst-case scenario for these two phases.



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
			<p>Dust and particulate matter emissions produced during the Construction Phase would be controlled through a Construction Environmental Management Plan (CEMP) which will include high risk mitigation measures.</p> <p>A standalone Construction Dust Assessment (CDA) will be submitted to identify relevant mitigation measures to support the DCO Application.</p>
	Vehicle Exhausts Emissions	Scoped Out – C, O and D	<p>Construction and Decommissioning Phase traffic movements will be controlled through an Outline Construction Traffic Management Plan (oCTMP). It is not expected that construction traffic flows will exceed the screening criterion for either sensitive human or ecological receptors.</p> <p>Impacts to air quality at sensitive human and ecological receptors from Operational Phase traffic are anticipated to be not significant, as road traffic flows are expected to fall below the EUK/IAQM guidance.</p> <p>It is considered assessment of the exhaust emissions from on-site plant will accord with Institute of Air Quality Management (IAQM) construction guidance. Construction and Decommissioning Phase emissions will adhere to emissions standards. No combustion plant will be present onsite during the Operational Phase.</p>
	Combustion Emissions	Scoped Out – C, O and D	



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
	BESS Emissions	Scoped Out – C, O and D	A standalone Battery Risk Assessment will be undertaken to determine the potential impacts on the local area and inform the Battery Safety Management Plan (BSMP).
Chapter 11: Noise and Vibration	Noise from traffic	Scoped In – C and O Scoped Out – D	The works involved during the Decommissioning Phase would be similar or of a lower magnitude/duration than for the Construction Phase, and therefore have similar/lower effects, whilst also being subject to similar management or control procedures.
	Vibration from traffic	Scoped Out – C, O and D	Relevant guidance advises that significant vibration impacts from traffic using the road network is unlikely (although momentary vibration may be perceptible in some cases) and does not consider vibration from vehicle movements as a notable source.
	Noise from Solar PV Site, BESS, Customer Substation and National Grid Substation.	Scoped In – C and O Scoped Out – D	Decommissioning works would be similar or of a lower magnitude/duration than for the Construction Phase and have similar/lower effects and subject to similar management or control procedures, and do not require separate consideration.
	Vibration from Solar PV Site, BESS, Customer Substation and National Grid Substation.	Scoped In – C Scoped Out – O and D	Proposed operational plant infrastructure likely to be used would generate insignificant levels of vibration.



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
			<p>The magnitude of operational vibration levels are unlikely to affect ecological receptors.</p> <p>Refer to above row for scoped out reasoning of impact during the Decommissioning Phase.</p>
	Noise and vibration from Grid Connection Infrastructure	<p>Scoped In – C</p> <p>Scoped Out – O and D</p>	<p>Low and no levels of noise from potential new Grid Connection Infrastructure is unlikely to create significant effects. The design of the Grid Connection Infrastructure will involve embedded mitigation, with detailed design (plant locations and sections) controlled through DCO requirements to establish suitable noise limits if required.</p>
Chapter 12: Soils and Agriculture	Disturbance and Crop Loss	<p>Scoped In – C</p> <p>Scoped Out – O and D</p>	<p>The land under and around the Solar PV Arrays will be kept in grassland use and potentially farmed by the grazing of sheep or production of fodder. Depending upon the grazing regime, there may be periodic need for some mowing or topping of grassland, but this will be normal agricultural activity and should have no adverse effect on soils. The change from arable farming to long-term grassland uses is likely to have a beneficial effect on soils.</p> <p>The outline Soil Management Plan (oSMP) will be developed to help guide good practice and minimise potential effects on soils and agricultural land quality. Through careful operation there should be no significant</p>



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
			<p>adverse effects on soil resource or agricultural land quality during operation.</p> <p>Works during the Decommissioning Phase will include removal of the certain Scheme infrastructure such as; solar PV panels, shallow cabling, fixed infrastructure, fencing etc.. Such works (depending upon time of year and ground conditions) have the potential to effect soils and land quality in localised small areas. The soils are expected to be sandy and resilient to being handled, and no significant adverse effects that are not capable of being rectified with normal agricultural land management machinery, are expected. Detailed guidance will be presented in the oSMP.</p>
	Land Quality	Scoped In – C, O and D	N/A
	Soils	Scoped In – C, O and D	N/A
	Economic and Land Use Effects for Farm Businesses and Rural Economy	<p>Scoped In - O</p> <p>Scoped Out – C and D</p>	The landowners involved in the Scheme have signed up by voluntary agreement and have therefore considered the potential effects on the overall viability of the farm holdings. This includes the potential impacts on agricultural tenants who utilise the land at present and agreement is in place that these tenancies would end



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
			<p>should the application for development consent be successful.</p> <p>Refer to above reasoning for scoped out reasoning of impact during the Decommissioning Phase.</p>
Chapter 13: Water Resources	Surface Water quality and quantity	Scoped In – C, O and D	N/A
	Groundwater quality and quantity	Scoped In – C, O and D	N/A
	Flood risk: <ul style="list-style-type: none"> • Fluvial • Pluvial; and • Groundwater. 	Scoped In – C, O and D	N/A
	Drainage	Scoped In – C, O and D	N/A
	Flood risk:	Scoped Out – C, O and D	The Scheme is not located within proximity to a tidally-influenced watercourse.



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
	<ul style="list-style-type: none"> Tidal 		
	Ground Conditions	Scoped Out – C, O and D	<p>Due to the homogenous nature of the underlying geology, limited ground disturbance during the installation of PV arrays and absence of sensitive superficial geology receptors, such as peatland and GWDTEs, effects on ground conditions will be scoped out.</p> <p>A separate chapter on ground conditions within the Environmental Statement (ES) is not considered to be required.</p>
Chapter 14: Climate Change	<p>Greenhouse gas emissions relating to:</p> <ul style="list-style-type: none"> Construction emissions Operational and maintenance; and emissions Decommissioning emissions. 	Scoped In – C, O and D	N/A



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
	In-combination Climate Change Impact (ICCI) Assessment relating to: <ul style="list-style-type: none"> • Temperature change • Precipitation change; and • Extreme weather conditions (wind). 	Scoped In – C, O and D	N/A
	In-combination Climate Change Impact (ICCI) Assessment relating to: <ul style="list-style-type: none"> • Sea level rise. 	Scoped Out – C, O and D	The effects of sea level rise are scoped out as the Scheme is not located in an area that is susceptible to sea level rise due to the distance of around 25km of the Scheme from the coast.
	Climate Change Resilience relating to: <ul style="list-style-type: none"> • Temperature change; • Precipitation change; and • Extreme weather conditions (wind). 	Scoped In – C, O and D	N/A
	Climate Change Resilience relating to:	Scoped Out – C, O and D	The effects of sea level rise are scoped out as the Scheme is not located in an area that is susceptible to sea



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
	<ul style="list-style-type: none"> Sea level rise. 		level rise due to the distance of around 25km of the Scheme from the coast.
Chapter 15: Glint and Glare	Construction and Decommissioning Phases	Scoped In - O Scoped Out – C and D	Not all photovoltaic (PV) solar panels will be present at once during the Construction and Decommissioning Phases, it is considered the length and intensity of any glint and / or glare will be less than or equal to the Operational Phase.
	Rail Infrastructure	Scoped Out – C, O and D	No rail infrastructure identified within the relevant Study Area (i.e. 200m of the Scheme).
	Viewpoints relating to Public Rights of Way (PROWs) and bridleways	Scoped Out – C, O and D	<p>The effect upon these receptors is considered to be at most 'Minor Adverse' due to the potential effects upon safety and amenity is considered to be less than that of a road user or a dwelling. PROWs and bridleways will be considered at a high-level (without detailed modelling).</p> <p>Mitigation measures as discussed in the EIA Scoping Report will likely be incorporated into the design to mitigate any identified potential effects.</p>
	Aviation Infrastructure outside of the 5km and 10km Study Areas:	Scoped Out – C, O and D	The effect upon these receptors will be at most minor adverse because the effects will be no greater than 'low potential for temporary after image' upon a pilot and/or will



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
	<ul style="list-style-type: none"> East Winch Airfield; and Great Massingham Airfield. 		occur outside a pilot's primary field of view. No Air Traffic Control Towers are present at these airfields.
	Local roads within the Study Area	Scoped Out – C, O and D	Any solar reflections from the Scheme that are experienced by road users along a local road would be considered minor adverse in the worst case in accordance with the guidance and industry best practice.
	Dwellings within the 1km Study Area	Scoped In – C, O and D	N/A
	Non-Local Road Infrastructure within the 1km Study Area (sections of the A47 and A1065 within the Study Area)	Scoped In – C, O and D	N/A
	Licensed Aviation Infrastructure within the 10km Study Area - RAF Marham	Scoped In – C, O and D	N/A
	Licensed Aviation Infrastructure within the 5km Study Area - Great Friars Thornes Farm Airfield	Scoped In – C, O and D	N/A



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
	Cumulative Assessment	Scoped In – C, O and D	N/A
Chapter 16: Socio- economics	Employment	Scoped In – C and D Scoped Out – O	Solar farms are not worker-intensive developments during their operation. The number of direct operational workers is expected to be very low.
	Provision of education, skills and training	Scoped In – C, O, and D	N/A
	Changes in demand for temporary workers accommodation	Scoped Out – C, O and D	The construction of Scheme is expected to draw upon only a relatively small proportion of construction workers within a commutable distance. However, it is important to note that the construction of solar farms require very specialist skillsets which may not be available from within the 60-minute travel time. As such, some workers may be expected to be sourced from further afield. Even in this worst-case scenario, it is unlikely that this will place significant pressure on local accommodation providers. For this reason, change in demand for temporary workforce accommodation is not likely to be significant
	Effect on land uses	Scoped Out – C, O, and D	It is assumed that the Customer Substation would be removed upon decommissioning but the National Grid Substation could remain as part of the energy network. This will be investigated further as the Scheme is refined



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
			<p>and will be outlined in the ES. A survey is being carried out to assess the Site's Agricultural Land Classification, with the findings to be presented in the PEIR and ES.</p> <p>The use of this land for solar energy would support the diversification of existing agricultural businesses by incorporating practices which manages the land while maintaining some agricultural use. Further, the agricultural land on the Site represents 0.007% of the UK's utilised agricultural area. It is considered unlikely that the changes in agricultural land are sufficiently extensive to substantially constrain local food supply.</p>
	Spending associated with the workers	Scoped In – C, and D Scoped Out - O	It is not anticipated that there would be large amounts of operational employment. Additionally, while temporary staff will be required for periodic replacement activities of the Scheme's infrastructure such as the panels and the BESS, these activities are not expected to necessitate a substantial workforce or extend over a prolonged period of time.
	Disruption to local businesses	Scoped Out – C, O, and D	There is not a high density of businesses in the vicinity of the Site that would be likely to experience disruption from the noise or visual impacts of the Construction and Decommissioning Phases.



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
			The Scheme has a high-capacity road network (A47 and A1065) providing access in and out of the town of Swaffham. Any traffic and congestion impacts created by the Scheme would be mitigated by measures included within the Outline Construction Traffic Management Plan (oCTMP) and existing strong level of road network capacity. As the road network has a strong level of capacity, and impacts from the Scheme would have mitigation.
	Changes in demand for health and social care	Scoped Out – C, O, and D	<p>Additional demand on local health infrastructure during Construction and Decommissioning Phases would be temporary and would not be expected to be significant.</p> <p>Injuries to construction workers annually are low. The Outline Construction Environmental Management Plan (oCEMP) will outline how the construction Site will follow best practice measures, thus minimising the risk of accidents or injury. There are likely to be very few workers who would require health and social care.</p>
	Access to open space and Public Rights of Way (PRoW)	Scoped Out – C, O, and D	PRoW on-Site are mostly located along access routes used by vehicles and are unlikely to be impacted during the Construction and Decommissioning Phase, except where vehicular access is required. The magnitude of impact to PRoW is anticipated to be small.



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
			Photovoltaic (PV) panels will not obstruct access to the PRow and it is aimed to improve the existing PRow on Site. As access to the existing PRow will be maintained and no substantial impact on the area is expected.
	Changes in crime and community safety	Scoped Out – C, O, and D	The area the Site is located within is below the regional and national crime level and no crime on the Site itself has been reported. As standard the Scheme would include security measures during the Construction, Operation and Decommissioning Phase. It is not anticipated that the Scheme would create any large or significant changes to the amount of crime or the level of community safety.
	Changes in commuting patterns	Scoped Out – C, O, and D	Any traffic and congestion impacts created by the Scheme would be mitigated by the Outline Construction Traffic Management Plan (oCTMP). It is expected there would not be any significant traffic, or congestion impacts as a result of the Construction and Decommissioning Phases. It is not anticipated the Scheme would support large amounts of employment during the Operational Phase. A small amount of service vehicles would periodically access the Site with impacts of such mitigated by measures set out in the Outline Operational Environmental Management Plan (oOEMP).



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
	Changes to local tourism assets	Scoped In - O Scoped Out – C and D	It is expected that changes to local tourism assets are the effects most likely to be sensitive to change in significance following the cumulative effects of nearby projects. For any effects which have been scoped out of the non-cumulative effect assessment, consideration will be given at a later stage, once more information has been gathered about local schemes, whether any of these effects should be scoped into the cumulative effect assessment.
	Impact on local property value	Scoped Out – C, O, and D	The Scheme would not have a large visual impact on any substantial numbers of houses, and so would be unlikely to significantly impact housing affordability in the area.
Chapter 17: Health <i>(Given the small numbers of likely significant human health effects, and their nature (i.e., often closely related to Socio-economics), it is proposed that human health is scoped out as a standalone topic)</i>	Physical activity	Scoped Out – C, O, and D	<p>There are currently only four PRoWs used on the Site, with a number of unofficial walking routes in the local area. The routes primarily affect residents of South Acre and Narford, who have a combined total of 29 households.</p> <p>The Applicant will explore opportunities to improve the existing PRoWs on the Site. It is unlikely impact is considered unlikely to be significant, given the size of the population likely to be affected.</p> <p>Given the short duration of these disruptions and the low number of people likely to be impacted, the resulting</p>



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
			magnitude of the impact is expected to be insufficient to lead to any significant effect on human health.
	Risk-taking behaviour (including use of alcohol, cigarettes, non-prescribed drugs, sexual activity and other risk-related activity)		The number of construction and decommissioning workers is unlikely to be significant enough to affect the local community to an extent where the workers could significantly alter community health behaviours. Further, the direct and temporary operational workforce will comprise a very small number of staff which would also be unlikely to significantly alter community health behaviours.
	Diet and nutrition		Although the Site will lead to a temporary and/or permanent loss of agricultural land, the agricultural land on Site represents 0.007% of the UK's utilised agricultural area, it is unlikely that the changes in agricultural land are sufficiently extensive to substantially constrain local food supply, or cause any human health effects to occur.
	Housing		The construction of Scheme is expected to draw upon only a relatively small proportion of construction and decommissioning workers within a commutable distance. During operation only be a very small number of permanent staff, and only a small number of temporary staff who would be required periodically for the replacement activities of panels, and BESS, and so they



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
			are not expected to adversely impact the availability of housing.
	Relocation		The Scheme would not involve the relocation of any residents.
	Open space, leisure and play		There is currently no open space, leisure space, or play space on the Site. While the Site contains multiple PRow, these are not considered relevant to leisure space for the purposes of this assessment
	Transport modes, access and connections		<p>Construction and decommissioning traffic to and from the Site would be managed with mitigation measures to be outlined within the Construction Traffic Management Plan (CTMP). Effects during decommissioning are considered to be similar or of lesser magnitude than construction.</p> <p>Scheme design and inclusion of appropriate embedded design and mitigation measures to reflect and accord with Scheme design principles. The traffic impacts of the Operational Phase are expected to be much lower than that of the Construction and Decommissioning Phases. Operational traffic impacts would be managed by the Operational Environmental Management Plan (OEMP).</p>



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
	Community safety		<p>Security measures such as perimeter fencing and CCTV systems are likely to be installed around the perimeter of the operational areas.</p> <p>Access to and from the Site would be managed through the Construction Environment Management Plan (CEMP), and so the Site is not expected to have an impact on community safety with regards to health.</p> <p>The aforementioned fencing and Site security would be maintained during the Operational Phase of the Scheme.</p>
	Community, identity, culture, resilience and influence		<p>Any potential negative impacts during the Construction and Decommissioning Phases on this would be managed by measures set out in the CEMP. The Site would not directly impact any local community centres or meeting spaces and as such would not have an effect on health.</p> <p>During the Operational Phase the Scheme is considered to support local investment through employment and skills initiatives which can contribute to a positive community identity, providing long-term social and economic benefits that strengthen the community's resilience. In addition, the Scheme would not impede or replace any area or venue that is currently used by the community, and so would be unlikely to disrupt any community cultural activities.</p>



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
	Social participation, interaction and support		The Scheme would not directly impact any local community centres or meeting spaces where social participation, interaction or support takes place
	Education and training	Scoped In – C and D Scoped Out – O	The Scheme could provide educational and training opportunities over the course of the Construction, Operation and Decommissioning Phases. There is potential that this effect could lead to a significant population health effect, this will be assessed in the combined Socio-economics and Human Health chapter of the ES.
	Employment and income		The Scheme is expected to support only a small amount of employment during the Operational Phase (outside of replacement activities). This effect is not considered to lead to a significant population health effect.
	Climate change and adaptation	Scoped In – O Scoped Out – C and D	Carbon and climate altering pollutant emissions are not expected to be of the scale to have significant health effects during this temporary phase
	Air quality	Scoped Out – C, O, and D	Chapter 10: Air Quality of the EIA Scoping Report concludes that a dedicated air quality chapter will not be required as part of the ES, as significant air quality effects are not anticipated. Dust and particulate matter emissions produced during Construction Phase activities would be



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
			<p>controlled thorough the implementation of an outline Construction Environmental Management Plan (oCEMP), ensuring there are no likely significant environmental effects.</p> <p>Traffic volumes associated with the Scheme, and thus air quality impacts, are expected to be lower in the Operational Phase than the Construction and Decommissioning Phases. Any potential negative impacts on air quality would be managed by measures set out in the OEMP.</p>
	Water quality or availability		<p>Any potential negative impacts on water quality or availability during the Construction and Decommissioning Phases would be managed by measures set out in the CEMP and the impact of the Scheme on water quality and availability will be analysed in the Water Resources and Ground Conditions chapter of the ES. Assessment of potential impacts, and inclusion of appropriate mitigation measures and good design will be covered in the above set out chapter. Additionally, Chapter 13: Water Resources and Ground Conditions of the EIA Scoping Report does not identify any human receptor impacts.</p> <p>The potential for contamination is anticipated to be much lower in the Operational Phase than during the Construction and Decommissioning Phases. There is also the potential for the Scheme to include a surface</p>



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
			water drainage system to manage fire water run-off in the event of a fire.
	Land quality		<p>It is considered unlikely that the Construction Phase will significantly affect the agricultural land quality or soil resource, particularly given that construction and decommissioning activities will involve limited excavation. Chapter 13: Water Resources and Ground Conditions of the EIA Scoping Report has scoped out Ground Conditions due to the limited ground disturbance during the Construction Phase and absence of sensitive superficial geology receptors.</p> <p>It is unlikely that maintenance and routine operations during the Operational Phase would significantly impact land quality.</p>
	Noise and vibration		Assessment of potential impacts and inclusion of appropriate mitigation measures and good design will be covered elsewhere in the ES (such as the In-Combination and/or Noise chapters).
	Radiation		Chapter 18: Other Environmental Matters of the EIA Scoping Report details how Electromagnetic Fields (EMF) radiation is proposed to be scoped out of the EIA. The Scheme is not anticipated to exceed The International Commission for Non-Ionizing Radiation



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
			<p>Protection (ICNIRP) exposure guidelines, and the design of the Scheme will consider any infrastructure constraints.</p> <p>Where the Scheme has cables exceeding 132kV mitigating techniques such as minimum stand-off distances between receptors will be implemented to mitigate the risk to human health.</p>
	Health and social care services		<p>It is considered additional demand on health and social services would be temporary and would not be expected to be significant as the annual number of construction workers injured at work is low and the CEMP will outline how the Construction phase will follow best practice measures, thus minimising the risk of accidents or injury.</p> <p>Operational workforce will comprise a very small number of permanent staff. While temporary staff will be required for periodic replacement activities of the Scheme's infrastructure these activities are not expected to necessitate a substantial workforce or extend over a prolonged period of time.</p>
	Built environment		<p>It is unlikely that there will be significant effects on existing features of the built environment in terms of population health given the Site's location. There are no community facilities on-site which would be affected by the construction and decommissioning phase. The CEMP</p>



Environmental Topic	Matter	Scoped In and Out – Construction (C), Operation (O), and Decommissioning (D)	Reasoning to support aspect/matter being Scoped Out where relevant
			<p>also outlines measures that will mitigate any negative effects with respect to the bio-physical environment.</p> <p>The Scheme is expected to have a positive land-use effect and will not impact local community spaces. Any potential air quality impacts will be mitigated through the measures outlined in the OEMP and therefore, not likely to be significant.</p>
	Wider societal infrastructure and resources		<p>A Planning Statement will be submitted with DCO Application addressing the alignment of the Scheme with government policy to secure wider societal health benefits through infrastructure, and the potential health benefits of this.</p> <p>The Scheme benefits on employment and income will be assessed in the combined Socio-economics and Human Health chapter of the ES.</p>


Table 19.2 Approach to Other Environmental Matters

Chapter 18: Other Environmental Matters		Scoped In/Scoped Out
Electromagnetics Fields (EMF)	<p>The Scheme is not anticipated to exceed the ICNIRP exposure guidelines, and the design of the Scheme will consider any infrastructure constraints. In light of this, no likely significant effects are expected for EMF from the Scheme; therefore this whole topic is proposed to be scoped out.</p> <p>Albeit a Risk Assessment will be undertaken and submitted as a technical appendix to the ES.</p>	Scoped Out
Major Accidents and Disasters	<p>The probability, likelihood and frequency of a major accident and/or disaster is considered to be very low with respect to the Scheme and would be managed under established legislative requirements, good practice construction techniques, the design process and a suite of management plans. There is no direct statutory provision in the planning system relating to protection from MADS. As such, further assessment of the vulnerability of the Scheme to major accidents and disasters is scoped out of the EIA.</p> <p>The potential receptors and risks of effects resulting from major accidents or disasters will be considered through other technical chapters of the ES (such as within the Air Quality chapter of the ES) and where relevant appropriate management plans, and this will negate the need for a specific major accidents or disasters topic chapter in the ES.</p>	Separate chapter Scoped Out – to be considered in the technical chapters of the ES
Telecommunications, Utilities and Television	<p>It is considered that significant effects on telecommunications, utilities and television receptors are not likely, with relevant measures will be captured within the Scheme design. Therefore, it is not considered necessary to include a separate chapter on Telecommunications, Utilities and Television Receptors within the ES and it is proposed to be scoped out of the ES.</p>	Scoped Out



Chapter 18: Other Environmental Matters		Scoped In/Scoped Out
Waste	<p>Significant effects arising from waste are not expected during Construction, Operation, or Decommissioning Phases, and hence the need for a separate waste chapter has been scoped out of the EIA.</p> <p>However, the outline Site Waste Management Plan (oSWMP) will contain estimates of by type and quantity, of expected residues and emissions and quantities and types of waste produced during the Construction and Operation Phases will be provided.</p> <p>Good practice measures will be set in place to ensure responsible processing of waste is adhered to. This will be secured through the Outline Construction Environmental Management Plan (oCEMP), Outline Operational Environmental Management Plan (oOEMP) and Outline Decommissioning Environmental Management Plan (oDEMP).</p>	Scoped Out



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- Ref 18-220 Department for Energy Security and Net Zero (2024). The National Policy Statement (NPS) for Energy (EN-1)
- Ref 18-221 Waste Management Plan for England 2021, Department for Environment, Food and Rural Affairs.
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The Droves Solar Farm – Environmental Impact Assessment Scoping Report

November 2024



THE DROVES
SOLAR FARM