



East Pye Solar Project

Environmental Impact Assessment (EIA) Scoping Report

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Contents

1	Introduction	20
1.1	Overview	20
1.2	The Applicant.....	21
1.3	The Scoping Boundary.....	21
1.4	NSIPs and the EIA Process	23
1.5	Request for a Scoping Opinion.....	24
1.6	General Approach to Scoping Matters In and Out.....	24
1.7	Consultation.....	26
1.8	Legislative Context and Planning Policy	28
2	Site Description	41
2.1	Introduction.....	41
2.2	The Site	41
2.3	Site 1	41
2.4	Site 2	44
2.5	Site 3	46
2.6	Site 4	48
2.7	Site 5	50
2.8	Site 6	53
2.9	Site 7	55
2.10	Site 8	58
2.11	Site 9	60
2.12	Site 10	62
2.13	BESS Site.....	65
2.14	National Grid Substation Site (including Grid Connection Infrastructure).....	67
2.15	Cable Route Corridor	69
3	Scheme Description	71
3.1	Overview	71
3.2	Components of the Scheme.....	71
3.3	PV Panels.....	72
3.4	Solar PV Arrays and Mounting Structure	72
3.5	Conversion Units	74
3.6	Substations.....	75
3.7	Battery Energy Storage System	78
3.8	Fencing and Security	79
3.9	Cable Route Corridor	80
3.10	Site Access.....	81
3.11	Access Tracks	81
3.12	Green Infrastructure.....	81
3.13	Mitigation and Enhancement Areas.....	82
3.14	Development Capacity	82

3.15	Construction	83
3.16	Operation and Maintenance	84
3.17	Decommissioning	85
3.18	Design Principles and Parameters	86
3.19	Commitments Register.....	89
4	EIA Methodology	90
4.1	Introduction.....	90
4.2	Environmental Statement.....	90
4.3	Consultation.....	91
4.4	EIA Methodology	91
4.5	Alternatives and Design Evolution	94
4.6	Construction and Decommissioning Methodology and Phasing	94
4.7	Mitigation and Enhancement Measures.....	95
4.8	Cumulative and In-Combination Effects.....	95
4.9	Summary and Residual Effects	95
5	Topics to be Scoped Out	96
5.1	Overview	96
5.2	Air Quality.....	97
5.3	Water Environment	105
5.4	Major Accidents & Disasters	112
5.5	Electric, Magnetic and Electromagnetic Fields.....	117
5.6	Telecommunications, Television Reception and Utilities	119
5.7	Glint and Glare.....	120
5.8	Lighting	124
5.9	Minerals.....	125
5.10	Waste & Materials.....	126
5.11	Socio-Economics	131
5.12	Human Health.....	138
5.13	Arboriculture	144
5.14	Ground Conditions.....	144
6	Topics to be Scoped In	153
6.1	Overview	153
7	Landscape and Visual.....	154
7.1	Introduction.....	154
7.2	Study Area.....	154
7.3	Overview of Legislation, Policy and Guidance	155
7.4	Baseline Environment	159
7.5	Embedded Mitigation	175
7.6	Methodology	175
7.7	Likely Significant Effects	176
7.8	Impacts Scoped Out of the Assessment.....	177
7.9	Proposed Approach to the ES.....	179

	7.10	Summary of Effects & Impacts	179
8		Ecology and Biodiversity.....	182
	8.1	Introduction.....	182
	8.2	General Site Description	182
	8.3	Study Area.....	183
	8.4	Overview of Legislation, Policy and Guidance	184
	8.5	Baseline Environment	185
	8.6	Project Basis for Scoping Assessment	205
	8.7	Embedded Mitigation	206
	8.8	Likely Significant Effects	208
	8.9	Impacts Scoped Out of the Assessment.....	209
	8.10	Proposed Approach to the ES	213
	8.11	Summary	215
9		Cultural Heritage	221
	9.1	Introduction.....	221
	9.2	Study Area.....	221
	9.3	Overview of Legislation, Policy and Guidance	221
	9.4	Baseline Environment	224
	9.5	Project Basis for Scoping Assessment	232
	9.6	Likely Significant Effects	232
	9.7	Impacts Scoped Out of the Assessment.....	234
	9.8	Proposed Approach to the ES	234
	9.9	Summary	238
10		Transport and Access.....	239
	10.1	Introduction.....	239
	10.2	Study Area.....	239
	10.3	Overview of Legislation, Policy and Guidance	240
	10.4	Baseline Environment	243
	10.5	Project Basis for Scoping Assessment	252
	10.6	Likely Significant Effects	255
	10.7	Impacts Scoped Out of the Assessment.....	262
	10.8	Proposed Approach to the ES	262
	10.9	Summary	264
11		Noise and Vibration.....	265
	11.1	Introduction.....	265
	11.2	Study Area.....	265
	11.3	Overview of Legislation, Policy and Guidance	265
	11.4	Baseline Environment	269
	11.5	Project Basis for Scoping Assessment	275
	11.6	Embedded Mitigation	276
	11.7	Likely Significant Effects and Additional Mitigation.....	276
	11.8	Impacts Scoped Out of the Assessment.....	280

11.9	Proposed Approach to the ES	282
11.10	Summary	282
12	Climate Change	283
12.1	Introduction.....	283
12.2	Study Area.....	283
12.3	Overview of Legislation, Policy and Guidance	284
12.4	Baseline Environment	285
12.5	Project Basis for Scoping Assessment	288
12.6	Embedded Mitigation	288
12.7	Likely Significant Effects	289
12.8	Impacts Scoped Out of the Assessment.....	290
12.9	Proposed Approach to the ES	293
12.10	Summary	296
13	Soils and Agricultural Land	298
13.1	Introduction.....	298
13.2	Study Area.....	298
13.3	Overview of Legislation, Policy and Guidance	298
13.4	Baseline Environment	299
13.5	Project Basis for Scoping Assessment	304
13.6	Embedded Mitigation	312
13.7	Likely Significant Effects	313
13.8	Impacts Scoped Out of the Assessment.....	314
13.9	Proposed Approach to the ES	315
13.10	Summary	315
14	Cumulative and In-Combination Effects.....	317
14.1	Overview	317
14.2	Cumulative Effects Assessment.....	317
14.3	Transboundary Effects.....	323
14.4	In-Combination Effects.....	324
15	Conclusions.....	325

Figures and Images included in text within Volume I

Figure 1.1	Scoping Boundary.....	22
Figure 1.2	Site Layout (Overview Sheet).....	23
Image 1	Tracker Panels	72
Image 2	Fixed South Facing PV Arrays.....	73
Image 4	Central Inverter Unit	75
Image 3	String Inverter.....	75
Image 5	132/33kV Substation (single transformer)	76
Image 6	Typical 400kV power transformer	77
Image 7	Battery and Energy Storage System (BESS)	79
Image 8:	Typical deer fencing	79
Image 9:	Pole-mounted Security Camera.....	80
Insert 1:	The Waste Hierarchy.....	127

Figure 10.3 Proposed Vehicle Routing and Access (overview Sheet 1)	248
Figure 11.1: Proposed Sound Survey Locations	275
Insert 12.1. PAS 2080 Lifecycle Stages.8	294
Insert 13.1: Provisional ALC Map extract and Groups	300
Insert 13.2: Predictive Likelihood of BMV	301
Insert 13.3: Predictive Likelihood of BMV, Wider Area	302
Insert 13.4: Extract from the National Soil Map	303

Tables

Table 1.1: East Pye Solar Project Team	25
Table 3.1: Design Parameters	86
Table 4.1: Environmental Statement Structure	90
Table 4.2: Methodology for Assessing Magnitude	92
Table 4.3: Methodology for Determining Sensitivity	92
Table 4.4: Effect Significance Matrix	93
Table 4.5: Generic Effect Definitions	93
Table 5.1 2021-Based DEFRA Estimated Annual Mean Background Concentrations	99
Table 5.2 Potential Air Quality effects and justification for scoping out	104
Table 5.3: Potential Water Environment effects and justification for scoping out	112
Table 5.4 Summary of Major Accidents and Disasters Reasoning for Scoping Out	114
Table 5.5 Aviation Receptors	121
Table 5.6: Glint and Glare Assessment Summary	124
Table 5.7 East of England – Landfill Capacity (End 2022)	129
Table 5.8: Socio-Economic Receptors, Potential Effects and Justification for Scoping Out of the Assessment	133
Table 5.9: Potential Health Effects and Justification for Scoping Out of the Health Assessment	140
Table 5.10 Potential Ground Conditions effects and justification for scoping out ground conditions	151
Table 7.1: Landscape Designations	159
Table 7.2: Proposed View Locations (VL) and Reasons for Inclusion	169
Table 7.3: Summary of Effects & Impacts	179
Table 8.1: International/European Designated Sites within 10km of the Sites and CRC	186
Table 8.2: National and Local Statutory Designated Sites within 5km of the Site and CRC	188
Table 8.3: Non-Statutory Designated Sites present within 0.5km of the Sites and CRC	191
Table 8.4: Priority Habitats Present within 2km of the Sites	194
Table 8.5: Summary of Habitat Survey Results	196
Table 8.6: Summary of Ecological Receptors Scoped-in and Scoped-out of the Environmental Statement	216
Table 9.1: Most sensitive assets BESS Site	224
Table 9.2: Most sensitive assets Site 1 and National Grid Substation Site	224
Table 9.3: Most sensitive assets Site 2	225
Table 9.4: Most sensitive assets Site 3	225
Table 9.5: Most sensitive assets Site 4	225
Table 9.6: Most sensitive assets Site 5	226
Table 9.7: Most sensitive assets Site 6	226
Table 9.8: Most sensitive assets Site 7	226
Table 9.9: Most sensitive assets Site 8	227
Table 9.10: Most sensitive assets Site 9	227
Table 9.11: Most sensitive assets Site 10	227
Table 9.12 Criteria for the Assessment of the Value of Heritage Assets	236
Table 9.13 Criteria for Assessing the Magnitude of Development Impacts on Cultural Heritage	236
Table 9.14 Criteria for Assessing the Significance of Development Impacts on Cultural Heritage	237
Table 9.15: Cultural heritage and archaeology scoping summary	238
Table 10.1: Indicative Study Area Links	243
Table 10.2: Railway Services	245
Table 10.3: Bus Services	246
Table 10.4: Likely Access Routeing	247
Table 10.5: ATC Baseline Flows	250
Table 10.6: MCP Locations in Study Area	250

Table 10.7: Trip-Generation Estimates by Site Group – Solar Farm.....	253
Table 10.8: Sensitivity / Importance of Identified Receptor.....	259
Table 10.9: Magnitude of Change Assessment Criteria	259
Table 10.10: Significance of Potential Effects.....	261
Table 10.11: Summary of Scope for Transport and Access	264
Table 11.1: Identified Noise and Vibration Sensitive Receptors - BESS Site and Site 1	269
Table 11.2: Identified Noise and Vibration Sensitive Receptors - Site 2	270
Table 11.3: Identified Noise and Vibration Sensitive Receptors - Site 3	270
Table 11.4: Identified Noise and Vibration Sensitive Receptors - Site 4	271
Table 11.5: Identified Noise and Vibration Sensitive Receptors - Site 5	271
Table 11.6: Identified Noise and Vibration Sensitive Receptors - Site 6	272
Table 11.7: Identified Noise and Vibration Sensitive Receptors – Site 7.....	272
Table 11.8: Identified Noise and Vibration Sensitive Receptors - Site 8	273
Table 11.9: Identified Noise and Vibration Sensitive Receptors - Site 9	273
Table 11.10: Identified Noise and Vibration Sensitive Receptors - Site 10	274
Table 11.11: Summary of Scope for Noise and Vibration.....	282
Table 12.1. Average 50 th Percentile Climate Projections at 25km grid square 637500, 287500 and 612500, 287500 using baseline 1981-2000 scenario RCP 8.5	287
Table 12.2. GHG Significance (IEMA, 2022).....	295
Table 12.3: Summary of Scope of ES for Climate Change.....	296
Table 13.1: Methodology for Determining Receptor Sensitivity for Agriculture and Soils.....	305
Table 13.2: Methodology for Determining Magnitude of Change for Agriculture and Soils	305
Table 13.3: Methodology for Determining Significance	306
Table 13.4: Summary of Scope for Soils and Agriculture	316
Table 14.1: Cumulative Effects Assessment Approach.....	318
Table 14.2: Cumulative Schemes.....	319
Table 14.3: NSIP Cumulative Schemes.....	322
Table 15.1: Proposed scope of the ES	326

Volume II – Figures

Figure 1.1	Scoping Boundary
Figure 1.2	Site Location Plan
Figure 5.1	Potential Sources of Contamination Location Plan
Figure 7.1	Zone of Theoretical Visibility
Figure 7.2	Landscape Designations Plan
Figure 7.3	Landscape Character Plan
Figure 7.4	Topography Plan
Figure 8.1	Internationally Designated Sites
Figure 8.2	Statutory Designated Sites
Figure 8.3	Non-Statutory Designated Sites
Figure 8.4	UKHabitat Survey Results
Figures 9.1 – 9.10	Heritage Figures showing Designated Assets
Figures 9.11 – 9.21	Heritage Figures showing HER Monument Records
Figure 10.1	Indicative Transport and Access Study Area
Figure 10.2	Public Rights of Way and National Cycle Network
Figure 10.3	Indicative Routeing and Access
Figure 10.4	Traffic Survey Locations
Figure 11.1	Proposed Sound Survey Locations

Volume III - Appendices

Appendix 5.1	Preliminary Minerals Resource Assessment
Appendix 5.2	Phase 1 Ground Conditions Assessment
Appendix 7.1	Landscape and Visual Methodology
Appendix 7.2	Landscape and Visual Pre-Scoping Consultation
Appendix 9.1	Heritage Gazetteer

Appendix 11.1 Noise Survey Method Statement

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Glossary

Term	Definition
132kV Substation	The 132kV substations are located within the solar PV arrays and comprise equipment to convert energy from 33kV to 132kV and connect to the Conversion Units. These 132kV substations will be located across the Sites and will feed into the 400kV Substations. These substations will comprise electrical infrastructure such as the Transformers, Switchgear and control equipment.
33kV Substation	The 33kV substations are located within the solar PV arrays. They will collect energy from the solar PV arrays and connect to the Conversion Units.
400kV Substation 1	A substation located in the south-west of the Site (within the BESS site) to convert energy from 132kV to 400kV to export electricity from the Scheme to the National Grid Substation. It will comprise electrical infrastructure such as the Transformers, Switchgear and control equipment. This substation will also provide Ancillary Buildings for staff welfare and storage facilities.
400kV Substation 2	A substation likely to be located in Site 5 to convert energy from 132kV to 400kV to export electricity from the Scheme to 400kV Substation 1, before it is exported to the National Grid Substation. It will, comprise electrical infrastructure such as the Transformers, Switchgear and control equipment. This substation will also provide Ancillary Buildings for staff welfare and storage facilities.
Abnormal Indivisible Load (AIL)	Classified as a vehicle which exceeds 44 tonnes gross vehicle weight or is a width of more than 2.9m and length of more than 18.65m.
Above Ground Level (AGL)	Measures height from the identified ground level.
AC (Alternative Current)	Alternative Current electricity is a type of electricity current which travels in a wave pattern and is the most common form of electricity used in homes and businesses.
Access Tracks	Internal access tracks will be required to facilitate construction and the movement of operations and maintenance vehicles around the Site. Where possible, these will follow existing farm tracks around the Site.
Agricultural Land Classification (ALC)	The measurement of agricultural land quality.
Air Quality Management Areas (AQMA)	Designated areas in which there are exceedances of pollutants in which developments must employ extra measures and precautions to protect air quality.
Ancient Woodland Inventory (AWI)	A collection which identifies over 52,000 ancient woodland sites in England.
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.
Annual Average Daily Flow (AADF)	The average traffic flow of a transport network in a local area.
Annual Average Daily Traffic (AADT)	The measure of daily traffic within a specific area which is determined on an annual basis.

Term	Definition
Annual Exceedance Probability (AEP)	The probability where flood level will exceed expected levels.
Applicant	East Pye Solar Limited
Associated Development	Development associated with the Scheme, including but not limited to the Battery Energy Storage System (BESS); substations; and grid connection infrastructure (including a new National Grid Substation) and Ancillary Infrastructure integral to the construction, operation (and maintenance) and decommissioning of the Scheme.
Automatic Traffic Count (ATC)	Method to measure both the speed and number of vehicle movements in a local area.
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.
Basic Noise Level (BNL)	Basic Noise Level is the level of noise in the surrounding environment.
Battery Energy Storage System (BESS)	Battery Energy Storage Systems (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.
Battery Fire Safety Management Plan (BSMP)	Applies fire safety design measures to minimise fire risk and ensure a fire is contained and extinguished effectively.
Best and Most Versatile Agricultural Land (BMV)	Agricultural land of grades 1, 2 and 3a is considered to be BMV land.
Biodiversity Net Gain (BNG)	Biodiversity Net Gain is an approach to development that makes sure habitats for wildlife are left in a measurably better state than they were before the development. Energy NSIP proposals should provide net gains for biodiversity where possible.
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 (CRC)	An area of land identified for the proposed underground cables between the Sites and the Point of Connection. At the EIA scoping stage the CRC has been defined as a wide area, with the expectation that it will be refined and reduced in size at the point of submission of the DCO Application. The defined extent of the CRC as identified at the EIA scoping stage, is fully considered in this EIA Scoping Report.
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.
Carbon Dioxide Equivalent (CO ₂ e)	Metric for assessing carbon emissions.
Construction (Design and Management) Regulations 2015 (CDM)	Regulates the health, safety and welfare of construction workers.
Construction Compound	Secure temporary construction compounds will be used to store materials and provide welfare facilities during the construction period.

Term	Definition
	The Site is anticipated to have two primary construction compounds and up to three secondary compounds.
Construction Environmental Management Plan (CEMP)	A specific plan developed to ensure that appropriate environmental management practices are followed during the construction phase of the Scheme. An outline Construction Environmental Management Plan (OCEMP) will be submitted alongside the DCO Application.
Construction Industry Research and Information Association (CIRIA)	Research and information organisation which provides guidance for building and civil engineering as well as transport and utilities infrastructure.
Construction Phase	The period of constructing the Scheme including enabling and commissioning works.
Construction Traffic Management Plan (CTMP)	The Construction Traffic Management Plan outlines the management of construction vehicles and worker travel associated with the construction period of the Scheme. An Outline Construction Traffic Management Plan (OCTMP) will be submitted alongside the DCO Application.
Construction Worker Travel Plan (CWTP)	An outline Construction Worker Travel Plan (CWTP) will be developed as part of the OCTMP to demonstrate sufficient measures can be put in place to minimise and manage the environmental and traffic impacts from the construction phase of the Scheme.
Control of Major Accidents Hazards Regulations (COMAH)	Sites identified to impact sensitive receptors from hazards.
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.
County Wildlife Sites (CWS)	Locally designated areas due to their significant wildlife value.
Critical National Priority (CNP)	A project that has been established by the UK as essential for the country's security, economy or well-being
Cumulative Effects	Effects upon the environment that result from the incremental impact of an action when added to other past, present or reasonably foreseeable actions. Each impact by itself may not be significant but can become a significant effect (in EIA terms) when combined with other impacts.
Cumulative Schemes	Schemes which have been identified for the assessment of likely significant cumulative effects on the environment.
Decommissioning Environmental Management Plan (DEMP)	A Decommissioning Environmental Management Plan (DEMP) will be secured by DCO Requirement and will ensure that appropriate environmental management practices are followed during the decommissioning phase of the Scheme.
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 substations (excluding the National Grid Substation).
Design Manual for Roads and Bridges (DMRB)	Design Manual for Roads and Bridges is used to assess transport networks and traffic flows.
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 (and maintenance) and

Term	Definition
	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 to be submitted by The Applicant for the Scheme.
Digital Surface Model (DSM)	Computer data of elevation data, terrain and objects on earth
Digital Terrain Model (DTM)	Topographical model of the earth.
Direct Current (DC)	Type of electric current which flows in one direction and is usually used in batteries.
Ecological Impact Assessment (EclA)	The process through which the potential impacts of the Scheme are identified and assessed through ecological surveys.
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. A such, these are produced in the surrounding area of anywhere there is an electric current.
Environmental DNA (eDNA)	Genetic material left by organisms in the environment.
Environmental effect	The consequence of an action (impact) upon the environment.
Environmental Impact Assessment (EIA)	A process, underpinned by legislation, by which information about environmental effects of a Scheme is collected, assessed and used to inform decision making. For certain projects EIA is a statutory requirement.
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.
Environmental Impact Assessment Regulations (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 Statement (ES)	The EIA process will continue up to submission of the DCO Application and will be reported in full in an ES.
Fixed South Facing PV Arrays	Solar photovoltaic (PV) panels that face south and are mounted to fixed Mounting Structures in an east/west configuration. Sometimes commonly referred to as 'fixed panels'.
Flood Risk Assessment (FRA)	Assesses the risk of the Scheme on increasing flood risk and the initial flood risk of the Site.
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.
Gigawatt (GW)	A GW is a unit of power equal to one billion watts.

Term	Definition
Glare	A continuous source of excessive brightness experienced by a stationary observer located in the path of reflected sunlight from the face of the PV panel.
Glint	A momentary flash of bright light that may be produced as a direct reflection of the sun in the solar panel.
Global Warming Potential (GWP)	Measurement of the potential for greenhouse gases to trap heat.
Greater Norwich Local Plan (GNLP)	Local planning policy as adopted by South Norfolk Council in March 2024.
Green Infrastructure	A network of landscape and ecological proposals that connect and enhance the existing natural environment to provide beneficial impacts for communities and species.
Greenhouse Gas (GHG)	Gases in the earth's atmosphere such as carbon dioxide that trap heat.
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 photovoltaic (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.
Habitat Regulations Assessment (HRA)	Tests the Scheme for the potential to significantly harm any designated ecological sites.
Heating, ventilation and air conditioning (HVAC) system	System used to cool the BESS of the Scheme.
Heavy Goods Vehicle (HGV)	Large lorries for materials/component deliveries e.g. PV panels.
High Voltage Cables/ Cabling	High Voltage cables (33kV, 132kV and 400kV) which transmit electricity from the Conversion Units to the BESS and the 400kV Substations.
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.
Historic Environment Record (HER)	The collection of information on archaeology and the historic built environment within the UK.
Horizontal Directional Drilling (HDD)	A potential trenchless method in the construction of the cable route for the Scheme.
Hydrogen fluoride (HF)	A chemical compound which can be released from an unlikely fire event of the BESS.
Information and Communications Technologies (ICTs)	Communication technology such as the internet, wireless networks, cell phones, computers and more.
Institute of Environmental Management and Assessment (IEMA)	A professional organisation established to improve environmental sustainability and management.
Inverter	Inverters convert the direct current (DC) electricity generated by the PV panels into alternative current (AC), which allows the electricity generated to be exported to the National Grid.
Island Green Power (IGP)	IGP is a leading international developer of renewable energy projects, established in 2013.
Landscape Character Area (LCA)	Defines a specific area by natural, cultural and landscape features.

Term	Definition
Landscape Character Types (LCT)	Categorise landscapes that share characteristics such as geology, vegetation and land use.
Landscape Environmental Management Plan (LEMP)	A LEMP will provide details of planting and enhancements and will set out how these measures will be implemented and maintained. An Outline Landscape Environmental Management (OLEMP) Plan will be appended to the ES.
Lead Local Flood Authority (LLFA)	The LLFA for the Scheme is Norfolk County Council.
Light Good Vehicle (LGV)	Vans and small flatbeds for plant maintenance, PPE, fixings, small components, couriers, and canteen supplies.
Local Nature Reserves (LNR)	Protected area of ecological interest designated by the local authority.
Local Planning Authority (LPA)	The planning department of the district or borough council (South Norfolk Council and Norfolk County Council) of the area in which the Scheme resides.
Low Voltage Cables/Cabling	Cables which transmit electricity from the PV Panels to the Conversion Units.
Lowest Observed Adverse Effect Level (LOAEL)	Lowest Observed Adverse Effect Level is the measured ambient sound level.
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).
Manual Classified Count (MCC)	Traffic flow surveys.
Manual Count Point (MCP)	The location in which a MCC survey is undertaken.
Mega-watt (MW)	A unit of measurement for electrical power. One MW is equal to one million watts.
Mitigation	Measures including any process, activity or design to avoid, reduce, or remedy for negative environmental impacts or effects of a development.
Mitigation and Enhancement Areas	The areas within the Scheme that are being proposed for mitigation and enhancement.
Mounting Structure	The structure that is fixed to the ground and onto which the PV panels are attached.
National Air Quality Objective (NAQO)	Target values for air quality that are set nationally to protect human health.
National Character Area (NCA)	Large-scale landscapes in England as defined by their natural, cultural and geographic features.
National Cycle Network (NCN)	Network of paths and routes for walking, wheeling and cycling in the UK.
National Electricity Transmission Systems (NETS)	The NETS is a network of high-voltage power lines which distributes electricity across the country.
National Energy System Operator (NESO)	The UK organisation that manages the transmission network.
National Grid Substation	A 400kV (kilovolt) substation operated by National Grid Electricity Transmission. A new National Grid Substation will be required to connect the 400kV substation(s) to the grid. The substation would be operated by National Grid Electricity Transmission plc. The National Grid Substation will contain switchgear equipment, a control building housing equipment and car parking. The National Grid Substation may be located either within sub-Site 1B or the area of land marked as 'National Grid Substation Site' (See Figure 1.2)

Term	Definition
National Heritage List for England (NHLE)	Register of all nationally protected.
National Heritage List for England (NHLE)	Register of all nationally protected historic buildings and sites in England.
National Infrastructure Commission (NIC)	The NIC is the official advisor to the Government on infrastructure.
National Policy Statements (NPS)	National Policy Statements (NPS) 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.
Natural Environment and Rural Communities (NERC) Act (2006)	UK law which aims at enhancing biodiversity, conserving natural resources and promoting sustainable land management.
Nitrogen Dioxide (NO ₂)	A greenhouse gas.
Non-road Mobile Machinery (NRMM)	Mobile machines and transportable industrial equipment or vehicles.
Non-Technical Summary (NTS)	The Non-Technical Summary (NTS) is a summary of the PEIR and ES in non-technical language.
Norfolk County Council (NCC)	NCC is the County-level administrative authority within which the Site is located (i.e. one of the 'host authorities').
Norfolk Historic Environment Record (NHER)	Norfolk's local record of archaeology and the historic built environment.
Norfolk Historic Environment Record (NHER)	Norfolk's record of archaeology and the historic built environment.
Operational Phase	The period within which the Scheme is operational and may require maintenance activities, including equipment replacement. The operational phase follows the Construction Phase and will last up to 60 years.
Ordinance Survey (OS)	The Ordinance Survey is a review of detailed mapping.
Particulate matter (PM _{2.5} and PM ₁₀)	A mixture of solid particulates and liquid droplets found in the air which are a form of particle pollution.
Peak Particle Velocity (PPV)	The measurement of vibration.
Permissive Paths	New recreational permissive paths that the public may use during the Operational Phase subject to the terms of the DCO.
Personal Injury Crash (PIC)	The records used to assess the level of effect for accidents and safety as a result of the Scheme.
Photovoltaic (PV)	The process of converting sunlight to electrical energy.
Photovoltaic (PV) Panel	Solar photovoltaic panel designed to convert solar irradiance to electrical energy. The PV panel is attached to a Mounting Structure (which collectively, is referred to as the Ground mounted PV Module).
Planning Act (PA) 2008	The Planning Act 2008 establishes a process for obtaining planning permission for NSIPs.
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

Term	Definition
	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 Norwich to Bramford 400kV overhead lines, with which the Scheme will connect, to transfer the energy generated to the National Grid system.
Polybrominated diphenyl ethers (PBDE)	Chemicals which are classified as a priority hazardous substance.
Polymerase Chain Reaction (PCR)	Laboratory technique used to detect species eDNA within water samples.
Pre-Construction Information Pack (PCIP)	Contains information used by the PC to prepare construction and decommissioning phase risk assessments and method statements which will be informed by appropriate assessment work.
Preliminary Ecological Appraisal (PEA)	An initial survey which assesses the habitats on Site.
Preliminary Environmental Information Report (PEIR)	The PEIR will contain the initial findings of the assessment of likely significant environmental effects resulting from the construction, operation (and maintenance), and decommissioning phases of the Scheme. Preliminary Environmental Information is defined in the EIA Regulations as: 'information referred to in regulation 14(2) which: (a) has been compiled by the Applicant; and (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)'. The PEIR will be published alongside the Statutory Consultation exercise, that will be carried stage of for the Scheme.
Preliminary Flood Risk Assessment (PFRA)	Local data for flood risk used to inform the FRA for the Scheme.
Principal Contractor (PC)	Appointed to plan, manage, monitor and coordinate health and safety during the pre-construction and construction phases.
Public Right of Way (PRoW)	PRoW comprise Footpaths (FP) and Bridleways (BW) as defined by NCC.
Representative Concentration Pathways (RCPs)	Used to develop climate change projections which will result in a different range of global mean temperature increases until 2099.
Roadside Nature Reserves (RNR)	Specific stretches of roadside managed to support and protect habitats and species.
Scheme	The Scheme is a Nationally Significant Infrastructure Project (NSIP). It comprises 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. The Scheme is known as 'East Pye Solar'.
Setting	The surroundings within which a heritage asset is experienced and any element which contributes to the understanding of its significance.
Significant Observed Adverse Effect Level (SOAEL)	The Significant Observed Adverse Effect Level is a noise level in which a significant effect on nearby receptors would occur.
Single Axis Tracker PV Panels	Solar photovoltaic (PV) panels that are in a north:south configuration that allow the PV panel to rotate and track the movement of the sun throughout the day. The panel then returns to its original position during the night. Sometimes commonly referred to as 'tracker panels'.

Term	Definition
Site	The Site comprises approximately 2,215 hectares of land located to the east of Long Stratton in Norfolk. The Site includes 10 individual Sites, which are further sub-divided into sub-Sites (which host the generating stations; including solar PV and other Associated Development, Substations, Mitigation and Enhancement Areas, Highway Works and Ancillary Infrastructure); the National Grid Substation site (including Grid Connection Infrastructure); Battery Energy Storage System Site; and Cable Route Corridor (CRC).
Site Waste Management Plan (SWMP)	A plan implemented to ensure best practice in waste management, handling and diversion during the construction phase.
Sites of Special Scientific Interest (SSSI)	A protected site of particular interest to science due to the species of flora or fauna it contains and any features of geological or physiological importance.
Soil Management Plan (SMP)	A management plan detailing construction, operation and decommissioning measures for ensuring the quality and protection of soils within these phases. An outline version of this plan will be submitted and secured via the DCO.
Soil Resource and Management Plan (SRMP)	A management plan detailing the survey work required for the CRC and subsequent measures required for the construction phase relating to the CRC. An outline version of this plan will be submitted and secured via the DCO.
Solar Photovoltaic (PV) Array	Solar PV arrays comprise solar panels placed on a mounting structure framework and arranged in rows.
Source Protection Zone (SPZ)	Designated areas to protect drinking water quality.
South Norfolk Council (SNC)	SNC, which is the District-level administrative authority within which the Site is located (i.e. one of the 'host authorities').
South Norfolk Development Management Policies Document (DMPD)	Policy document as part of the South Norfolk Local Plan which provides a spatial strategy for land use.
Special Area of Conservation (SAC)	A protected site to conserve rare or important habitats, plants and animals.
Special Protection Areas (SPA)	Sites which are selected to protect one or more rare, threatened or vulnerable bird species.
SSSI Impact Risk Zones (IRZ)	Identified areas surrounding an SSSI designation which have the potential to impact the designation.
Statement of Community Consultation (SoCC)	The SoCC outlines how the Applicant intends to consult with the local community on the Scheme.
Strata	A layer or a series of layers of rock in the ground.
Strategic Flood Risk Assessment (SFRA)	Local data for flood risk used to inform the FRA for the Scheme.
Strategic Road Network (SRN)	A core part of the national transport system which comprises 4,500 miles of motorways and major roads.
Sub-Site	The Scheme includes a number of Sites, numbered 1 -10 which host the generating stations; including solar PV and other Associated Development, Substations, Mitigation and Enhancement Areas, Highway Works and Ancillary Infrastructure. Within these Sites, there are a number of separate sub-Sites which have been sub-numbered e.g. 2A, 2B, 2C.
Sustainable Drainage Systems (SuDS)	Provides sustainable mechanisms to manage surface water runoff quantity and quality in a sustainable manner.

Term	Definition
Switchgear	A combination of electrical disconnect switches, fuses or circuit breakers used to control, protect, and isolate electrical equipment.
Target Note (TN)	The location of an ecologically significant feature.
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.
Transport Assessment (TA)	Assesses the impact of the Scheme on the local transport network.
Unexploded Ordnance (UXO)	Explosive weapons within the ground that did not explode and are therefore at risk of detonation.
View Locations (VLs)	VLs are selected to inform visual effects from a number of sensitive receptors. The Applicant has agreed view locations with the SNC.
Village Clusters Housing Allocations Plan (VCHAP)	Local Plan document that, once adopted, will form part of the Development Plan for South Norfolk, aiming to allocate new housing sites in the area's villages.
Water Framework Directive (WFD)	Ensures that all surface water and groundwater bodies are of good chemical quality.
Water Management Alliance (WMA)	A partnership between Norfolk Rivers, Waveney, Lower Yare and Lothingland Internal Drainage Boards (IDBs) which control easement requirements from their watercourses.
Zone of Theoretical Visibility (ZTV)	A map, usually digitally produced, showing areas of land from which the Scheme is theoretically visible.
Zones of Influence (ZOI)	Areas which have the potential to cause impacts and subsequent effects to ecological features during the construction, operation and decommissioning phases of the Scheme.

1 Introduction

1.1 Overview

- 1.1.1 This Environmental Impact Assessment (EIA) Scoping Report (hereafter known as the 'Scoping Report') has been prepared on behalf of East Pye Solar (the 'Applicant') for a solar photovoltaic (PV) electricity generating station, and associated development including Battery Energy Storage System (BESS), Ancillary Infrastructure, substations 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 The Scheme 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.
- 1.1.3 This Scoping Report 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.
- 1.1.4 This Scoping Report 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.
- 1.1.5 The Scoping Report has been prepared with reference to Planning Inspectorate (PINS) Advice Note Seven: Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements¹ which contains guidance on EIA Scoping, and the NSIP Technical Advice Page for Scoping Solar Development.
- 1.1.6 The purpose of the Scoping Report is to request a formal Scoping Opinion from the Secretary of State (SoS) in accordance with Regulation 10 of the EIA Regulations and to ensure that a proportionate EIA is undertaken. The benefits of delivering proportionate EIA, as defined by the Institute of Environmental Management and Assessment (IEMA) (2017), are to:
- drive collaborative action and understanding across the EIA community;
 - focus assessments so their findings are accessible to all stakeholders;
 - reduce uncertainty and risk within project consenting;
 - save time and costs for developers, consenting authorities and consultees; and

¹ Planning Inspectorate (2020) Nationally Significant Infrastructure Projects - Advice Note Seven: Environmental Impact Assessment: process, preliminary environmental information and environmental statements available at: <https://www.gov.uk/government/publications/nationally-significant-infrastructure-projects-advice-note-seven-environmental-impact-assessment-process-preliminary-environmental-information-an>

- allow more time to be spent exploring the delivery of environmental improvements.
- 1.1.7 One of the key actions which can help to deliver proportionate EIA is to undertake a balanced and appropriate scoping exercise. To this end, two integral elements of this Scoping Report are to: describe aspects of the environmental impacts of the Scheme which the Applicant believes can be scoped out in the interest of proportionality; and describe the proposed approach to the EIA to be undertaken subsequently.
- 1.1.8 In due course, the ES, which reports the proportionate EIA, will be based on the Scoping Opinion, which is in turn informed by the recommendations of the consultees and the information contained within this Scoping Report. This Scoping Report (**Volume I**) is supported by a suite of figures and appendices that are provided in **Volume II** and **Volume III**, respectively. Where relevant, figures are reproduced within this report to guide the reader, however, they are also provided in full in **Volume I**.

1.2 The Applicant

- 1.2.1 The Scheme is being developed by East Pye Solar Ltd (the Applicant), part of Island Green Power Limited (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.
- 1.2.2 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 generation possible, whilst drastically reducing carbon emissions. IGP is 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.
- 1.2.3 With a track record in developing more than 1 Gigawatt of renewable assets, over the past decade IGP 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.

1.3 The Scoping Boundary

- 1.3.1 **Figure 1.1** below illustrates the Scoping boundary that has been used to inform this Scoping Report. Further plans are provided in full and on a Site-by-Site basis in **Volume II**.

- 1.3.2 The scoping boundary is defined as the area within which the Scheme will be located, including its electrical infrastructure and temporary work areas. The boundary combines the solar photovoltaic (PV) arrays, conversion units, substations (including a National Grid Substation; BESS Site and the Cable Route Corridor (CRC), which is the cable route that connects the solar PV areas and the Point of Connection). The Site is disparate in nature and shown in **Figure 1.2** sheets 1 – 13 (**Volume II**).
- 1.3.3 The EIA process will inform the design of the Scheme. This may result in the Site boundary being changed, specifically in respect of the CRC, when the final DCO Order Limits are defined.

Figure 1.1 Scoping Boundary

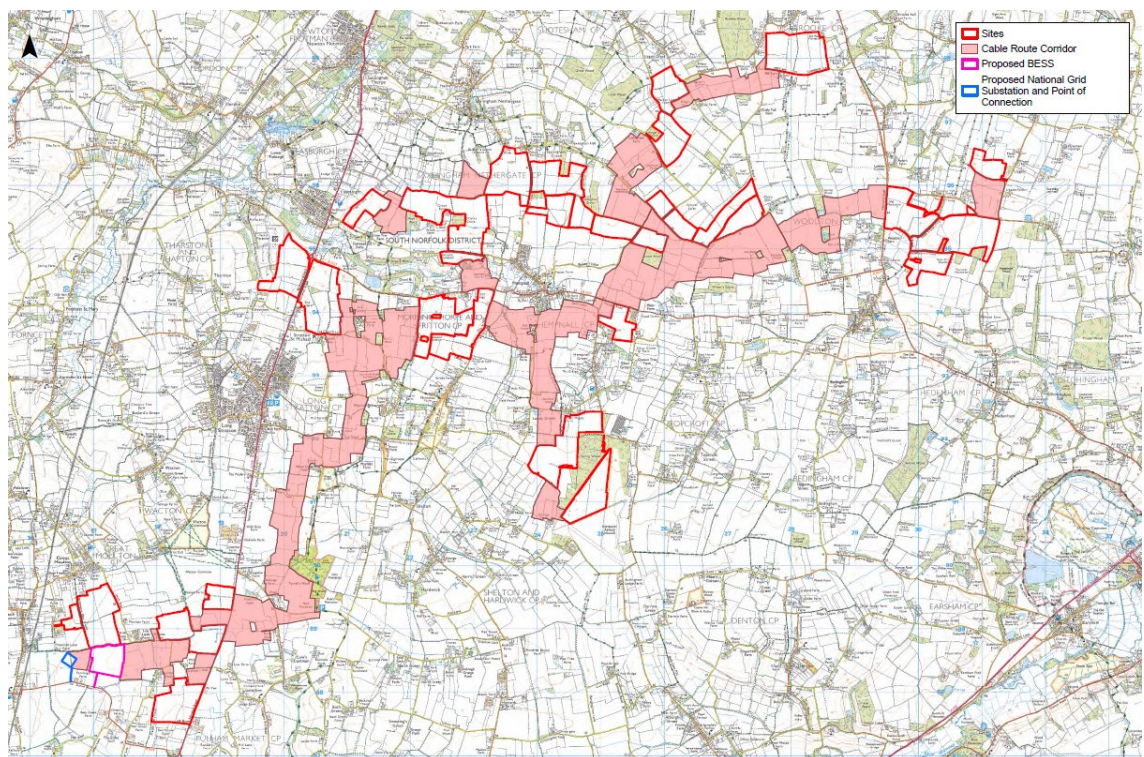
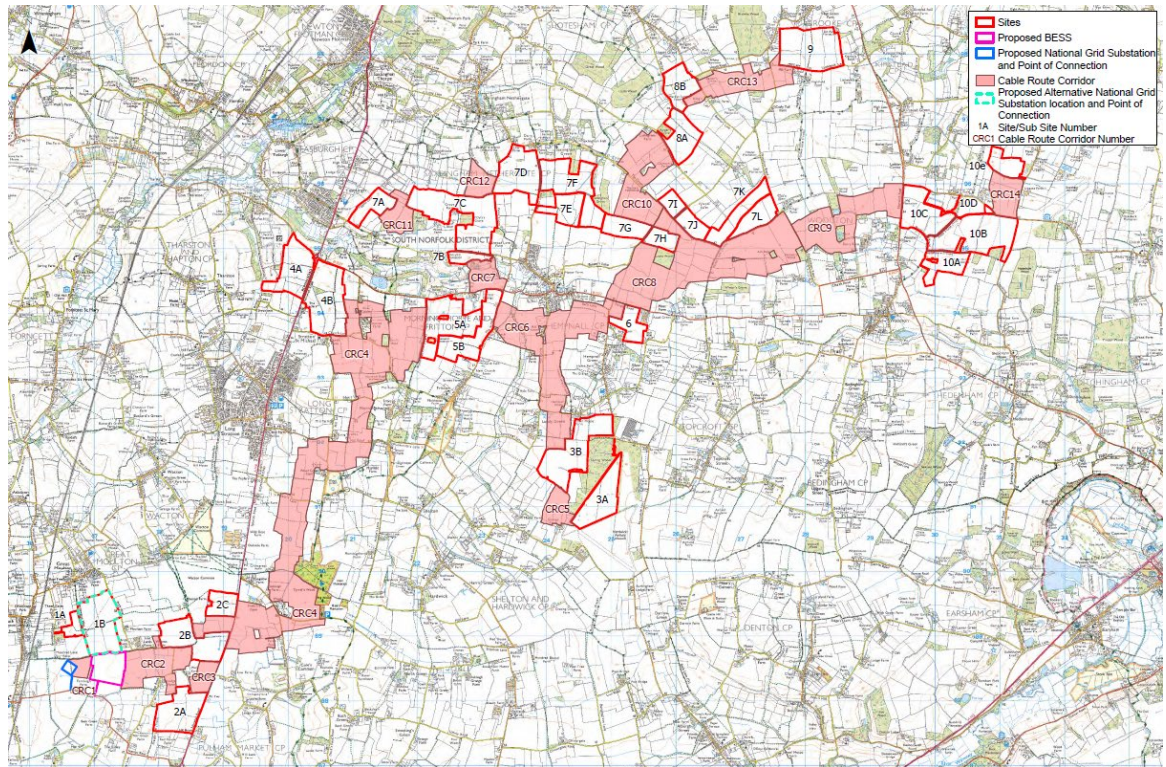


Figure 1.2 Site Layout (Overview Sheet)



1.4 NSIPs and the EIA Process

- 1.4.1 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 (PA2008) and therefore, requires a Development Consent Order (DCO) under PA2008.
- 1.4.2 It is noted that the UK Government intends to raise the threshold from 50MW to 100MW. However, the prevailing threshold remains as 50MW at the time of writing. Notwithstanding, the Scheme would exceed the to-be-updated 100MW threshold.
- 1.4.3 The process for applying for a DCO is set out in the PA2008. Section 31 of PA2008 states that a DCO is required for development that is or forms part of an NSIP. EIA Scoping falls into the pre-application stage of the DCO process. The EIA Regulations make provisions for various matters in connection with making a DCO Application, including in respect of the pre-application stage.
- 1.4.4 The EIA requirement for NSIPs is transposed into law through the EIA Regulations. The EIA Regulations specify which developments are required to undergo EIA, and schemes relevant to the NSIP planning process are listed under either 'Schedule 1' or 'Schedule 2'. Those developments listed in Schedule 1 must be subject to EIA, while developments listed in 'Schedule 2' must only be subject to EIA if they are considered *'likely to have significant effects on the environment by virtue of factors such as its nature, size or location'* (Regulation 3(1) of the EIA Regulations). The selection criteria for Schedule 2 development are set out in Schedule 3.

- 1.4.5 The Scheme is a ‘Schedule 2’ development under paragraph 3(a) of Schedule 2 of the EIA Regulations, as it constitutes *‘industrial installations for the production of electricity, steam and hot water’* and is not a project listed in Schedule 1.
- 1.4.6 The Applicant hereby gives notice, pursuant to Regulation 8(1)(b) of the EIA Regulations, that the application for a DCO will be accompanied by an ES. The ES will include at least the information set out in Regulation 14(a) to (e) of the EIA Regulations and any additional information specified in Schedule 4 relevant to the specific characteristics of the East Pye Solar Project and to the environmental features likely to be significantly affected by it. It will include the information reasonably required for reaching a reasoned conclusion on the significant effects of the Scheme.

1.5 Request for a Scoping Opinion

- 1.5.1 This Scoping Report has been prepared by Stantec, including its IEMA qualified assessors, on behalf of the Applicant with regard to the Scheme, which is situated in the area of Long Stratton, South Norfolk.
- 1.5.2 Following the completion of the surveys, assessments and consultation processes outlined in this EIA Scoping Report, an application for a DCO will be made to the Planning Inspectorate on behalf of the SoS for determination in accordance with PA2008.
- 1.5.3 This Scoping Report is submitted in support of a request pursuant to Regulation 10 of the EIA Regulations for a Scoping Opinion from the SoS on the scope and level of detail of the information to be provided in the ES. It includes the information required by Regulation 10(3) as follows:
- a. *a plan sufficient to identify the land (see **Figure 1.1**);*
 - b. *a description of the Scheme, including its location and technical capacity (see **Chapter 3 Scheme Description** of this Scoping Report);*
 - c. *an explanation of the likely significant effects of the development on the environment (see **Chapters 5 - to 14** of this Scoping Report); and*
 - d. *Such other information or representations as the person making the request may wish to provide or make (see Figures and Appendices referenced throughout).*

1.6 General Approach to Scoping Matters In and Out

- 1.6.1 This Scoping Report has been produced in accordance with the EIA Regulations and appropriate guidance documents. The Inspectorate’s Advice Note Seven: Environmental Impact Assessment: Preliminary Environmental Information and

Environmental Statements (2020)² observes that, although not a statutory requirement, the Scoping Opinion is an important document. This is because the scoping process allows for an early identification of the likely significant effects applicable to the EIA Regulations and also provides an opportunity to agree where aspects and matters can be scoped out from further assessment. This Scoping Report has also taken into consideration the recently-issued Scoping Opinions of locationally-relevant solar DCOs including The Drovers and High Grove.

- 1.6.2 Section 4.10 of Advice Note Seven highlights the essential need to ensure that ESs are appropriately focused on aspects and matters where a likely significant effect may occur, which thereby ensures that the EIA process is proportionate. This includes scoping out from the ES the need for further assessment aspects and matters where it is appropriate to do so. Advice Note Seven goes on to advise that applicants should ensure that their scoping request includes sufficient justification for scoping aspects/matters out, and that this justification should be evidence-based and have reference to the assessment process.
- 1.6.3 The Inspectorate published further guidance in relation to Scoping Solar Development in September 2024³ to provide advice on conducting proportionate, evidence-based scoping. Regard has been had to this guidance in the preparation of this Scoping Report.
- 1.6.4 The topics to be scoped out of the ES, and the Applicant's justification for this, are set out in **Chapter 5** of this Scoping Report. The topics proposed to be scoped into the assessment are: Cultural Heritage; Landscape & Visual; Ecology & Biodiversity; Transport & Access; Noise; Climate Change; and Soils and Agricultural Land and are discussed in **Chapters 7 – 13**. A summary of the overall approach to the assessment is provided in **Chapter 15**. **Table 1.1** below, details the key topic authors that will be providing technical assessment work contributing to the EIA.

Table 1.1: East Pye Solar Project Team

Topic	Author
Air Quality	Stantec
Climate Change	Stantec
Cultural Heritage	GHC Heritage
Ecology and Biodiversity	Stantec
EIA coordinators	Stantec
Glint and Glare	Pager Power
Ground Conditions and Minerals	Stantec
Human Health	Stantec

² The Inspectorate (2020). Nationally Significant Infrastructure Projects - Advice Note Seven: Environmental Impact Assessment: process, preliminary environmental information and environmental statements [online]. <https://www.gov.uk/government/publications/nationally-significant-infrastructure-projects-advice-note-seven-environmental-impact-assessment-process-preliminary-environmental-information-an>

³ The Inspectorate (2024). Nationally Significant Infrastructure Projects: Technical Advice Page for Scoping Solar Development [online]. Available at: https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-technical-advice-page-for-scoping-solar-development?utm_medium=email&utm_campaign=govuk-notifications-topic&utm_source=2ef29f6b-8e65-4f1a-b8c2-0cba49981a46&utm_content=daily

Landscape and Visual Impact	Stantec
Noise and Vibration	Stantec
Socio-economics	Stantec
Soils and Agricultural Land	Kernon Countryside Consultants Ltd
Transport and Access	Stantec
Waste and Materials	Stantec
Water Environment (Flood and Drainage)	Stantec

1.7 Consultation

Introduction

- 1.7.1 Sections 42, 47 and 48 of PA2008 and Regulation 13 of the EIA Regulations 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.
- 1.7.2 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. The consultation, as an ongoing process, enables mitigation measures to be incorporated into the Scheme to limit adverse environmental effects and optimise environmental benefits.
- 1.7.3 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

- 1.7.4 PINS acting on behalf of the Secretary of State will consult on this Scoping Report 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 host authorities. Comments received from consultees will be considered and included within the Scoping Opinion issued by PINS.
- 1.7.5 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 and South Norfolk District Council (Officers and Members);
 - Parish Councils (see further below);

- The Planning Inspectorate;
 - Local Members of Parliament – MPs for South Norfolk and Waveney Valley;
 - Natural England; and
 - Norfolk Wildlife Trust.
- 1.7.6 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.
- 1.7.7 This will include complying with the consultation requirements set out in 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.
- 1.7.8 In respect of the local communities likely to be affected by the Scheme, the Applicant has undertaken the first stage of (non-statutory) consultation October 23 through to 6 December 2024. The Applicant identified and engaged with a wide range of community interest groups as part of this process. This involved the following Parish Councils:
- Host Parish Councils – Hempnall, Morningthorpe and Fritton, Woodton, Saxlingham Nethergate, Shotesham, Brooke Kirstead, Seething, Hedenham Parish Meeting, Tasburgh, Tivetshall, Great Moulton, Shelton and Hardwick Wacton, Long Stratton, Tharston and Hapton, Pulham, Howe Parish Meeting.
 - Neighbouring parish councils – Topcroft, Mundham, Bedingham Parish Meeting, Alburgh Parish Council, Thwaite, Pullham St. Mary, Flordon, Aslacton.
- 1.7.9 This initial period of consultation has now concluded, and the Applicant has considered 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

- 1.7.10 A Statement of Community Consultation (SoCC) will be prepared in accordance with Section 47 of PA2008. The SoCC will outline how the Applicant intends to consult with the local community on the Scheme.
- 1.7.11 The Applicant is required to consult the local authorities identified pursuant to Section 43(1) of 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.
- 1.7.12 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 PA2008 and Regulation 13 of the EIA Regulations. The Applicant will also publicise the proposed DCO Application in accordance with Section 48 of PA2008.

- 1.7.13 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 PA2008. The consultation responses will be recorded in a Consultation Report which will be submitted as a part of the DCO Application.

1.8 Legislative Context and Planning Policy

Introduction

Net Zero Opportunities of the Power Sector

- 1.8.1 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 UK 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.
- 1.8.2 The National Infrastructure Commission (NIC), official advisor to the Government on infrastructure, has subsequently produced a report, 'Net Zero: Opportunities for the Power Sector', 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.
- 1.8.3 The British Energy Security Strategy (April 2022)⁴ 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)⁵ 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 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.
- 1.8.4 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.

⁴ British Energy Security Strategy, Secure, clean and affordable British energy for the long term, HM Government, April 2022

⁵ Powering Up Britain: Energy Security Plan, HM Government, March 2023

Primary Legislation

Planning Act 2008

- 1.8.5 The Scheme constitutes a NSIP, in accordance with the PA2008, 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)).
- 1.8.6 Consequently, a DCO Application under the PA2008 is required which will be determined by the Secretary of State (SoS).

Environment Act 2021

- 1.8.7 The Environment Act 2021 (Commencement No. 3) Regulations 2022 ('2021 Act')⁶ 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.
- 1.8.8 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 NSIPs⁷, meaning the Scheme will need to achieve a minimum of 10% BNG.

Net Zero Strategy: Build Back Greener

- 1.8.9 The Net Zero Strategy⁸, published by Government on 19 October 2021, builds on the Government's commitments made in the Energy White Paper (2020)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

⁶ The Environment Act 2021 (Commencement No. 3) Regulations 2022, UK Statutory Instruments 2022 No. 518 (C. 21)

⁷ The Biodiversity Net Gain Statutory Instruments – explained: The Biodiversity Net Gain Statutory Instruments – explained – Environment (blog.gov.uk)

⁸ Net Zero Strategy: Build Back Greener, HM Government, October 2022

⁹ Energy White Paper, Powering our Net Zero Future, HM Government, December 2020

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."

National Planning Policy

National Policy Statements

- 1.8.10 The DCO Application must be determined in accordance with Section 104 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.
- 1.8.11 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)¹⁰;
 - NPS on Renewable Energy Infrastructure (EN-3)¹¹; and
 - NPS for Electricity Networks Infrastructure (EN-5)¹².

Overarching National Policy Statement for Energy (EN-1)

- 1.8.12 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.
- 1.8.13 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".*
- 1.8.14 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*

¹⁰ Department for Energy Security & Net Zero, Overarching National Policy Statement for Energy (EN-1), November 2023

¹¹ Department for Energy Security & Net Zero, National Policy Statement for Renewable Energy Infrastructure (EN-3), November 2023

¹² Department for Energy Security & Net Zero, National Policy Statement for Electricity Networks Infrastructure (EN-5), November 2023

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 generation¹³, 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".

1.8.15 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".

1.8.16 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.

1.8.17 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".

1.8.18 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".

1.8.19 Paragraphs 3.3.4 to 3.3.7 collectively set out the *need for different types of electricity infrastructure*, identifying that 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.

1.8.20 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.

1.8.21 Paragraph 3.3.20 states:

¹³Footnote 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.

“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 solar¹⁴.”

- 1.8.22 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.

- 1.8.23 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 6¹⁵. According to the Net Zero Strategy¹⁶ 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”.

- 1.8.24 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.

- 1.8.25 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.”

- 1.8.26 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”.

- 1.8.27 The energy NPSs have taken account of the National Planning Policy Framework (NPPF), the Planning Practice Guidance (PPG) for England, and Planning Policy

¹⁴ Footnote 44 from EN-1: <https://www.gov.uk/government/publications/modelling-2050-electricity-system-analysis>

¹⁵ Footnote 61 taken from EN-1: <https://www.gov.uk/guidance/carbon-budgets#setting-of-the-sixth-carbon-budget-2033-2037>

¹⁶ Footnote 62 taken from EN-1: <https://www.gov.uk/government/publications/net-zero-strategy>

Wales (PPW) and Technical Advice Notes (TANs) for Wales, where they are appropriate¹⁷. 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.

- 1.8.28 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.”

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

- 1.8.30 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 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.”

- 1.8.31 It is therefore considered that the Scheme is low carbon infrastructure and so is considered CNP infrastructure.

- 1.8.32 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:

¹⁷ 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:

“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”.

1.8.33 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 ES for projects that are subject to the EIA Regulations¹⁸.

1.8.34 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”.

1.8.35 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”.

1.8.36 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”.

1.8.37 EN-1 sets out assessment principles and generic impacts that an ES 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)

¹⁸ 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.

- 1.8.38 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.
- 1.8.39 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”.*
- 1.8.40 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.
- 1.8.41 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 Strategy¹⁹ states the government expects a fivefold increase in solar development by 2035 (up to 70GW).
- 1.8.42 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.
- 1.8.43 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”*
- 1.8.44 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.
- 1.8.45 Paragraphs from 2.10.127 - 2.10.144 of EN-3 provides topic-specific requirements of how applicants should consider impacts within technical assessments,

¹⁹ Footnote 79 taken from EN-3: 73 See <https://www.gov.uk/government/publications/britishenergy-security-strategy/british-energysecurity-strategy>

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)

1.8.46 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).

1.8.47 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”.

1.8.48 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”.*

1.8.49 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:

- i. reconnect important habitats via green corridors, biodiversity stepping zones, and reestablishment of appropriate hedgerows; and/or*
- ii. connect people to the environment, for instance via footpaths and cycleways constructed in tandem with environmental enhancements”.*

- 1.8.50 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

- 1.8.51 The revised National Planning Policy Framework (NPPF) (December 2024)²⁰ sets out the UK government's planning policies for England and how these are expected to be applied.
- 1.8.52 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.
- 1.8.53 So that sustainable development is pursued in a positive way, at the heart of the NPPF is a presumption in favour of sustainable development.
- 1.8.54 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.
- 1.8.55 Section 14 ‘*Meeting the challenge of climate change, flooding and coastal change*’ paragraph 161, of the NPPF identifies that:
- “The planning system should support the transition to net zero by 2050 and take full account of all climate impacts including overheating, water scarcity, storm and flood risks 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”.*
- 1.8.56 Paragraph 168 now states that planning authorities should “*not require applicants to demonstrate the overall need for renewable or low carbon energy, and give significant weight to the benefits associated with renewable and low carbon energy generation and the proposal’s contribution to a net zero future*”.
- 1.8.57 In addition, the NPPF has been brought into closer alignment with EN-3 with regards to agricultural land. Footnote 62 of the previous adopted NPPF has been revised (now Footnote 65), to remove the need to consider the availability of agricultural land for food production, in deciding which sites are appropriate for development.

²⁰ National Planning Policy Framework, Ministry of Housing, Communities & Local Government, December 2024

Local Policy

Greater Norwich Local Plan

- 1.8.58 The Greater Norwich Local Plan (GNLP)²¹ was adopted by South Norfolk Council on 25 March 2024. The adopted GNLP consists of three documents, namely The Strategy, The Sites Plan and The Monitoring Framework.
- 1.8.59 The Strategy consists of seven policies, of which the following are relevant to the Scheme:
- Policy 3 – Environmental Protection and Enhancement
 - Policy 4 – Strategic Infrastructure
- 1.8.60 The Sites Plan contains the planning allocations for the sites to deliver the Strategy. The document does not include any residential sites in smaller South Norfolk villages as South Norfolk Council are preparing a separate village clusters plan (see below). It does however consider non-residential sites in South Norfolk villages.
- 1.8.61 The Sites Plan includes allocations within South Norfolk. However, none of the allocated sites are within close proximity to the Scheme.
- 1.8.62 The Monitoring Framework outlines the indicators and targets used to monitor the implementation of the GNLP's policies and objectives, ensuring that the plan's goals for sustainable growth, housing, and infrastructure are met.

The South Norfolk Local Plan²²

- 1.8.63 The South Norfolk Site-Specific Allocations and Policies Document (adopted in October 2015) has been superseded by the adoption of the GNLP except for the smaller villages in South Norfolk, which will be addressed through a new South Norfolk Village Clusters Housing Allocations Local Plan (currently under preparation).
- 1.8.64 The South Norfolk Development Management Policies Document (DMPD) was adopted on 26th October 2015 and forms part of the South Norfolk Local Plan. The Key Diagram, which sets out the spatial strategy for land use and transport planning in the DMPD will be superseded by the Key Diagram in the GNLP Strategy, but the remainder of the document is to be carried forward and used in conjunction with the adopted plan.
- 1.8.65 The relevant policies in the DMPD are as follows:
- Policy DM1.1 – Ensuring development management contributes to achieving sustainable development in South Norfolk;
 - Policy DM1.3 – The sustainable location of new development;

²¹ Various (2024) Greater Norwich Local Plan, Available at: <https://www.gnlp.org.uk/local-plan-examination-local-plan-examination-document-library/j-inspectors-report-and-adoption>

²² South Norfolk and Broadland District Council (2015) Development Management Policies Document

- Policy DM1.4 – Environmental quality and local distinctiveness;
- Policy DM3.8 – Design principles applying to all development;
- Policy DM3.13 – Amenity, noise and quality of life;
- Policy DM3.14 – Pollution, health and safety;
- Policy DM4.1 – Renewable energy;
- Policy DM4.2 – Sustainable drainage and water management;
- Policy DM4.4 – Natural environmental assets – designated and locally important open space;
- Policy DM4.5 – Landscape character and river valleys;
- Policy DM4.8 – Protection of trees and hedgerows;
- Policy DM4.9 – Incorporating landscape into design; and
- Policy DM4.10 – Heritage Assets.

South Norfolk Supplementary Planning Documents

- 1.8.66 In addition to the Village Clusters Housing Allocation Plan the following documents have been recognised as supplementary planning documents to the policies set out in the South Norfolk Development Plan.
- South Norfolk landscape character assessments 2001 and 2021 Landscape Designations Review²³

Local Policies

- 1.8.67 The policy documents identified below, are considered to be relevant to the Scheme.
- Long Stratton Area Action Plan (2016)²⁴
 - Long Stratton Neighbourhood Plan (2021)²⁵
 - The Tivetshalls Neighbourhood Plan (2022)²⁶
 - Tasburgh Neighbourhood Plan (2024)²⁷

Emerging Plan: South Norfolk Village Clusters Housing Allocations Plan²⁸

- 1.8.68 The Village Clusters Housing Allocations Plan (VCHAP) is a Local Plan document that, once adopted, will form part of the Development Plan for South Norfolk, aiming to allocate new housing sites in the area's villages. It plans to deliver around 1,200 new homes by 2038. Between 12 August and 7 October, South Norfolk Council published a Regulation 19 Pre-submission Addendum to the VCHAP, allowing formal representations on proposed changes. This Addendum includes alternative and amended site allocations and other focused modifications following earlier

²³ South Norfolk and Broadland District Council (2012) Landscape Character Assessments

²⁴ South Norfolk Council (2016) Long Stratton Area Action Plan

²⁵ LSNP (2016_ Long Stratton Neighbourhood Plan

²⁶ The Tivetshalls Neighbourhood Plan 2022 – 2042, Adopted December 2022

²⁷ The Tasburgh Neighbourhood Plan, Adopted July 2022

²⁸ South Norfolk Village Clusters Housing Allocations Plan, Broadland and South Norfolk

consultations, addressing changes to the Regulation 19 VCHAP document published in 2023.

- 1.8.69 A review of the allocations confirmed that none of them overlap with the Sub-Sites or cable route corridor within the red line boundary of the Scheme.

Norfolk County Council

- 1.8.70 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 Development Plans comprise:

- Core Strategy and Minerals and Waste Development Management Policies DPD 2010-2026 (adopted September 2011)²⁹
- Minerals Site Specific Allocations Development Plan Documents (DPD)³⁰ (adopted October 2013, amendment adopted December 2017)
- Waste Site Specific Allocations Development Plan Document (DPD) (adopted October 2013)³¹

²⁹ Core Strategy and Minerals and Waste Development Management Policies Development Plan Document 2010-2026

³⁰ Norfolk County Council (2017) Norfolk Minerals and Waste Development Framework – Mineral Site Specific Allocations Development Plan Document

³¹ Norfolk County Council (2013) Norfolk Minerals and Waste Development Framework – Waste Site Specific Allocations Development Plan Document

2 Site Description

2.1 Introduction

- 2.1.1 This Chapter gives an overview of the Site, its surrounding area and the CRC, as shown on **Figure 1.2 (Sheets 1 – 13) (Volume II)**. The Site is described in its entirety, as well as on the basis of the individual Sites which lie within the whole Site. Within each Site, there are sub-Sites, which relate to individual land parcels. Where necessary these sub-Sites, or groupings of these sub-Sites are described individually.

2.2 The Site

- 2.2.1 The Site is situated within the administrative boundaries of Norfolk County Council (NCC) and South Norfolk Council (SNC). The Site spans a number of land parcels that will be developed for solar development, associated infrastructure and landscaping proposals. Taken together, and including the current CRC, the whole Site covers approximately 2,215 hectares south of Norwich and north of Harleston. The Site is grouped into Sites 1 – 10; the National Grid Sub-station Site and the BESS Site. Sites 3 to 10 are concentrated to the east of Long Stratton, with an additional cluster of land parcels including Sites 1 and 2, and the BESS Site and National Grid Substation Site located south of Great Moulton, approximately, 6.5km to the south-west of the remainder of the Scheme (see **Figure 1.2, Sheet 1 of 13**).
- 2.2.2 All distances are approximate calculations, based on the closest point to the Site or sub-Site.
- 2.2.3 Key baseline information is provided below as an overview of each Site. Further baseline information more pertinent to each technical topic are provided in the respective Chapters (**Chapter 5** and **Chapters 7 – 13**).

2.3 Site 1

Overview

- 2.3.1 Site 1 is 56ha in size comprising two adjacent land parcels, sub-Site 1A and sub-Site 1B immediately to the east. Site 1 is located at the southern extent of the Scheme boundary, 170m south-west of Great Moulton, and immediately to the north of the BESS Site (see **Figure 1.2 Sheet 2 of 13**).
- 2.3.2 Sub-Site 1A comprises one agricultural field and sub-Site 1B encompasses four fields. Part of sub-Site 1B has the potential to accommodate the National Grid Substation. Whilst the National Grid Substation is likely to be located at the National Grid Substation Site as discussed at **Section 2.14** of this Chapter, this is subject to on-going discussions with National Grid.

Landscape and Visual

- 2.3.3 There are no statutory landscape designations covering Site 1, nor are there any within 10km.
- 2.3.4 The nearest area of residential dwellings lies within Great Moulton. However, there are closer, individual residential dwellings, some within 75m of sub-Site 1A to the north-west and 120m east of sub-Site 1B.
- 2.3.5 The topography of the Site is predominantly level, which is similar to the area surrounding Site 1.
- 2.3.6 The Site and individual fields are bordered sporadically by trees and hedgerows. Further agricultural fields are beyond Site 1. The BESS Site is located to the south of sub-Site 1B on the southern side of Hundred Lane.

Ecology and Biodiversity

- 2.3.7 There are no areas of Ancient Woodland within 2km of the Site.
- 2.3.8 Norfolk Valley Fen Special Area of Conservation (SAC) is located 7.3km north of sub-Site 1B.
- 2.3.9 There are three Sites of Special Scientific Interest (SSSI) located within 5km of the Site:
 - Pulham Market Big Wood SSSI, 1.9km east of sub-Site 1B;
 - Aslacton Parish Land SSSI, 2.2km north-west of sub-Site 1B; and
 - Forncett Meadows SSSI, 2.7km north of sub-Site 1B.

Heritage

- 2.3.10 There are no statutory historic designations within Site 1.
- 2.3.11 There are multiple Grade I and II* Listed Buildings within 3km of the Site, which are listed below. There are no Grade II Listed Buildings within 100m of Site 1. Any Grade II assets over 100m from the Site that are likely to be impacted by the Scheme are discussed in **Chapter 9**.
 - Grade II* Listed Building 'Wacton Hall', 980m north-east of sub-Site 1B;
 - Grade II* Listed Building 'Old Rectory', 1.1km north-west of sub-Site 1B;
 - Grade II* Listed Building 'Tomb Chest' about 20 metres South-west of Church St Michael, 1.2km north of sub-Site 1B;
 - Grade II* Listed Building 'Church of St Michael', 1.2km north-west of sub-Site 1A;
 - Grade II* Listed Building 'Channon Hall', 1.7 km west of sub-Site 1A;
 - Grade I Listed Building 'Church of St Margaret', 1.7km south of sub-Site 1B; and

- Grade I Listed Building 'Church of St Michael', 1.9km north-west of sub-Site 1A.

2.3.12 There are no Scheduled Monuments, Registered Historic Parks and Gardens or Registered Battlefields within proximity of Site 1.

Transport

2.3.13 There are multiple Public Rights of Way (PRoW) within proximity of Site 1. PRoW 'Great Moulton FP14' crosses the centre of Site 1 and connects to PRoW 'Great Moulton FP15' from the west and 'Great Moulton FP12' to the east.

2.3.14 Narrowgate Way separates sub-Site 1A and sub-Site 1B. Frith Way travels along the northern boundary and Hundred Lane travels along the southern boundary of sub-Site 1B.

2.3.15 An active railway track is located 280m to the west which runs north to south in relation to sub-Site 1A. Details relating to this railway track are further described in **Chapter 10**.

Ground Conditions

2.3.16 There are no active or historic landfills within 1km of Site 1.

2.3.17 The bedrock geology of the Site is chalk deposits of Lewes Nodular Chalk, Seaford Chalk, Newhaven Chalk, Culver Chalk and Portsdown Chalk, which are classified as a Principal Aquifer.

2.3.18 The superficial deposits beneath the Site are Lowestoft Formation which is classified as a Secondary (undifferentiated) Aquifer.

Water Resources and Flooding

2.3.19 Site 1 is located within Flood Zone 1. The River Yare (a main river as designated by the Environment Agency) is located 1.6km north.

2.3.20 There are two unnamed watercourses which run into Site 1 from the south and west borders.

2.3.21 The majority of the Site is at a very low risk to surface water flooding, and a very low risk to river and sea flooding.

2.3.22 Site 1 is located within a drinking water safeguard zone for surface water. Site 1 is also located within a Source Protection Zone (SPZ) Zone III.

2.4 Site 2

Overview

- 2.4.1 Site 2 is 99ha in size comprising three separate land parcels, sub-Site 2A, 2B and 2C, located in the southern extent of the Scheme, 1.1km north-west of Pulham Market and 950m south-east of Great Moulton (see **Figure 1.2 Sheet 3 of 13**). The sub-Sites are located along Norwich Road, with fields outside of the Scheme between each sub-Site. Sub-Site 2A is most southerly, with 2B 430m north and 2C 250m north of 2B.
- 2.4.2 Each sub-Site comprises a number of fields.

Landscape and Visual

- 2.4.3 There are no statutory landscape designations covering Site 2, nor are there any within 9km.
- 2.4.4 The nearest area of residential dwellings is in Pulham Market. However, there are individual residential dwellings surrounding the sub-Sites. With the closest being west of sub-Site 2A, 90m west of sub-Site 2B and 270m north-east of sub-Site 2C.
- 2.4.5 The topography of the Site is predominantly level, which is similar to the area surrounding Site 2.
- 2.4.6 Each sub-Site is bordered sporadically by trees and hedgerows. The fields within each sub-Site are similarly bordered by sporadic trees and hedgerows.
- 2.4.7 There are further agricultural fields beyond Site 2.

Ecology and Biodiversity

- 2.4.8 There is an area of Ancient Woodland within 2km of the Site, Big Wood, located 1.2km east of sub-Site 2C.
- 2.4.9 Norfolk Valley Fen SAC is located 7.3km north of sub-Site 2C.
- 2.4.10 The following SSSIs locations are within 5km of Site 2:
- Pulham Market Big Wood SSSI, 1.2km east of sub-Site 2C;
 - Aslacton Parish Land SSSI, 3.4km north-west of sub-Site 2B;
 - Fornsett Meadows SSSI, 3.6km north of sub-Site 2B; and
 - Fritton Common SSSI, 3.7km north-east of sub-Site 2C.

Heritage

- 2.4.11 There are no statutory historic designations within Site 2.

- 2.4.12 There are multiple Listed Buildings located within 3km of Site 2, listed below. Due to their prevalence in the area, Grade II Listed Buildings are reported up to 100m only. Any Grade II Listed Buildings that are pertinent to the assessment of likely significant effects that are over 100m are discussed in **Chapter 9**.
- Grade II Listed Building 'Hill House (South Norfolk District Council Offices)', 80m south-east of sub-Site 2A
 - Grade II* Listed Building 'Wacton Hall', 930m north-west of sub-Site 2B;
 - Grade I Listed Building 'Church of St Margaret', 1.6km west of sub-site 2B; and
 - Grade I Listed Building 'Church of St Mary Magdalene', 1.8km south-east of sub-site 2A.
- 2.4.13 There are no Scheduled Monuments, Registered Historic Parks and Gardens or Registered Battlefields within proximity of Site 2.

Transport

- 2.4.14 Norwich Road follows the eastern boundaries of each sub-Site. Prangle Lane bounds the western boundary of sub-Site 2A. Firth Way travels along part of the southern boundary of sub-Site 2B.
- 2.4.15 Site 2 is crossed and bordered by multiple PRowS. Sub-Site 2C is bordered to the north by PRow 'Wacton FP43'. Sub-Site 2B is crossed by PRow 'Tivetshall St Margaret RB6' which connects to PRow 'Wacton RB31' that runs alongside the eastern border of the land parcel. Sub-Site 2A is bordered to the west by PRow 'Tivetshall St Margaret BR9' and to the south by PRow 'Tivetshall St Margaret FP8'.
- 2.4.16 An active railway track is located 2.1km to the west of sub-Site 2B. Details relating to this railway track are further described in **Chapter 10**.

Ground Conditions

- 2.4.17 There are no active or historic landfills within 1km of Site 2.
- 2.4.18 The bedrock geology of the southernmost land parcel is Norwich Crag Formation (sand), classified as a Principal Aquifer. The bedrock geology under the remaining two land parcels is chalk deposits of Lewes Nodular Chalk, Seaford Chalk, Newhaven Chalk, Culver Chalk and Portsdown Chalk, which are classified as a Principal Aquifer.
- 2.4.19 The superficial deposits beneath the Site are Lowestoft Formation which is classified as a Secondary (undifferentiated) Aquifer.

Water Resources and Flooding

- 2.4.20 Site 2 is located within Flood Zone 1. The River Yare is located 1.9km north-west.
- 2.4.21 There are multiple unnamed watercourses which run through sub-Site 2B.

- 2.4.22 The majority of the Site is at a very low risk to surface water flooding, and a very low risk to river and sea flooding.
- 2.4.23 Site 2 is a designated drinking water safeguard zone for surface water, as well as lying within a SPZ Zone III.

2.5 Site 3

Overview

- 2.5.1 Site 3 is located 220m south of Hempnall Site 3. It comprises two separate land parcels, Sub-Site 3A and 3B, measuring a total area of 95ha. Sub-Site 3A is roughly triangular in shape, comprising one field. Sub-Site 3B contains multiple fields in a non-uniform shape, located 240m north-west of sub-Site 3A (see **Figure 1.2 Sheet 4 of 13**).

Landscape and Visual

- 2.5.2 There are no statutory landscape designations covering Site 3, nor are there any within 7km.
- 2.5.3 The nearest area of residential dwellings is Lundy Green, adjacent along the northern boundary of sub-Site 3B. There are other isolated dwellings surrounding the sub-Sites, including a farm dwelling 175m south-west of sub-Site 3A and 75m north of sub-Site 3B.
- 2.5.4 The Broads National Park is located 6.8km east of sub-Site 3A.
- 2.5.5 The topography of the Site is predominantly level, which is similar to the area surrounding Site 3.
- 2.5.6 Site 3 is bordered sporadically by trees and hedgerows. Sub-Site 3B comprises farm tracks and hedgerows within it, delineating fields. There are further agricultural fields and woodland blocks beyond Site 3.

Ecology and Biodiversity

- 2.5.7 Spring Wood is located immediately adjacent to the Site between sub-Site 3A and 3B. It comprises an area of Ancient Replanted Woodland, and its deciduous woodland is considered a Priority Habitat. Norfolk Valley Fens SAC is located 7.4km north-west.
- 2.5.8 The following SSSIs are located within 5km of Site 3:
- Fritton Common SSSI, 1.4km north-west;
 - Shotesham-Woodton Hornbeam Woods SSSI, 2.4km north-east;
 - Pulham Market Big Wood SSSI, 3.8km south-west; and
 - Sexton Wood SSSI, 4.3km east.

Heritage

- 2.5.9 The are no statutory historic designations within Site 3.
- 2.5.10 There are multiple Listed Buildings located within 3km of the Site, which include the following:
- Grade II* Listed Building ‘Church of St Margaret’, 1.6km north-east of sub-Site 3A;
 - Grade I Listed Building ‘Church of St Mary’, 1.8km west of sub-Site 3B; and
 - Grade I Listed Building Church of St Catherine’, 1.8km north-west of sub-Site 3B.
- 2.5.11 There are no Grade II Listed Buildings within 100m of Site 3. Any Grade II assets over 100m from the Site that are likely to be impacted by the Scheme are discussed in Chapter 7.
- 2.5.12 Located 1.9km south-east of Site 3 is a Scheduled Monument ‘Castle Hill, Hangman’s Hill and adjoining earthworks, Darrow Green’.
- 2.5.13 There are no Registered Historic Parks and Gardens or Registered Battlefields within 2km of Site 3.

Transport

- 2.5.14 Spring Lane borders the eastern boundary of sub-Site 3B. The remainder of the boundaries follow field margins and hedgerows.
- 2.5.15 Sub-Site 3B is crossed from north to south by the PRoW ‘Hempnall FP25’ which connects to PRoW ‘Hempnall FP28’ that crosses the parcel from west to east. PRoW ‘Hempnall FP28’ connects to PRoW ‘Hempnall ‘FP26’ on the western boundary.

Ground Conditions

- 2.5.16 There is an historic landfill located 100m north-west of the sub-Site 3A, and 160m south-east of sub-Site 3B. The landfill site accepted inert, commercial and liquid sludge waste until 1975. There are no other landfills within 1km of the Site. Sub-Site 3A is on land that was formerly part of RAF Hardwick. An Unexploded Ordnance (UXO) Constraints Assessment undertaken for the site identifies Site 3A as having a High UXO hazard level (there is an elevated probability that UXO will be encountered within the footprint of the former airfield).
- 2.5.17 The superficial deposits of Site 3 are Norwich Crag Formation (sand), classified as a Principal Aquifer.
- 2.5.18 The bedrock geology beneath Site 3 is Lowestoft Formation (diamicton) which is classified as a Secondary (undifferentiated) Aquifer.

Water Resources and Flooding

- 2.5.19 Site 3 is located within Flood Zone 1. The River Yare is located 1.9km north-west.
- 2.5.20 The majority of Site 3 is at a very low risk to surface water flooding and has a very low risk to river and sea flooding.
- 2.5.21 Sub-Site 3A is designated as a drinking water safeguard zone for surface water, this designation does not extend into sub-Site 3B. Sub-Site 3B falls within SPZ Zone III, which does not extend into sub-Site 3A. The Applicant is aware of a number of private water supplies in the proximity of sub-Site 3A.

2.6 Site 4

Overview

- 2.6.1 Site 4 is located at the most north-western point of the Scheme, 300m north of Long Stratton and 440m south of Tasburgh (see **Figure 1.2 Sheet 5 of 13**).
- 2.6.2 Site 4 is 100ha in size comprising two separate land parcels, sub-Site 4A and 4B, bisected in a north to south direction by Norwich Road A140. Sub-Site 4A comprises six agricultural fields bordered by groups of trees and hedgerows, as well as the B1527 which borders the northern boundary. Sub-Site 4B also comprises six agricultural fields bordered by trees and hedgerows, as well as the B1135 which is adjacent to the northern border.

Landscape and Visual

- 2.6.3 There are no statutory landscape designations covering Site 4, nor are there any within 7km.
- 2.6.4 The nearest area of residential dwellings is at Tasburgh. However, there are isolated dwellings surrounding the sub-Sites, including 35m to the west and 25m south of sub-Site 4B.
- 2.6.5 The topography of the Site is predominantly level, which is similar to the surrounding area of Site 4.
- 2.6.6 Site 4 is bordered sporadically by trees and hedgerows. An existing solar farm is located adjacent to sub-Site 4A (Land South of Hall Farm Bungay Road, Tasburgh (Hall Farm)). Further agricultural fields are located to the north, east and south.

Ecology and Biodiversity

- 2.6.7 There are three areas of Ancient Woodland located within 2km of the Site:
 - Popes Wood, 1.2km north-east of sub-Site 4B;
 - The Grove, 1.6km south-east of sub-Site 4B; and

- Doylys Grove, 1.9km east of sub-Site 4B.
- 2.6.8 Norfolk Valley Fens SAC is located 2.3km north-west of sub-Site 4A.
- 2.6.9 The following SSSIs are located within 5km of Site 4:
- Fritton Common SSSI, 1.8km south-east of sub-Site 4B;
 - Flordon Common SSSI, 2.4km north-west of sub-Site 4A;
 - Forngett Meadows SSSI, 3.2km west of sub-Site 4A;
 - Pulham Market Big Wood, 3.9km south of sub-Site 4B;
 - Shotesham-Woodton Hornbeam Woods, 4km east of sub-Site 4B; and
 - Aslacton Parish Land, 4.6km west of sub-Site 4A.

Heritage

- 2.6.10 There are no statutory historic designations within Site 4.
- 2.6.11 There are a number of Listed Buildings within 3km of Site 4, listed below. Due to their prevalence in the area, Grade II Listed Buildings are reported up to 100m only. Any Grade II Listed Buildings that are pertinent to the assessment of likely significant effects that are over 100m are discussed in **Chapter 9**.
- Grade II Listed Building 'Barn North of the Old Rectory', 10m south of sub-Site 4B;
 - Grade II Listed Building 'Cottage Occupied by Mr and Mrs Woods, North-West of Church of St Michael', 30m south-west of sub-Site 4B;
 - Grade II Listed Building 'Church Farmhouse', 50m south of sub-Site 4B;
 - Grade II Listed Building 'The Cedars', 70m west of sub-Site 4B;
 - Grade I Listed Building 'Church of St Michael', 45m south-west of sub-Site 4B;
 - Grade II* Listed Building 'The Old Rectory', 70m south of sub-Site 4B;
 - Grade II* Listed Building 'Tharston Hall', 550m south-west of sub-Site 4A;
 - Grade I Listed Building 'Church of St Mary', 570m west of sub-Site 4A;
 - Grade II* Listed Building 'Premises Owned by Mr. Tummore and G.J. Cracknell and son', 1.2km south-west of sub-Site 4B;
 - Grade I Listed Building 'Church of St John the Baptist', 1.4km south-east of sub-Site 4B;
 - Grade I Listed Building 'Church of St Catherine', 1.9km east of sub-Site 4B and
 - Grade I Listed Building 'Rainthorpe Hall Including Garden Wall with Gate and Gate Piers', 1.9km north of sub-Site 4A.
- 2.6.12 The Registered Historic Park and Garden 'Ranthorpe Hall' is located 1.7km north of sub-Site 4B. Scheduled Monument 'Camp in village' is located 575m north of sub-Site 4B. There are no Registered Battlefields or Scheduled Monuments within 2km of Site 4.

Transport

- 2.6.13 Norwich Road bisects the Site, forming the eastern and western boundaries of sub-Site 4A and 4B, respectively. Bungay Road follows the northern boundaries of both sub-Sites. Church Lane borders sub-Site 4B's southern boundary.
- 2.6.14 Within sub-Site 4B the PRow 'Long Stratton FP4' runs from the east to the centre, connecting with the PRow 'Long Stratton FP3' which then runs to the north.
- 2.6.15 An active railway track runs from north to south 1.9km to the west of sub-Site 4A. Details relating to this railway track are further described in **Chapter 10**.

Ground Conditions

- 2.6.16 There are two historic landfills within 1km of Site 4:
 - Thorn Wood, which accepted inert waste until 1986, 330m north of sub-Site 4A; and
 - A site off the B1135, which accepted commercial, household and gas control waste until 1992, 900m east of sub-Site 4B.
- 2.6.17 There are no other landfills within 1km of Site 4.
- 2.6.18 The bedrock geology is chalk deposits of Lewes Nodular Chalk, Seaford Chalk, Newhaven Chalk, Culver Chalk and Portsdown Chalk Formations, which are classified as a Principal Aquifer.
- 2.6.19 The superficial deposits are predominant Lowestoft Formation (diamicton), classified as a secondary undifferentiated aquifer, with areas of Lowestoft Formation (sand and gravel) in the north-west and areas of Leet Hill sand and gravel member in the north-east, which are both classified as Secondary A Aquifers.

Water Resources and Flooding

- 2.6.20 Site 4 is located within Flood Zone 1. The River Yare is located 300m north.
- 2.6.21 An unnamed water course crosses Site 4.
- 2.6.22 The majority of the Site is at a very low risk to surface water flooding, with some areas of low risk within sub-Site 4B, and a very low risk to river and sea flooding.
- 2.6.23 Site 4 is not located within an area covered by a drinking water safeguard zone, nor is it located within a SPZ.

2.7 Site 5

Overview

- 2.7.1 Site 5 is located roughly in the centre of the Site, 520m south-west of Hempnall (see **Figure 1.2 Sheet 6 of 13**).
- 2.7.2 Site 5 is 90ha in size comprising two connected land parcels, sub-Site 5A in the north-west and 5B in the south-east. Sub-Site 5 consists of seven agricultural fields with boundaries formed by trees and hedgerows. Two sections of woodland are located within sub-Site 5A, which are excluded from the Site boundary. Sub-Site 5B comprises three agricultural fields separated by tree-lined hedgerows.
- 2.7.3 A 400kV Substation is likely to be proposed to be located within Site 5.

Landscape and Visual

- 2.7.4 There are no statutory landscape designations covering Site 5, nor are there any within 7km.
- 2.7.5 The National Park 'The Broads' is located 9km south-east from sub-Site 5B.
- 2.7.6 The nearest area of residential dwellings is at Hempnall. However, there are isolated dwellings surrounding Site 5, with a dwelling adjacent to the eastern boundary of sub-Site 5B, 100m north-west of sub-Site 5B and 60m north of sub-Site 5A.
- 2.7.7 The topography of the Site is predominantly level, which is similar to the area surrounding Site 5.
- 2.7.8 Further agricultural fields are located beyond the Site to the west, south and east. There are a number of commercial properties and a nursery (Jack in the Box) to the north, in addition to further agricultural fields.
- 2.7.9 The Site is bordered sporadically by trees and hedgerows.

Ecology and Biodiversity

- 2.7.10 There are three areas of Ancient Woodland within 2km of the Site:
 - Popes Wood, 1km north of sub-Site 5A;
 - The Grove, 1.1km south of sub-Site 5A; and
 - Doylys Grove, 1.1km east of sub-Site 5A.
- 2.7.11 Norfolk Valley Fens SAC is 4.5km north-west of sub-Site 5A.
- 2.7.12 The following SSSIs are located within 5km of Site 5:
 - Fritton Common SSSI, 630m south of sub-Site 5B;
 - Shotesham-Woodton Hornbeam Woods SSSI, 3.3km north-east of sub-Site 5B;
 - Pulham Market Big Wood SSSI, 3.9km south-west of sub-Site 5A; and
 - Flordon Common SSSI, 4.5km north-west of sub-Site 5A.

Heritage

- 2.7.13 The are no statutory historic designations within Site 5.
- 2.7.14 There are multiple Listed Buildings within proximity to Site 5, which include the following:
- Grade I Listed Building ‘Church of St Catherine’, 25m south of sub-Site 5B;
 - Grade I Listed Building ‘Church of St John the Baptist’, 790m south of sub-Site 5A;
 - Grade I Listed Building ‘Church of St Margaret’, 820m east of sub-Site 5B;
 - Grade I Listed Building ‘Church of St John the Baptist’, 900m south-west of sub-Site 5B;
 - Grade II* Listed Building ‘The Old Rectory’, 1.5km west of sub-Site 5B; and
 - Grade I Listed Building ‘Church of St Michael’, 1.6km west of sub-Site 5A.
- 2.7.15 There are no Grade II Listed Buildings within 100m of Site 1. Any Grade II assets over 100m from the Site that are likely to be impacted by the Scheme are discussed in **Chapter 9**.
- 2.7.16 There are no Scheduled Monuments, Registered Historic Parks and Gardens or Registered Battlefields within proximity of Site 5.

Transport

- 2.7.17 Sub-Site 5A is bordered on two sides by roads, including the B1527 on the northern boundary and Boylandhall Lane to the west. Sub-Site 5B is bordered on two sides including the B1527 on the northern boundary, and The Street to the east.
- 2.7.18 There are connecting PRowS within Site 5. PRow ‘Morningthorpe FP5’ starts at the B1527, and travels south into Site 5, travelling through both sub-Sites. This PRow then connects to ‘Morningthorpe FP9’ and ‘Morningthorpe FP11’ within sub-Site 5B. Sub-Site 5A is bordered by PRow ‘Morningthorpe RB4’ along its western boundary.

Ground Conditions

- 2.7.19 A historic landfill, off the B1135, which accepted commercial, household and gas control waste until 1992, is located 100m north-west of sub-Site 5A. There are no other active or historic landfill sites within 2km of Site 5.
- 2.7.20 The superficial deposits are predominant Lowestoft Formation (diamicton), classified as a Secondary (undifferentiated) Aquifer.
- 2.7.21 The bedrock geology is Norwich Crag formation (sand), classified as a Principal Aquifer.

Water Resources and Flooding

- 2.7.22 Site 5 is located within Flood Zone 1. The River Yare is located 245m north.
- 2.7.23 There are two unnamed watercourses which cross Site 5A.
- 2.7.24 The majority of the Site is at a very low risk to surface water flooding, and a very low risk to river and sea flooding.
- 2.7.25 The Site is not located within an area covered by a drinking water safeguard zone, nor is it located within a SPZ.

2.8 Site 6

Overview

- 2.8.1 Site 6 is 18ha in size and comprises one non-uniformed shape agricultural field.
- 2.8.2 Site 6 is located roughly in the centre of the Site and is located 580m south-west of Hempnall. Site 6 is located 480m north of Silver Green (see **Figure 1.2 Sheet 7 of 13**).

Landscape and Visual

- 2.8.3 There are no statutory landscape designations covering Site 6, nor are there any within 7km.
- 2.8.4 The Broads National Park is located 6.8km east of the Site.
- 2.8.5 The nearest areas of residential dwellings are at Hempnall and Silver Green. There are residential properties which border the Site alongside the eastern and western boundaries.
- 2.8.6 The topography of Site 6 is predominantly level, as is the surrounding area.
- 2.8.7 Further agricultural fields are located beyond the Site to the west, south and east. There are a number of commercial properties and an educational facility to the north, in addition to further agricultural fields.
- 2.8.8 The Site is bordered sporadically by trees and hedgerows.

Ecology and Biodiversity

- 2.8.9 There are four areas of Ancient Woodland located within 2km of the Site:
 - Little Wood, 740m north-east;
 - Winters Grove, 1km north-east;
 - Saxlingham Grove, 1.4km north; and
 - Spring Wood 1.5km south.

- 2.8.10 Norfolk Valley Fens SAC is located 7km north-west.
- 2.8.11 Shotesham-Woodton Hornbeam Woods SSSI is located 730m north-east, beyond which Fritton Common SSSI is located 2.7km south-west of Site 6. Sexton Wood SSSI is located 4.5km south-east and Shotesham Common SSSI is located 4.9km north of Site 6.

Heritage

- 2.8.12 There are no statutory historic designations within Site 6.
- 2.8.13 There are Grade I and II* Listed Buildings within 3km of the Site, which are listed below. Due to their prevalence in the area, Grade II Listed Buildings are reported up to 100m only. Any Grade II Listed Buildings that are pertinent to the assessment of likely significant effects that are over 100m are discussed in **Chapter 9**.
- Grade II Listed Building 'Poachers Cottage', 60m south-west;
 - Grade II Listed Building 'The Fiers', 85m west;
 - Grade II Listed Building 'The Haven', 90m south;
 - Grade I Listed Building 'Church of St Margaret', 970m north-west; and
 - Grade II* Listed Building 'Church of St Margaret', 1.3km south-east of the Site.
- 2.8.14 There are no Scheduled Monuments, Registered Historic Parks and Gardens or Registered Battlefields within proximity of Site 6.

Transport

- 2.8.15 Site 6 is bound by B1527 to the north, Alburgh Road to the west and an unnamed road to the south.
- 2.8.16 There are no PRoW which cross the Site. However PRoW 'Hempnall FP14' connects to the Site's southern boundary and PRoW 'Hempnall FP13' connects to the Site's western boundary.

Ground Conditions

- 2.8.17 There are no historic or active landfill sites within 2km of Site 6.
- 2.8.18 The superficial deposits are predominant Lowestoft Formation (diamicton), classified as a Secondary (undifferentiated) Aquifer.
- 2.8.19 The bedrock geology is Norwich Crag formation (sand), classified as a Principal Aquifer.

Water Resources and Flooding

- 2.8.20 Site 6 is located within Flood Zone 1. The River Yare is located 680m north-west.

- 2.8.21 The majority of the Site is at a very low risk to surface water flooding, with a small area at low risk, and a very low risk to river and sea flooding.
- 2.8.22 Site 6 is not located within an area covered by a drinking water safeguard zone. Site 6 is located within a Zone III (Total Catchment) SPZ.

2.9 Site 7

Overview

- 2.9.1 Site 7 is 327ha in size, which is the largest land parcel grouping within the Site, due to the close proximity of the land parcels (see **Figure 1.2 Sheets 8 and 9**). Hempnall is located 500m south-west and 600m south of the central sub-Sites of Site 7. Tasburgh is located 250m to the west of sub-Site 7A, the most western sub-Site. To the north, Saxlingham Nethergate is located 460m from sub-Site 7D. to the south-east, Woodton is located 2km from sub-Site 7L.
- 2.9.2 Site 7 comprises the following sub-Sites (from west to east):
- 7A;
 - 7B;
 - 7C;
 - 7D;
 - 7E;
 - 7F;
 - 7G;
 - 7H;
 - S7I;
 - S7J;
 - 7K; and
 - 7L.
- 2.9.3 The sub-Sites comprise agricultural fields which are delineated with tree lines, farm tracks and hedgerows.

Landscape and Visual

- 2.9.4 There are no statutory landscape designations covering Site 7, nor are there any within 5km.
- 2.9.5 The National Park 'The Broads' is located 6.4km south-east of sub-Site 7L.
- 2.9.6 The closest settlement areas are described above. However, there are residential properties located outside of these areas that are located closer to Site 7:
- 150m west of sub-Site 7A;
 - 25m and 50m south of sub-Site 7C;
 - 30m north of sub-Site 7D;
 - 120m north-east of sub-Site 7F; and

- 15m and 130m east of sub-Site 7L.

2.9.7 The topography of all sub-Sites is predominantly flat, as is the surrounding area.

2.9.8 Further agricultural fields are located beyond the sub-Sites.

2.9.9 There are trees and hedgerows surrounding each of the sub-Sites.

Ecology and Biodiversity

2.9.10 There are 11 areas of Ancient Woodland located within 2km of Site 7:

- Doylys Grove, adjacent to the south, west and north of sub-Site 7C;
- Popes Wood, adjacent to the south of sub-Site 7C;
- Saxlingham Grove, adjacent to the north of sub-Site 7F and 7G;
- Little Wood, adjacent to the south of sub-Site 7H;
- Winters Grove, located 550m south of sub-Site 7K;
- Becketts Wood, located 575m south-east of sub-Site 7L;
- Privet Wood, located 745m south-east of sub-Site 7L;
- Ringers Grove, located 770m north of sub-Site 7I;
- Great Wood, located 1.2km north of sub-Site 7F;
- Green Farm Grove, located 2km north of sub-Site 7G; and
- Brooke Wood, located 2.3km north of sub-Site 7K.

2.9.11 Smockmill Local Nature Reserve (LNR) is located 2km north of sub-Site 7C.

2.9.12 Broadland Ramsar site, Special Protection Area (SPA), SAC is located 9.2km north-east of sub-Site 7K.

2.9.13 Norfolk Valley Fens SAC is located 2.8km north-west at the of sub-Site 7A.

2.9.14 There are multiple SSSIs within 5km of Site 7, which include the following:

- Shotesham-Woodton Hornbeam Woods SSSI, borders sub-Sites 7F, 7G and 7H;
- Fritton Common SSSI, located 2.1km south of sub-Site 7B;
- Shotesham Common SSSI, 2.6km north of sub-Site 7D;
- Sexton Wood SSSI, 4.5km south-east of sub-Site 7L;
- Hedenham Wood SSSI, 4.6km east of sub-Site 7L; and
- Flordon Common SSSI, 4.7km west of sub-Site 7A.

Heritage

2.9.15 There are no statutory historic designations within Site 7.

2.9.16 There are multiple Listed Buildings located within 3km of Site 2, listed below. Due to their prevalence in the area, Grade II Listed Buildings are reported up to 100m only. Any Grade II Listed Buildings that are pertinent to the assessment of likely significant effects that are over 100m are discussed in **Chapter 9**:

- Grade II Listed Building 'Wood Farmhouse', 30m south of sub-Site 7C;
- Grade II Listed Building 'Grove Farmhouse', 45m south-west of sub-Site 7C;
- Grade II Listed Building 'Manor Cottage', 55m north of sub-Site 7D;
- Grade II Listed Building 'Manor Farmhouse Barn', 65m north-east of sub-Site 7D;
- Grade II Listed Building 'Manor Farmhouse', 70m north of sub-Site 7D;
- Grade II Listed Building 'Hill Cottages', 85m north of sub-Site 7D;
- Grade II Listed Building 'Former Quaker Meeting House', 100m south-west of sub-Site 7A.
- Grade II* Listed Building 'Oaks Farmhouse', located 180m east of sub-Site 7L;
- Grade II* Listed Building 'Remains of Church of St Mary', 330m north-west of sub-Site 7D;
- Grade II* Listed Building 'Old Hall', 600m north of sub-Site 7D;
- Grade II* Listed Building 'The Old Rectory', 670m north-west of sub-Site 7D;
- Grade II* Listed Building 'Church of St Mary the Virgin', 680m north-west of sub-Site 7D;
- Grade II* Listed Building 'Remains of Church of St Mary', 760m north of sub-Site 7C;
- Grade I Listed Building 'Church of St Margaret', 920m south of sub-Site 7B;
- Grade I Listed Building 'Church of St Mary', 935m north-west of sub-Site 7A;
- Grade II* Listed Building 'Oaks Farmhouse', 1.2km east of sub-Site 7J;
- Grade II* Listed Building 'Church of All Saints', 1.3km south-east of sub-Site 7L; and
- Grade I Listed Building 'Rainthorpe Hall including Garden Wall with Gate and Gate Piers', 1.6km north-west of sub-Site 7A.

- 2.9.17 The Registered Historic Park and Garden 'Rainthorpe Hall' is located 1.5km north-west of sub-Site 7A, as associated with the Grade I listed building mentioned above.
- 2.9.18 The Scheduled Monument 'Camp in village' is located 870m north-west of sub-Site 7A.
- 2.9.19 There are no Registered Battlefields within 2km of Site 7.

Transport

- 2.9.20 Site 7A is bordered to the south by Fairstead Lane. There are no PRoW running through Site 7A.
- 2.9.21 Fairstead Lane borders sub-Site 7C and 7B. Broaden Lane crosses between sub-Site 7D and 7F, similar to the road Bussey's Lake. The PRoW 'Hempnall FP2' runs from north to south within sub-Site 7F and connects to PRoW 'Saxlingham Nethergate FP12' in sub-Site 7E. PRoW 'Saxlingham Nethergate FP10' runs from the north to the centre of the sub-Site 7E where it connects with PRoW 'Saxlingham Nethergate FP27' which runs east, and then PRoW 'Hempnall FP3' which runs south. This PRoW then connects to 'Hempnall FP4' and 'Hempnall FP5' which loops in the south and runs northeast connecting to PRoW 'Saxlingham Nethergate FP9' in sub-Site 7F.

- 2.9.22 Sub-Site 7D is bordered to the north by The Green, a road which curls around and separates 7I and 7J running from south to north. Woodton Road borders the northern boundary of Sub-Site 7K and 7L. There are no PRow going through Site 7I, 7J, 7K, and 7L.

Ground Conditions

- 2.9.23 There are two historic landfill sites within 2km of Site 7:
- Off B1135, which accepted commercial, household and gas control waste until 1992, located 610m south-west of sub-Site 7B;
 - Thorn Wood, which accepted inert waste until 1986, located 600m south-west of sub-Site 7A.
- 2.9.24 There are no other landfill sites within 2km of the Site.
- 2.9.25 The superficial deposits are predominantly Lowestoft Formation (diamicton), classified as a Secondary (undifferentiated) Aquifer.
- 2.9.26 The bedrock geology is Crag Group (sand and gravel), which is classified as a Principal Aquifer.

Water Resources and Flooding

- 2.9.27 Site 7 is located within Flood Zone 1. The River Yare flows along the southern boundary of sub-Site 7B.
- 2.9.28 There are ordinary (unnamed) watercourses present within sub-Site 7C, 7D, 7E, 7F, 7K and 7L.
- 2.9.29 The majority of Site 7 is at a very low risk to surface water flooding, with a small area at low risk, and a very low risk to river and sea flooding.
- 2.9.30 A small part of the sub-Site 7H of the Site is covered by a Drinking Water Safeguard Zones (Surface Water). The remainder of the Site is not located within an area covered by a drinking water safeguard zone. The majority of Site 7 is located within a Zone III (Total Catchment) SPZ.

2.10 Site 8

Overview

- 2.10.1 Site 8 is 55ha in size and located within the north of the Scheme Site 1.7km south-west of Brooke and 2.3km north-east of Hempnall. There are two adjacent land parcels, namely sub-Site 8A to the south and sub-Site 8B to the north. Sub-Site 8A comprises three fields outlined by trees and hedgerow and sub-Site 8B similarly comprises three fields lined by trees and hedgerow (see **Figure 1.2 Sheet 9 of 13**).

Landscape and Visual

- 2.10.2 There are no statutory landscape designations covering Site 8, nor are there any within 5km.
- 2.10.3 Residential properties are located along Brooke Road, with the closest located approximately 220m north. Shotesham is located further along Brooke Road, approximately 1km north-west. There is an isolated dwelling along the boundary of sub-Site 8B, along Market Lane and a further dwellings 150m south of sub-Site 8B.
- 2.10.4 The Broads National Park is located 7.8km south-east of sub-Site 8A.
- 2.10.5 The topography of the Site is predominantly flat, as is the surrounding area.
- 2.10.6 Further agricultural fields are located beyond Site 8. There are trees and hedgerows surrounding Site 8.

Ecology and Biodiversity

- 2.10.7 There are eight areas of Ancient Woodland located within 2km of Site 8:
 - Ringers Grove, located adjacent to the west and north of sub-Site 8A;
 - Little Wood, located 140m west of sub-Site 8B;
 - Green Farm Grove, located 180m east of sub-Site 8B;
 - Great Wood, located 735m west of sub-Site 8B;
 - Brooke Wood, located 755m north-east of sub-Site 8B;
 - Saxlingham Grove, located 1km south-west of sub-Site 8A;
 - Howe Grove, located 1.7km north of sub-Site 8B;
 - Winters Grove, located 1.9km south of sub-Site 8A.
- 2.10.8 Broadland Ramsar site is located approximately 9km east of sub-Site 8B.
- 2.10.9 Norfolk Valley Fens SAC is located 7km west of sub-Site 8A, and the Broads SAC is located 9km north-east of sub-Site 8B.
- 2.10.10 Broadland SPA is located 9km north-east of sub-Site 8B.
- 2.10.11 The Shotesham-Woodton Hornbeam Woods SSSI is located 170m west of sub-Site 8B. The Shotesham Common SSSI is 1.8km north-west of sub-Site 8B.

Heritage

- 2.10.12 There are no statutory historic designations within Site 8.
- 2.10.13 There are multiple Listed Buildings located within 2km of Site 8, which include the following:
 - Grade II* Listed Building 'Grove Farmhouse Formerly Creasey's Grove Farmhouse' 1.2km north-west of sub-Site 8A;

- Grade II* Listed Building ‘Oaks Farmhouse’ 1.6km south-east of sub-Site 8A;
- Grade II* Listed Building ‘Church of All Saints’ 1.7km north-west of sub-Site 8B; and
- Grade II* The Dukes Head’ 1.8km north-west of sub-Site 8B.

- 2.10.14 There are no Grade II Listed Buildings within 100m of Site 1. Any Grade II assets over 100m from the Site that are likely to be impacted by the Scheme are discussed in **Chapter 9**.
- 2.10.15 There are no Scheduled Monuments, Registered Historic Parks and Gardens or Registered Battlefields within proximity of Site 8.

Transport

- 2.10.16 Sub-Site 8A is bound by Wash Lane to the west, and Market Lane to the north. Sub-Site 8B is bound by Market Lane along its western boundary and Baxter’s Lane and Brooke Road to the east. PRow ‘Shotesham FP22’ crosses Sub-Site 8B from Brooke Road to Market Lane in an east-west direction. PRow ‘Shotesham FP19’ travels south through sub-Site 8A from Market Lane heading south-east.

Ground Conditions

- 2.10.17 There are no historic or active landfills within 2km of Site 8.
- 2.10.18 The superficial deposits are predominantly Lowestoft Formation (diamicton), classified as a secondary undifferentiated aquifer, with an area of Alluvium (clay, sand and gravel) running through the Site along the river, which is classified as a Secondary A Aquifer.
- 2.10.19 The bedrock geology is Crag Group (sand and gravel), which is classified as a Principal Aquifer.

Water Resources and Flooding

- 2.10.20 Site 8 is located within Flood Zone 1.
- 2.10.21 The majority of Site 8 is at a very low risk to surface water flooding, with some areas at low to high risk, associated with the River Tas (a main river that flows between sub-Site 8A and 8B), and a very low risk to river and sea flooding.
- 2.10.22 Site 8 is not located within an area covered by a drinking water safeguarding zone. The majority of Site 8 is located within a Zone III (Total Catchment) SPZ.

2.11 Site 9

Overview

- 2.11.1 Site 9 is 58ha in size comprising one land parcel, made up of six fields, in a roughly rectangular shape with sporadic tree and hedgerow lined boundaries. Site 9 is situated at the north extent of the Scheme Site to the south of Brooke and 2.7km south of Poringland (see **Figure 1.2 Sheet 10 of 13**).

Landscape and Visual

- 2.11.2 There are no statutory landscape designations covering Site 9, nor are there any within 5km.
- 2.11.3 The nearest populated area to Site 9 is Brooke, with the closest properties located 35m north. There are also residential properties and agricultural buildings along the southern and western boundary of Site 9.
- 2.11.4 The Broads National Park is located 7.1km north-east of Site 9.
- 2.11.5 The topography of the Site is relatively flat, as is the area surrounding Site 9.
- 2.11.6 Further agricultural fields lie beyond the Site to the west and east. The outskirts of the residential area of Brooke are located to the north, in addition to agricultural fields. To the south there is a small group of residential and agricultural buildings adjacent to the Site boundary amongst further agricultural fields.

Ecology and Biodiversity

- 2.11.7 There are six areas of Ancient Woodland located within 2km of the Site:
- Brooke Wood, 150m west;
 - Green Farm Grove, 925m west;
 - An unnamed woodland, 1.3km south;
 - Howe Grove, 1.8km north-west;
 - Ringers Grove, 1.9km south-west; and
 - Little Wood, 1.9km west.
- 2.11.8 Broadland Ramsar site is located 6.8km north-east.
- 2.11.9 The Broads SAC is located 6.5km north-east and Norfolk Valley Fens SAC is located 8.9km north-west.
- 2.11.10 Broadland SPA is located 6.8km north-east.
- 2.11.11 Site 9 is located 1.9km west of Shotesham-Woodton Hornbeam Woods SSSI and 3.1km west of Shotesham Common SSSI. Additionally, Hedenham Wood SSSI is located 3.9km south-east of Site 9.

Heritage

- 2.11.12 There are no statutory historic designations within Site 9.

- 2.11.13 There are multiple Listed Buildings located approximately within 3km of the Site, which include the following:
- Grade II* Listed Building 'Church of St Margaret' 1.1km east;
 - Grade II* Listed Building 'Porch House' 1.1km north-east;
 - Grade I Listed Building 'Kirstead Hall' 1.2km east;
 - Grade II* Listed Building 'Church of St Peter' 1.5km north-east; and
 - Grade II* Listed Building 'Church of St Mary' 1.5km north.
- 2.11.14 There are no Grade II Listed Buildings within 100m of Site 1. Any Grade II assets over 100m from the Site that are likely to be impacted by the Scheme are discussed in **Chapter 9**.
- 2.11.15 There are no Scheduled Monuments, Registered Historic Parks and Gardens or registered battlefields within proximity of Site 9.

Transport

- 2.11.16 Littlebeck Lane and Mill Lane border the southern boundary of Site 9. An unnamed farm track borders the northern boundary. PRoW 'Brooke FP6' crosses Site 9 from north to south and connects to Mill Lane and Littlebeck Lane.

Ground Conditions

- 2.11.17 Howe Pits is an active landfill site located approximately 1.9km north of the Site. It accepts non-biodegradable waste. It also accepted inert, commercial and household waste until 1994.
- 2.11.18 The superficial deposits are predominantly Lowestoft Formation (diamicton), classified as a secondary undifferentiated aquifer.
- 2.11.19 The bedrock geology is Crag Group (sand and gravel), which is classified as a Principal Aquifer.

Water Resources and Flooding

- 2.11.20 Site 9 is located within Flood Zone 1. The River Yare is located approximately 1.8km south-west.
- 2.11.21 The majority of Site 9 is at a very low risk to surface water flooding, and a very low risk to river and sea flooding.
- 2.11.22 Site 9 is not located within an area covered by a drinking water safeguard zone. The western portion of Site 9 is located within a Zone III (Total Catchment) SPZ, the remainder of the Site is not located within a SPZ.

2.12 Site 10

Overview

- 2.12.1 Site 10 is 145ha in size comprising five land parcels, sub-Site 10A, 10B, 10C, 10D and 10E. Sites 10A, 10B, 10C and 10D are adjacent to one another, with a smaller land parcel 10E approximately 510m to the north. Site 10 is situated in the north-eastern extent of the Site 315m north-east of Woodton and 920m south-west of Seething (see **Figure 1.2 Sheet 11 of 13**).
- 2.12.2 Site 10 comprises agricultural fields which have sporadically, tree and hedgerow lined boundaries.

Landscape and Visual

- 2.12.3 There are no statutory landscape designations covering Site 10, nor are there any within 5km.
- 2.12.4 The closest residential properties are located to the south-west, which are located on the outskirts of Woodton, with some located 225m away from sub-Site 10A and 10C. Additionally, there are a residential property and farm buildings 130m north of sub-Site 10E, and 300m north-west of 10D.
- 2.12.5 The Broads National Park is located 3.5km south of sub-Site 10A.
- 2.12.6 The topography of the Site is level, similar to the area surrounding area Site 10.
- 2.12.7 Further agricultural fields are located beyond Site 10. There are a number of commercial properties to the north of sub-Site 10B, 10C and 10D, and south of sub-Site 10E, in addition to further agricultural fields.
- 2.12.8 Trees and hedgerows surround Site 10.

Ecology and Biodiversity

- 2.12.9 There are 5 areas of Ancient Woodland located within 2km of the Site:
- Hedenham Wood, located 145m east of sub-Site 10B;
 - Long Row, located 855m south-east of sub-Site 10B;
 - An unnamed woodland, located 950m west of sub-Site 10C;
 - Privet Wood, located 1km west of sub-Site 10A;
 - Becketts Wood, located 1.5km west of sub-Site 10C;
- 2.12.10 Broadland Ramsar, SPA and SAC site is located 6.6km north-east of sub-Site 10E.
- 2.12.11 The following SSSI are located within 5km of Site 10:
- Hedenham Wood SSSI, 145m east of sub-Site 10B;
 - Tindall Wood, Ditchingham SSSI, 1.7km south-east of sub-Site 10B;
 - Sexton Wood SSSI, 2.1km south of sub-Site 10A;
 - Shotesham-Woodton Hornbeam Woods, 2.5km west of sub-Site 10A; and

- Broome Heath Pit SSSI, 4.7km south-east of sub-Site 10B.

Heritage

- 2.12.12 The are no statutory historic designations within Site 10.
- 2.12.13 There are multiple Listed Buildings located within 3km of Site 10, which include the following:
- Grade II* Listed Building ‘Church of All Saints’, 1.1km south-west of sub-Site 10C;
 - Grade I Listed Building, ‘Church of St Peter’, located 1.4km south of sub-Site 10A;
 - Grade I Listed Building ‘Church of St Andrew’ located 1.6km south-west of sub-Site 10A;
 - Grade II* Listed Building ‘Church of St Margaret’ located 1.7km north-east of sub-SITE 10E;
 - Grade II* Listed Building ‘Oaks Farmhouse’ located 1.7km west of sub-Site 10C; and
 - Grade I Listed Building ‘Hedenham Hall’ located 1.9km south-east of sub-Site 10A.
- 2.12.14 There are no Grade II Listed Buildings within 100m of Site 10. Any Grade II assets over 100m from the Site that are likely to be impacted by the Scheme are discussed in **Chapter 9**.
- 2.12.15 The Registered Park and Garden at Ditchingham Hall is located 1.7km south of Site 10.
- 2.12.16 There are no Registered Battlefields or Scheduled Monuments within 2km of Site 10.

Transport

- 2.12.17 There are no PRoWs which cross Site 10. PRoW ‘Seething RB13’ passes along the north-east boundary of sub-Site 10B. PRoW ‘Woodton RB3’ borders the south-west boundaries of sub-Site 10C and 10B along Pound Lane.
- 2.12.18 The B1332 Norwich Road borders the west of sub-Site 10C and Harvey’s Lane runs along the northern boundaries of sub-Site 10C, 10D and 10B. Seething Road runs along the eastern boundary of sub-Site 10B.

Ground Conditions

- 2.12.19 There are no landfills within 2km of Site 10.
- 2.12.20 The superficial deposits are predominantly Lowestoft Formation (diamicton), classified as a Secondary undifferentiated Aquifer.

- 2.12.21 The bedrock geology is Crag Group (sand and gravel), which is classified as a Principal Aquifer.

Water Resources and Flooding

- 2.12.22 The River Yare flows approximately 570m south of sub-Site 10A. An unnamed, minor watercourse flows along the western boundaries of sub-Site 10A, 10B and 10C.
- 2.12.23 Site 10 is at a very low risk to surface water flooding, and a very low risk to river and sea flooding.
- 2.12.24 Sub-Site 10A, 10B, 10C and 10D are located within Zone III of an SPZ, as well as a drinking water safeguard zone for groundwater.

2.13 BESS Site

Overview

- 2.13.1 The potential siting of the BESS Site is adjacent to sub-Site 1B (see **Figure 1.2 Sheet 12 of 13**), separated by Hundred Lane. The BESS Site comprises an agricultural field bordered by lines of trees and hedgerows, and a small pocket of woodland along part of its western boundary. Great Moulton is located 1.1km north, and Sneath Common is located 1.1km west.
- 2.13.2 The BESS Site is a total of 22ha. The BESS Site will also accommodate 400kV Substation 1. However the infrastructure associated with the BESS and 400kV Substation 1 is unlikely to utilise this entire space in order to allow for emergency vehicle access.

Landscape and Visual

- 2.13.3 There are no statutory landscape designations covering the BESS Site, nor are there any within 5km.
- 2.13.4 The majority of residential properties are within Great Moulton and Sneath Common, which are 1.1km north and 1.1km west from the Site respectively. However, there is a residential property 70m north, and two residential properties located 200m south along Station Road.
- 2.13.5 The topography of the Site is predominantly level, similar to the area surrounding the BESS Site.
- 2.13.6 The BESS Site is well screened by trees and hedgerows which border the field.

Ecology and Biodiversity

- 2.13.7 There are no areas of Ancient Woodland within 2km of the BESS Site.

- 2.13.8 The Norfolk Valley Fens SAC is located 8.3km north.
- 2.13.9 The following SSSIs are located within 5km of the BESS Site:
- Pulham Market Big Wood SSSI, located 3km east;
 - Aslacton Parish Land SSSI, located 3.2km north; and
 - Forncett Meadows SSSI, located 3.7km north.
- 2.13.10 Further ecological baseline information is provided in **Chapter 8**.

Heritage

- 2.13.11 The BESS Site is not covered by any statutory historic designations.
- 2.13.12 Two Listed Buildings are within 3km of the BESS Site. This includes Grade I Listed Building 'Church of St Margaret' located 1.4km south-west and Grade II* Listed Building 'Wacton Hall' located 1.6km north-east. There are no Grade II Listed Buildings within 100m of Site 1. Any Grade II assets over 100m from the Site that are likely to be impacted by the Scheme are discussed in Chapter 7.
- 2.13.13 There are no Scheduled Monuments, Registered Historic Parks and Gardens or Registered Battlefields within proximity of the BESS Site.

Transport

- 2.13.14 Hundred Lane borders the northern border of the BESS Site. The PRoW 'Great Moulton RB19' runs along Hundred Lane and adjacent to the northern boundary. PRoW 'Tivetshall St Margaret FP3' runs along the eastern boundary of the BESS Site.
- 2.13.15 The BESS Site is located 940m east of an active railway track. Details relating to this railway track are further described in **Chapter 10**.

Ground Conditions

- 2.13.16 There are no active or historic landfills within 1km of the BESS Site.
- 2.13.17 The bedrock geology of the BESS Site is Lewes Nodular Chalk which is classified as a Principal Aquifer.
- 2.13.18 The superficial deposits beneath the BESS Site are Lowestoft Formation (diamiction) which is classified as a Secondary (undifferentiated) Aquifer.

Water Resources and Flooding

- 2.13.19 The majority of the BESS Site is located within Flood Zone 1, with a small area of Flood Zone 2 in the north-west corner. The BESS Site is at a very low risk to surface water flooding, and a very low risk to river and sea flooding.

- 2.13.20 The River Yare is located 2.5km north of the BESS Site. There are no watercourses within the BESS Site.
- 2.13.21 The BESS Site is located within the Zone III SPZ and a drinking water safeguard zone for surface water.

2.14 National Grid Substation Site (including Grid Connection Infrastructure)

Overview

- 2.14.1 The proposed National Grid Substation is proposed to be located at the National Grid Substation Site (see **Figure 1.2 Sheet 13 of 13**). This section of the report describes the site characteristics of the National Grid Substation Site. Subject to on-going discussions with National Grid, an alternative location for the Substation, is potentially within part of sub-Site 1B (the characteristics of sub-Site 1B are described above) (shown on **Figure 1.2**). The potential for the National Grid Substation to be located at the National Grid Substation Site and part of sub-Site 1B are both addressed in this Scoping Report.
- 2.14.2 The National Grid Substation Site is a square shaped Site located approximately 470m south of sub-Site 1A and 1B and situated to the west of the BESS site. The Site comprises of grassland and is bordered by sporadic trees, as well as Hundred Lane to the northern corner.

Landscape

- 2.14.3 There are no statutory landscape designations covering the National Grid Substation Site. The nearest area of residential dwellings is Great Moulton, located approximately 440m north-west.
- 2.14.4 The topography of the Site is relatively flat, similar to the surrounding areas of the Substation Site. The Site is screened by trees and hedgerow which border the fields.

Ecology and Biodiversity

- 2.14.5 The Ancient Woodland Big Wood is located 3.8km east of the Site and Bunnell Wood Ancient Woodland is located 4.8km north-west of the Site.
- 2.14.6 The Norfolk Valley Fens SAC is located 8.5km north of the National Grid Substation Site.
 - The following SSSIs are located within 5km of the Substation Site:
 - Aslacton Parish Land SSSI, located 3.1km north;
 - Pulham Market Big Wood SSSI, located 3.8km east; and
 - Forngett Meadows SSSI, located 3.8km north.

Heritage

- 2.14.7 The National Grid Substation Site is not covered by any statutory historic designations. The Grade I Listed Building 'Church of St Margaret' is located 1.3km south of the Site and the Grade II* Listed Building 'Channonz Hall' is located 1.7km west of the Site.
- 2.14.8 There are no scheduled monuments, historic parks and gardens or registered battlefields within proximity of the Substation Site.

Transport

- 2.14.9 There is a PRow which crosses the centre of the National Grid Substation Site 'Tivetshall St Margaret FP2' from the south to north and connects to the PRow 'Great Moulton RB19' at the northern boundary. The northern boundary is also bordered to Hundred Lane.
- 2.14.10 The National Grid Substation Site is situated 560m east of the Norwich to London railway line.

Ground Conditions

- 2.14.11 There are no active or historic landfills within 1km of the National Grid Substation Site.
- 2.14.12 The bedrock geology of the Site is Lewes Nodular Chalk which is classified as a Principal Aquifer.
- 2.14.13 The superficial deposits beneath the Site are Lowestoft Formation (diamiction) which is classified as a Secondary (undifferentiated) Aquifer.

Water Resources and Flooding

- 2.14.14 The Site is located within Flood Zone 1. The River Yare is located approximately 1km south-east.
- 2.14.15 The majority of the Site is at a very low risk to surface water flooding, with a small area of low risk in the north-west corner, and a very low risk to river and sea flooding.
- 2.14.16 The Site is not located within an area covered by a drinking water safeguard zone. The western portion of the Site is located within a Zone III (Total Catchment) Source Protection Zone, the remainder of the Site is not located within a Source Protection Zone.

2.15 Cable Route Corridor

Overview

- 2.15.1 For the purposes of this Scoping Report, the proposed CRC area represents potential areas indicated for construction of the 33kV, 132kV and 400kV cables and laying the interconnecting cables between the solar PV arrays. The indicative route is shown on **Figure 1.2 Sheet 1 of 13**. It will comprise 14 total routes between the individual Sites and sub-Sites in order to transfer the generated energy from the solar PV arrays to the substations and Point of Connection.
- 2.15.2 The different sections of the route have been identified as 'CRC1', 'CRC2' etc. up to 'CRC 14', as shown on the plan. A description of the different sections of the CRC is provided below (unless where otherwise specifically identified, 'highway infrastructure' refers to minor or unclassified roads):
- CRC 1 – This section of the CRC links the National Grid Sub Station Site to the BESS Site, and forms part of a single agricultural field, with a woodland situated to the eastern boundary.
 - CRC2 – Links the BESS Site to Site 2 (sub-Sites 2A and 2B) and comprises a number of fields. (It should be noted that the Southern boundary of Site 1 is contiguous with the BESS Site boundary and any interconnecting cables from Site 1 will link with the Scheme via the BESS Site).
 - CRC 3 - Links sub-Site 2A to 2B and comprises a number of fields and accommodates some highway infrastructure.
 - CRC4 – Links sub-Sites 2B and 2C together and then links Site 2 with Sites 4 and 5 to the north and east of Long Stratton. This is one of the longer sections of CRC (circa 5.7 kilometres) linking the National Grid Sub Station and BESS Sites, and Sites 1 and 2 in the Great Multon area in the south-west of the Scheme to the Sites in the vicinity of Long Stratton. CRC4 comprises numerous fields and accommodates some highway infrastructure including the A140.
 - CRC5 - Links sub-Site 3A to 3B and comprises a number of fields.
 - CRC 6 - This section of the CRC is situated to the south of Hempnall and links Site 3 to Sites 5 and 6. It comprises a number of fields and accommodates some highway infrastructure.
 - CRC7 - Links Site 5 to Site 7. CRC7 comprises a number of fields, woodland and a Statutory Main River.
 - CRC8 - Links CRC6, Site 6 and parts of Site 7 together. CRC7 comprises numerous fields and accommodates some highway infrastructure.
 - CRC9 – Links with CRC8 to connect Site 10 with the Scheme. CRC9 comprises numerous fields and accommodates some highway infrastructure.
 - CRC10, 11 and 12 – Links various parts of Site 7 together and connects the Scheme to Site 8. CRC10, 11 and 12 comprise a number of fields. CRC 10 accommodates some highway infrastructure.
 - CRC 13 – Links Site 8 to Site 9 and comprises a number of fields and accommodates some highway infrastructure.
 - CRC 14 - Links sub-Site 10D to 10E and comprises two fields.

- 2.15.3 The route for the cables will be refined through further environmental baseline surveys and technical studies, since a narrower corridor will be required for the cable route and its construction. Temporary construction compounds will also be required along the route, the locations of which will be subject to engineering and environmental considerations.
- 2.15.4 The refined CRC will be assessed and subsequently described in the ES. The ES will also set out how disturbance will be limited in extent given the narrow width of cable trench required, and the fact that affected land along the cable route will be reinstated following a relatively short (less than 2 years) construction period. The cables will be installed beneath the ground within agricultural fields. Where possible the cables will follow natural field margins and utilise hedgerow gaps and gates. Techniques such as Horizontal Directional Drilling (HDD) may also be utilised to avoid damage to ecologically valuable habitats, such as watercourses and hedgerows.

3 Scheme Description

3.1 Overview

- 3.1.1 The Scheme comprises the construction, operation (and maintenance) and decommissioning of ground-mounted solar PV arrays, and associated development including a Battery Energy Storage System (BESS); Ancillary Infrastructure; a number of 33kV and 132kV Substations (comprising electrical infrastructure such as the Transformers and Switchgear) located within the Solar Array Sites; two 400kV Substations; and Grid Connection Infrastructure (which includes the new National Grid Substation). Underground cables will run between the Solar Array Sites within the cable route corridor (CRC) to connect to the BESS Site and National Grid Substation Site. 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.

3.2 Components of the Scheme

Overview

- 3.2.1 The Scheme comprises the following principal components and Associated Development:
- Solar PV arrays;
 - Mounting structures (as either single-axis tracker and/ or fixed);
 - Conversion Units (comprising: Inverters; Transformers; and Switchgear);
 - Substations (33kV, 132kV, 400kV) comprising electrical infrastructure such as the Transformers, Switchgear and control rooms;
 - A National Grid Substation;
 - BESS;
 - CRC;
 - Grid Connection Infrastructure - Underground and/or overhead lines which could include new pylons between the National Grid Substation and the Point of Connection;
 - Ancillary infrastructure;
 - Access tracks;
 - Green infrastructure;
 - Fencing and security;
 - Mitigation and enhancement areas; and
 - Temporary Construction compounds.
- 3.2.2 Further details of each of the key Scheme components as listed above are set out below.
- 3.2.3 Appropriate setbacks and buffers will be included within the design to limit the environmental impacts caused by the Scheme during construction, operation and decommissioning. These setbacks and buffers will be developed based on

consultation feedback, relevant statutory guidance, baseline assessments and professional judgment.

3.3 PV Panels

- 3.3.1 PV panels are made up of cells, which convert the solar irradiance to electrical energy.
- 3.3.2 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.
- 3.3.3 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.
- 3.3.4 There are currently two options for the Mounting Structures which are being considered and which are described below.

3.4 Solar PV Arrays and Mounting Structure

- 3.4.1 The Scheme will use Single-Axis Tracker Panels (Option A) and/ or Fixed Panels (Option B). The parameters for each of these options are described below.

Option A: Single-Axis Tracker Panels

- 3.4.2 PV Panels which are fixed to the Mounting Structures will be orientated north to south. They 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 (shown on **Image 1**, below).



Image 1 Tracker Panels

Option B: Fixed South Facing PV Arrays

- 3.4.3 PV panels 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 (shown on **Image 2**, below).



Image 2 Fixed South Facing PV Arrays

Solar PV Mounting Structure

- 3.4.4 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 4m, 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. The specific piling methodology will be informed by relevant assessment work, including ground conditions and archaeological surveys.

Cabling

- 3.4.5 Low voltage distribution cabling between solar 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, 132kV and 400kV) are required between the Conversion Unit compounds, BESS and the 400kV Substations.
- 3.4.6 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.

3.5 Conversion Units

- 3.5.1 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.
- 3.5.2 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.
- 3.5.3 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.
- 3.5.4 The configuration of equipment within the Conversion Unit compounds will depend on the iterative design process as influenced by technical and environmental factors.

Inverters

- 3.5.5 Inverters convert Direct Current (DC) electricity collected by the solar PV arrays into AC electricity, to allow electricity generated to be exported to the National Grid.
- 3.5.6 Inverters are sized to deal with the level of voltage and intensity of the energy which is output from the solar PV arrays.
- 3.5.7 There are two options for inverters, namely string inverters or inverters located within a conversion unit compound (shown on **Image 3** and **4**, respectively, below). 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. Inverters located within the Conversion Unit compound would either be standalone cabinets, or they would be housed ('integrated') within a container. The maximum size of a standalone inverter cabinet would be 6m by 2.4m, with a maximum height of 2.9m.
- 3.5.8 String inverters are small enough to be mounted underneath or behind the PV panels on their mounting structures. Inverters located within the conversion unit compound would either be standalone cabinets or would be integrated within a container.



Image 3 String Inverter



Image 4 Central Inverter Unit

Transformers

- 3.5.9 Transformers are required to increase and decrease the voltage of electricity generated by the solar PV arrays.
- 3.5.10 Should a standalone transformer option be required, the maximum dimensions would be 43m by 65m with a maximum height of 6.5m.

Switchgears

- 3.5.11 Switchgears are the combination of electrical disconnect switches, fuses or circuit breakers used to control, protect and isolate electric equipment. Switchgears are used both to de-energise equipment to allow work to be done and to clear faults downstream of their location.
- 3.5.12 Should a standalone switchgear option be required, the maximum dimensions would be 5m by 9m with a maximum height of 4m.

3.6 Substations

- 3.6.1 A substation is a part of an electrical generation, transmission, and distribution system. Substations transform voltage from high to low, or low to high, or perform any of several other important functions necessary for the energy generation process. Between the generating station and consumer, electric power may flow through several substations at different voltage levels.
- 3.6.2 The Scheme will require different types of substations, which are outlined below. The locations and numbers of Substations will be determined through further assessments, consultation and the design evolution process.

33 to 132kV Substations

3.6.3 A number of substations each up to 132kV will be located across the site to collect energy from the solar PV arrays and convert the energy from 33kV to 132kV, an example of a 132kV substation is shown in **Image 5**. These substations are comprised of electrical infrastructure such as the Transformers, Switchgear and control equipment required to facilitate the export of electricity. The transformers associated with the 132kV Substations will either be single or dual. Maximum compound parameters are as follows:

- 33kV to 132kV substation with single transformer: 43m by 65m, with a height of 6.5m; and
- 33kV to 132kV substation with dual transformer: 63m by 68m, with a height of 6.5m.



Image 5 132/33kV Substation (single transformer)

400kV Substation

3.6.4 There will be a requirement for two 400kV Substations located within the Site. Details of each are outlined below:

- 400kV Substation 1 comprising electrical infrastructure such as the Transformers, Switchgear and control equipment required to facilitate the export of electricity from the Scheme to the National Grid Substation. 400kV Substation (1) is anticipated to be located within the southern extent of the Site, potentially within the BESS Site; and
- 400kV Substation 2 comprising electrical infrastructure such as the Transformers, Switchgear and control equipment required to facilitate the export of electricity from the Scheme to the 400kV Substation (1) before onward

transmission to the National Grid Substation. 400kV Substation 2 is anticipated to be located within the central extent of the Scheme, potentially within Site 5.

- 3.6.5 These substations will include office space and welfare facilities as well as operational monitoring and maintenance equipment.
- 3.6.6 400kV substations will either be air insulated switchgear (AIS) or gas insulated switchgear substations.



Image 6 Typical 400kV power transformer

National Grid Substation and Grid Connection Infrastructure

- 3.6.7 A new National Grid Substation will be required at the Point of Connection (within the south-west of the Site) to connect the 400kV Substation 1 to the National Grid. The substation will monitor and manage the export of electricity to the National Grid from the Scheme and will be operated by National Grid Electricity Transmission plc. The location of the National Grid Substation is subject to on-going discussion with National Grid and landowners. The National Grid Substation will be located either at the National Grid Substation Site, or within sub-Site 1B, along the existing 400kV overhead line.
- 3.6.8 The National Grid Substation is assumed to have a footprint of 3ha. The National Grid Substation is likely to contain switchgear equipment, a control building housing equipment and car parking. The National Grid Substation would be enclosed by a palisade fence in line with National Grid standards.

- 3.6.9 Grid Connection Infrastructure will be required between the National Grid Substation and the existing 400kV overhead lines. The Grid Connection Infrastructure is likely to include underground and/or overhead lines including new 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.
- 3.6.10 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.
- 3.6.11 The details of the National Grid Substation and Grid Connection Infrastructure will be refined throughout the progression of the Scheme through PEIR and ES and ongoing engagement with National Grid Electricity Transmission plc.
- 3.6.12 The National Grid Substation will be constructed, operated and maintained by National Grid. This is in accordance with the Electricity Act 1989 that specifies that operators should develop and maintain an efficient, coordinated, and economical electricity transmission/distribution system, and includes required specifications.

Interconnecting Cables Within the Sites

- 3.6.13 The solar PV arrays will be connected to the 33kV and 132kV substations via interconnecting cables. The voltage of the interconnecting cables will be between 33kV to 132kV and will be determined through further electrical design.
- 3.6.14 Further design and assessment work will determine whether the cables are installed underground or within casing attached to the mounting structures.

3.7 Battery Energy Storage System

- 3.7.1 A BESS provides an important balancing service, allowing electricity generated by the panels to be stored at times of low demand, and then exported onto the system when demand increases. The BESS will therefore enhance grid reliability and resilience. The BESS will have a capacity of up to 500MW.
- 3.7.2 The BESS will incorporate heating, ventilation and cooling systems to ensure the efficiency of the technology. These features are integrated into the units within which they are housed. The battery system will comprise DC/AC inverters to control the charge of the batteries from either the solar PV energy output or when drawing energy from the grid (shown on **Image 7**, below).



Image 7 Battery and Energy Storage System (BESS)

- 3.7.3 The dimensions of the BESS units are 16m by 3m with a maximum height of 3.2m.

3.8 Fencing and Security

- 3.8.1 Perimeter fencing would be in place throughout the Sites surrounding the solar PV arrays and is likely to comprise deer wire mesh with wooden posts, at a maximum height of 2.5m (shown on **Image 8**, below). It is expected that the final location of the fencing will be finalised as part of the detailed design which would be secured through a DCO Requirement post-consent.



Image 8: Typical deer fencing

- 3.8.2 The BESS, conversion units and substations would be surrounded by palisade fencing, likely at a maximum height of 3m.
- 3.8.3 Pole-mounted, internal-facing CCTV systems will be installed around the perimeter of the Sites (shown on **Image 9**, below). It is anticipated that these would be galvanised steel poles painted green, with a maximum height of 3m.



Image 9: Pole-mounted Security Camera

- 3.8.4 Motion-sensing security lighting will be provided within the substation, conversion unit and BESS compounds, to be used for maintenance and security purposes. In the event of an emergency, lighting will also be provided.
- 3.8.5 Temporary on-site lighting will be required during construction to enable safe working in hours of darkness, within the agreed working hours. This lighting will be suitably designed as far as reasonably practicable so as to not cause nuisance and would accord with good practice measures to minimise light spill and glare.

3.9 Cable Route Corridor

- 3.9.1 The electricity generated by the solar PV arrays from the Scheme will be exported via the CRC, which will comprise new underground cables to the proposed National Grid Substation. These underground cables will also import and export energy between the BESS and the National Grid Substation.
- 3.9.2 The final route and extent of the CRC to be proposed in the DCO Application will be refined through further environmental and technical assessments, landowner negotiations, and consultation and engagement input from other stakeholders, including the host authorities. At this stage, the route is indicated by the CRC (**Figure 1.2 Volume II**).
- 3.9.3 The voltage of the cables and the number of circuits will affect the width and number of the cable trenches required. The range of typical cable trench is from 1.2m to 1.7m wide, and up to 2m deep. The width and spacing of the cable trenches will depend on environmental constraints, engineering requirements, or crossing third party apparatus such as railway lines.
- 3.9.4 In addition to trenches, land will be required in the corridor for access (a haul road) and soil and cable 'lay down' areas. Temporary construction compounds along the route will also be required at necessary intervals depending on the nature of the route. The typical working area for the cable route installation is anticipated to be approximately 50m wide, to accommodate cable turns, and utility or road and rail

crossings. Following installation of the cable, the construction working area would be reinstated.

3.10 Site Access

- 3.10.1 Access points into each Site or sub-Site, as required will be designed to accommodate an articulated HGV with a maximum length of 16.5m. Existing access points are proposed to be used where possible with visibility splays of 2.4m x 215m. There may be some variation on visibility splays based on site specific conditions.
- 3.10.2 The transformers will be classified as an Abnormal Indivisible Load (AIL) and therefore an additional assessment will be undertaken by an AIL specialist to identify suitable routes to the proposed transformer locations. The routing and access points for these will be determined through the design process and in consultation with the appropriate statutory consultees.

3.11 Access Tracks

- 3.11.1 It is anticipated that on-Site access tracks will follow the alignment of existing agricultural tracks where practicable. New internal access tracks are likely to be a maximum of 6m wide, constructed of hardcore or gravel over a levelling layer of substrate. Where appropriate and if applicable, local materials will be sourced. Where required, drainage will be implemented to control any surface water run-off.

3.12 Green Infrastructure

- 3.12.1 The Site currently comprises land in agricultural use. There are features within the Site such as hedgerows, field margins, ditches, and watercourses which are known and otherwise considered to have some ecological value.
- 3.12.2 As a general principle, the design process will look to retain existing features, and the following ecological mitigation and enhancement measures are well suited for implementation on solar projects of this scale:
 - Land between and under the solar PV arrays sown as grassland and meadow, managed with limited cutting and a mix of some areas being potentially grazed and others not;
 - Gaps within existing hedgerows filled with additional native species to increase diversity, and hedgerows will be managed on a rotational basis to enable wildlife to benefit from them all year round;
 - Creating new woodland blocks and belts, and tree planting;
 - Appropriate vegetated buffers maintained comprising native planting;
 - Locating beehives around the Site; and
 - Installing bird nest and bat boxes on trees located around the Site to provide opportunities for a range of species recorded within the local area.
- 3.12.3 Prior to the commencement of any phase of development, a Landscape Ecological Management Plan (LEMP) will be prepared and submitted to and approved by the relevant planning authority. This will be secured by a DCO Requirement. This will

ensure the potential construction and operational impacts are minimised and that, where possible, opportunities for connecting existing ecological networks and beneficial effects are secured as part of the Scheme. The LEMP will be in accordance with the Outline LEMP (OLEMP) which will be submitted as part of the DCO Application.

- 3.12.4 The proposed LEMP will seek to increase the green infrastructure, connecting existing networks and enhance landscape views where appropriate. This may include enhancing PRoW to improve access to the countryside or creating new permissive paths. Where practicable, PRoW's will remain open during construction, operation and decommissioning. However, there may be short periods of temporary closure or required diversions to facilitate the Scheme.

Drainage

- 3.12.5 A Flood Risk Assessment (FRA) and a Drainage Strategy are being developed to inform the design process for the Scheme. The assessments will identify how the Scheme will manage surface water across the Site and not increase flood risk. The Drainage Strategy will detail the measures to manage the surface water drainage from the Scheme and any required changes needed to existing land drainage.

3.13 Mitigation and Enhancement Areas

- 3.13.1 Areas within the Site that will not be developed with infrastructure will be used to provide appropriate mitigation and enhancement measures as required to lessen the environmental impact of the Scheme. The level and type of measures required will be subject to further environmental assessment and design evolution. Measures that are suited to large scale solar schemes and could be implemented throughout the Site include:

- additional planting (hedgerows, meadows and trees);
- creation of permissive paths; and
- placement of beehives, bird and bat boxes.

3.14 Development Capacity

- 3.14.1 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).
- 3.14.2 Paragraph 2.10.51 of NPS EN-3 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 Planning Act (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 (noting this is intended to increase to 100MW as per UK Government intentions).

3.15 Construction

Construction Programme

- 3.15.1 The Scheme currently has a National Grid connection date of 2031. The construction of the Scheme is proposed to be undertaken over an estimated 24-month period. Subject to the DCO consenting process, the earliest construction start date would likely be 2028.
- 3.15.2 The construction period will vary across the Site. For the larger sub-Sites there will be opportunities for having multiple construction crews working at the same time.
- 3.15.3 There will be temporary construction compounds required for the Site and the grid connection works (installation of the cable route). The temporary construction compounds will comprise:
- Temporary portacabins for construction operatives (the dimension of the portacabins would vary and the maximum size for individual units is expected to be 10m by 3m with a typical maximum height of 3m);
 - Perimeter security fencing with a typical maximum height of 3m;
 - Parking areas for construction and workers vehicles;
 - A secure compound for storage;
 - Temporary hardstanding;
 - Wheel washing facilities (if appropriate water connection and drainage facilities can be provided);
 - Storage bins for recyclables and other waste; and
 - Temporary lighting for use during construction periods that fall within hours of darkness and within the agreed hours, with the exception of specified circumstances (as set out below).
- 3.15.4 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, night-time working for cable construction works in public highways or horizontal direction drilling 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).
- 3.15.5 Across the Site the Scheme will be designed to avoid removal and damage to hedgerows. Subject to final design, where this is not feasibly practicable some removal of hedgerows may be required. Any removal would be in line with the Hedgerow Regulations (1997)³² with necessary assessment taken place.

³² The Hedgerow Regulations (1997) <https://www.legislation.gov.uk/uksi/1997/1160/contents>

Construction Environmental Management Plan

- 3.15.6 Prior to the commencement of construction of any part of the Scheme, a Construction Environmental Management Plan (CEMP) will be submitted to and approved by the relevant planning authority, and this will be secured by a Requirement in the DCO. The CEMP for each phase will be in accordance with the Outline CEMP (OCEMP) which will be submitted as part of the DCO Application. This will ensure the potential construction impacts are minimised in line with the conclusions of the ES.
- 3.15.7 The Outline CEMP will detail the allocated responsibilities, procedures and requirements for environmental management of the construction sites. It will include relevant site-specific method statements, operating practices, and arrangements for monitoring and liaison with local authorities and stakeholders. The Outline CEMP will be developed by the Principal Contractor prior to construction.
- 3.15.8 The Principal Contractor(s) undertaking the construction of the Scheme will develop the CEMP in line with the Outline CEMP. The CEMP will then be adopted, with all activities complying with the measures as detailed in the CEMP. The main contractor will allocate environmental management responsibilities to a site manager and ensure that all sub-contractors' activities are effectively managed in accordance with the CEMP.

Legislation

- 3.15.9 The Construction (Design and Management) Regulations 2015 (CDM) regulate the health, safety and welfare of construction projects and will apply to the Scheme. A Principal Designer and a Principal Contractor (PC) will be appointed to plan, manage, monitor, and coordinate health and safety during the pre-construction and construction phases, respectively. The PC will have responsibility for ensuring legislative compliance and obtaining all permits/licences relating to ground conditions and contamination, as required.
- 3.15.10 The CDM Regulations require a pre-construction information pack (PCIP) to be provided by the Applicant or by the Principal Designer if the Client delegates this duty. The pack contains all information that is held or is readily available. The PCIP will be used by the PC to prepare construction and decommissioning phase risk assessments and method statements which will be informed by appropriate assessment work.

3.16 Operation and Maintenance

The Scheme will be operational for up to 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.

- 3.16.1 The components of the Scheme are anticipated to have the following approximate lifespans:

- Photovoltaic Panels – 25-40 years; and
- Batteries – 15-20 years.

- 3.16.2 It is therefore assumed, that the solar panels could require replacement up to two times and the batteries up to four times during the operation of the Scheme. The environmental implications of the replacement of the solar PV panels and BESS will be considered within the assessment of operational impacts of the Scheme in the ES. The construction phase is therefore considered as a worst-case scenario for the panel and battery replacement scenario, with any impacts likely to be much less than those reported during construction.
- 3.16.3 For routine maintenance purposes, movement within the Site is likely to be by quad bike or a small, farm utility vehicle. Personnel will visit the Site from time to time to check the apparatus and carry out maintenance and repairs. No on-site staff will be required to operate the Scheme but there will be limited staff facilities located in the control rooms associated within the National Grid and 400kV Substations. Some permanent equipment for monitoring the Site will be located in the Relay and Control Room. Whilst this would typically be accessed remotely, it would be available for occasional physical access during routine visits.

3.17 Decommissioning

- 3.17.1 The decommissioning of the Scheme is expected to take 12-24 months and is anticipated to be undertaken in phases. A Decommissioning Environmental Management Plan (DMEP) will be prepared and will be submitted to and approved by the relevant planning authority prior to decommissioning, and this will be secured by a Requirement in the DCO. The DEMP for each part of the Scheme will be in accordance with the Outline DEMP (ODEMP) which will be submitted as part of the DCO Application. This will ensure the potential decommissioning impacts are minimised.
- 3.17.2 The Solar PV Arrays and all related built infrastructure, ancillary infrastructure, substations and BESS will be removed and recycled or disposed of in accordance with good practice, local and national guidance and market conditions prevailing at that time. It is however anticipated that the National Grid Substation will remain in situ following decommissioning of the Scheme.
- 3.17.3 The underground ducting along the CRC will also be decommissioned in accordance with the latest regulations and good practice prevailing at that time but are anticipated to be left in-situ to minimise adverse environmental effects. It is possible to remove the cable itself by extracting it at the joint bays from within the ducting, so that the cable can be recycled.
- 3.17.4 The effects of decommissioning are likely to be similar to, and are often of a lesser magnitude than, construction effects and are considered in the relevant sections of this Report. However, there can be a high degree of uncertainty regarding decommissioning as legal and policy requirements, engineering approaches and technologies are likely to change over the operational life of the Scheme.

- 3.17.5 The land within the Scheme will be restored and returned to its original use as far as reasonably practicable after decommissioning. This will include removal of the solar PV panels, substations, conversion units and BESS.

3.18 Design Principles and Parameters

- 3.18.1 A series of design principles and parameters will be developed for the Scheme as part of an iterative process based on environmental assessments and consultation with key stakeholders. The design principles and parameters of the Scheme are currently being developed and will be confirmed following the development of detailed design and construction plans and presented in the DCO Application. Regard will be had to recently published Planning Inspectorate Guidance in respect of good design³³, in developing the design approach for the Scheme.
- 3.18.2 **Table 3.1** sets out the maximum design parameters that have been used to inform the Scoping Report and the approach to scoping assessments.

Table 3.1: Design Parameters

Scheme Component	Parameter Type	Maximum Design Parameter
Solar PV Arrays		
Option A: Single-Axis Tracker Panels (Tracker Panels)	Maximum Height of solar panels above ground level (AGL)	4.5m at greatest inclination and, 2.5m when horizontal
	Minimum height of lowest part of solar panel above the ground:	0.4m
	Indicative Orientation	Aligned in north:south rows, the panels will rotate east to west and tilt up to 60 degrees from horizontal
	PV mounting structure	Metal frames, either secured via metal posts driven into ground at a depth of 1.5-4m, or in areas of Arch protection, weighed down using concrete feet or other non-ground penetrative techniques. All electrical infrastructure associated with the panels will be elevated by the mounting structures so that it is no less than 0.6m above the 0.1% Annual Exceedance Probability (AEP) flood level or where this is not possible as high as practicable).
	Solar Panel Type	Bifacial monocrystalline panels
	Separation distance between rows	Minimum of 2.5m between rows of tracking panels. Maximum 15m between solar module centrelines.
Option B Fixed South Facing PV	Height of all panels (maximum above ground level)	3.5m

³³ Nationally Significant Infrastructure Projects: Advice on Good Design, The Planning Inspectorate, 23 October 2024

Scheme Component	Parameter Type	Maximum Design Parameter
Arrays (Fixed Panels)	Minimum height of lowest part of the solar panel above the ground:	0.4m
	Indicative Orientation	East-west rows, panels facing south at fixed tilt angle of between +10 to 35 degrees from horizontal
	PV mounting structure	Metal frames, either secured via metal posts driven into ground at a depth of 1.5 - 4m, or in areas of archaeological protection, weighed down using concrete feet or other non-ground penetrative techniques. All electrical infrastructure associated with the panels will be elevated by the mounting structures so that it is no less than 0.6m above the 0.1% Annual Exceedance Probability (AEP) flood level or where this is not possible as high as practicable).
	Solar Panel Type	Bifacial monocrystalline panels
	Separation distance between rows	Minimum of 2.5m between rows of tracking panels. Maximum 14m between solar module centrelines
Fencing	Perimeter Fencing	Deer fencing with a 2.5m maximum height
Conversion Units		
Conversion Unit (comprising inverters, transformer and switchgear)	Maximum dimensions	15m by 5m with maximum height of 3.5m
Substations		
33kV Substation	Maximum compound area	Maximum dimensions of 14m by 4m
	Maximum height	4m
	Compound perimeter	3m high palisade fencing around the compound 2.5m high deer type wire mesh and wooden post fencing outside of the palisade fencing.
132kV Substation	Maximum compound area	0.5ha
	Maximum height	7m to the top of the busbars
	Compound perimeter	3m high palisade fencing around the compound 2.5m high deer type wire mesh and wooden post fencing outside of the palisade fencing.
	Relay and Control Rooms – maximum dimensions	Maximum dimensions of 6m by 11m and maximum height of 4m

Scheme Component	Parameter Type	Maximum Design Parameter
400 kV Substation 1	33kV Switchgear	Maximum dimensions of 5m by 19m and maximum height of 4m
	Maximum compound area	3ha
	Maximum height	13m to the top of the busbars
	Compound perimeter	3m high palisade fencing around the compound and 2.5m high deer type wire mesh and wooden post fencing outside of the palisade fencing.
	Access	Maximum 6m wide, constructed of hardcore or gravel over a levelling layer of substrate
	Relay and Control Room – maximum dimensions	Maximum dimensions of 7m by 19m and maximum height of 4m
	33Kv Switch Room	Maximum dimensions of 7m by 19m and maximum height of 4m
400 kV Substation 2	Housing	Maximum height of 6m
	Maximum compound area	3ha
	Maximum height	13m to the top of the busbars
	Compound perimeter	3m high palisade fencing around the compound and 2.5m high deer type wire mesh and wooden post fencing outside of the palisade fencing.
	Access	Maximum 6m wide, constructed of hardcore or gravel over a levelling layer of substrate
	Relay and Control Room – maximum dimensions	Maximum dimensions of 7m by 19m and maximum height of 4m
	33Kv Switch Room	Maximum dimensions of 7m by 19m and maximum height of 4m
National Grid Substation	Housing	Maximum height of 6m
	Maximum compound area	3ha
	Maximum height	15m to the top of the busbars
	Compound perimeter	3m high palisade fencing around the compound 2.5m high deer type wire mesh and wooden post fencing outside of the palisade fencing.
Battery Energy Storage System (BESS)		
BESS	Maximum compound area	11ha
	BESS unit dimensions	16m by 3m with a maximum height 3.2m
	Compound perimeter	3m high palisade fencing around the compound and CCTV cameras

Scheme Component	Parameter Type	Maximum Design Parameter
		to be installed, with the exact numbers to be confirmed
	Access	Maximum 6m wide constructed of hardcore or gravel over a levelling layer of substrate. Parking bays will be provided (number to be confirmed).
Fencing	Security	3m maximum height palisade fencing
Cable Route Corridor		
Cable Route Corridor	Cable route working corridor – maximum width	50m
	Cable trench – maximum width	Individual trenches typically up to 1.2m width. Multiple trenches typically 1-7m width. This includes separation distances where multiple cables are running in parallel within the same trench or within multiple trenches.
	Cable trench – maximum depth	Typically, up to 2m subject to design and ground conditions.

3.19 Commitments Register

- 3.19.1 In line with recent guidance from the Planning Inspectorate³⁴, a Commitments Register has been prepared. This sets out the measures which are likely to be required to ensure that good design objectives will be secured and implemented, and also to ensure that the likely significant effects arising from the Scheme are mitigated and monitored as far as possible. The Commitments Register has been submitted separately to PINS.
- 3.19.2 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.

³⁴ Planning Inspectorate (2024) Nationally Significant Infrastructure Projects: Commitments Register. Available at: <https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-commitments-register>

4 EIA Methodology

4.1 Introduction

- 4.1.1 This Chapter describes the broad principles of the methodology that will be adopted in the ES, including the approach that will be used to identify, evaluate and mitigate likely significant environmental effects. It also sets out the proposed structure of the ES.

4.2 Environmental Statement

- 4.2.1 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 Report.
- 4.2.2 The ES will contain three volumes, and an accompanying non-technical summary as set out in **Table 4.1** below.

Table 4.1: Environmental Statement Structure

Volume I: ES Main Text		
Chapter No.	Chapter Title	Description
1	Introduction	Introduction to the ES, EIA requirements, details of project team, ES organisation and availability of information.
2	EIA Methodology	Methods used to prepare each Chapter, description of ES structure and content, generic significance criteria, assumptions, limitations, scoping and consultation.
3	Site & Scheme Description	Site description and details of the Scheme.
4	Alternatives & Design Evolution	Describes the reasonable alternatives studied by the Applicant, provides a comparison of the environmental effects of those alternatives and identifies the reasoning for the selection of the Scheme based on environmental constraints.
5	Construction Methodology & Phasing	Details of anticipated programme for development and construction methodology.
6	Landscape & Views	Effects of the Scheme on landscape and visual amenity.
7	Ecology & Biodiversity	Effects of the Scheme on ecology and biodiversity
8	Cultural Heritage	Effects of the Scheme on built heritage and below-ground archaeology.

Volume I: ES Main Text		
Chapter No.	Chapter Title	Description
9	Transport & Access	Effects of the Scheme on traffic and access, including relating to driver severance and delay, pedestrian severance and delay, pedestrian amenity, accidents and safety and hazardous and dangerous loads.
10	Noise & Vibration	Effects of the Scheme on noise and vibration.
11	Climate Change	Effects of the Scheme on climate change.
12	Soils and Agricultural Land	Effects of the Scheme on soils and agricultural land.
13	Cumulative and In-Combination Effects	Summary of the cumulative and in-combination effects of the Scheme.
14	Other Matters	Chapter detailing other matters which do not warrant an ES Chapter.
15	Summary & Residual Effects	Summary of the residual effects of the Scheme.

Volume II: Figures Figures supporting the Main Text (Volume I) will be provided in Volume II.

Volume III: Technical Appendices Technical data, figures, plans and reports to support the Chapters in Volume III.

ES Non-Technical Summary Summary of the ES in non-technical language providing 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.

4.3 Consultation

- 4.3.1 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 non-statutory consultation process to help inform the content of this Scoping Report. Further detail on stakeholders who have already been consulted can be found within the individual environmental Chapters of this document.

4.4 EIA Methodology

- 4.4.1 The ES will set out the methodology used in the EIA, state the assumptions applicable to all disciplines, and summarise the EIA scoping process undertaken and the public consultation process. Bespoke methodologies, limitations and assumptions will be contained in the technical chapters of the ES where required.

- 4.4.2 The significance of an environmental effect is determined by the interaction of magnitude and sensitivity, whereby the effects can be positive (beneficial) or negative (adverse). Generic criteria to be used in carrying out this process are detailed below. Some technical Chapters may use discipline-specific criteria with their own terms for magnitude, sensitivity and significance; and, where used, this will be explained in the relevant Chapter.
- 4.4.3 An environmental effect can be categorised as either permanent or temporary. The duration of temporary effects comprises:
- Short-term (a period of up to 1 year);
 - Medium-term (a period of between 1 year and up to 5 years); and
 - Long-term (a period of more than 5 years).

Prediction of Impact Magnitude

- 4.4.4 The methodology for determining the scale or magnitude of impact is set out **Table 4.2** below.

Table 4.2: Methodology for Assessing Magnitude

Magnitude of Impact	Criteria for assessing impact
High	Total loss or major/substantial alteration to key elements/features of the baseline (pre-development) conditions such that the post development character/composition/attributes will be fundamentally changed.
Medium	Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition/attributes of the baseline will be materially changed.
Low	A minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible/detectable but not material. The underlying character/composition/attributes of the baseline condition will be similar to the pre-development circumstances/situation.
Very Low	Very little change from baseline conditions. Change barely distinguishable, approximating to a 'no change' situation.

- 4.4.5 The sensitivity of a receptor is based on the relative importance of the receptor using the scale set out in **Table 4.3** below.

Table 4.3: Methodology for Determining Sensitivity

Sensitivity	Examples of Receptor
High	The receptor/resource has little ability to absorb change without fundamentally altering its present character or is of international or national importance.
Medium	The receptor/resource has moderate capacity to absorb change without significantly altering its present character or is of high importance.
Low	The receptor/resource is tolerant of change without detriment to its character, or is of low or local importance.

Sensitivity	Examples of Receptor
Very Low	The receptor/resource is tolerant of change without detriment to its character, or does not make a significant contribution to local character or distinctiveness and is not designated.

Assessment of Effect Significance

- 4.4.6 After the magnitude of the impact and the sensitivity of the receptor/resource have been determined, the effect significance will be classified using the matrix in **Table 4.4**. This illustrates the interaction between impact magnitude and receptor sensitivity.

Table 4.4: Effect Significance Matrix

Magnitude	Sensitivity			
	High	Medium	Low	Very Low
High	Major Adverse / Beneficial	Major Adverse / Beneficial	Moderate Adverse / Beneficial	Minor Adverse / Beneficial
Medium	Major Adverse / Beneficial	Moderate Adverse / Beneficial	Minor Adverse / Beneficial	Negligible
Low	Moderate Adverse / Beneficial	Minor Adverse / Beneficial	Negligible	Negligible
Very Low	Minor	Negligible	Negligible	Negligible

Generic Effect Definitions

- 4.4.7 **Table 4.5** below provides generic definitions of the terminology used to categorise effects where specific topic-related descriptions are not stated.

Table 4.5: Generic Effect Definitions

Effect	Description
Major	An effect that is likely to be an important consideration at a national to regional level because it will contribute to achieving national/regional objectives or is likely to result in exceedance of statutory objectives or breaches of legislation.
Moderate	An effect that is likely to be an important consideration at a regional level.
Minor	An effect that is likely to be an important consideration at a local level.
Negligible	An effect that is likely to have a negligible or neutral influence, irrespective of other effects.

Significance

- 4.4.8 The significance of all potential effects will be clearly identified in the ES. As a general rule, major and moderate effects will be considered to be significant whilst minor and negligible effects will be considered to be not significant. When the

outcome of significance is not overtly clear, professional judgment will also be applied and may alter the significance of an effect where necessary, taking into account the professional's understanding of the balance between the magnitude of an impact and the sensitivity of the receptor/resource and whether the effect is permanent or temporary, its frequency, whether it is reversible, and its likelihood of occurrence.

Rochdale Envelope

- 4.4.9 The ES will adopt a 'maximum design scenario' approach, assessing the Scheme on the basis of the maximum design parameters relevant to each technical discipline. This represents the worst-case scenario for impacts (known as the 'Rochdale Envelope' following court cases that established this principle in 1999 and 2001). This ensures that all potentially significant effects (beneficial or adverse) of the Scheme will have been assessed, providing the flexibility required to take advantage of technological improvements that may occur between the application being submitted and construction being commenced.
- 4.4.10 Advice Note Nine 'Rochdale Envelope'³⁵ 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.
- 4.4.11 As the design evolves in response to the environmental assessment and consultation processes (which run in parallel), the maximum (or minimum) parameters may be further developed from those set out in this document in order to deliver the best environmental outcomes for the Scheme. The maximum (or minimum) parameters assessed in the ES will be set out in a concept design parameters and principles document submitted with the DCO Application and secured in the DCO.

4.5 Alternatives and Design Evolution

- 4.5.1 The ES will describe the evolution of the Scheme based on environmental constraints and the reasonable alternatives to the submitted Scheme, assessed by the Applicant.

4.6 Construction and Decommissioning Methodology and Phasing

- 4.6.1 The ES will outline both the anticipated construction and decommissioning programme, as well as their phasing and methodology, and it will explain the assumptions made. This Chapter will form the basis of the construction and

³⁵ Planning Inspectorate (2018) Nationally Significant Infrastructure Projects - Advice Note Nine: Rochdale Envelope. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010168/EN010168-000007-EN010168_LDSP_Scoping%20Main%20Report.pdf

decommissioning phase assumptions documented in each of the technical Chapters of the ES.

4.7 Mitigation and Enhancement Measures

- 4.7.1 As mentioned above, the ES will include a Commitments Register summarising the measures proposed under each technical Chapter to reduce, avoid or offset the potential adverse effects of the Scheme. The Commitments Register will set out the mechanisms that will be used to secure any mitigation that may be required.

4.8 Cumulative and In-Combination Effects

- 4.8.1 The approach to the assessment of the likely significant cumulative and in-combination effects of the Scheme is set out in **Chapter 15** (Cumulative and In-combination Effects) of this Scoping Report.

4.9 Summary and Residual Effects

- 4.9.1 The residual effects of the Scheme will be summarised in one table at the end of the ES, setting out the overall beneficial and adverse likely significant effects of the Scheme. The residual effects are those that remain after the consideration of embedded mitigation measures, i.e. those built into the design of the Scheme, and any additional mitigation and enhancement measures, that will be secured as part of the DCO.

5 Topics to be Scoped Out

5.1 Overview

5.1.1 This Chapter presents the matters to be ‘Scoped Out’ of the ES. The topics, that it is considered can be scoped out of the ES, comprise:

- Air Quality;
- Water Environment;
- Major Accidents and Disasters;
- Electric, Magnetic and Electromagnetic Fields;
- Telecommunications, Television Reception and Utilities;
- Wind Microclimate;
- Daylight, Sunlight and Overshadowing;
- Glint and Glare;
- Lighting;
- Minerals;
- Waste and Materials;
- Socio-Economics;
- Human Health;
- Arboriculture; and
- Ground Conditions.

5.1.2 These are proposed to be scoped out on the basis that the Scheme is not anticipated to result in likely significant effects during its construction, operation and decommissioning phases, in respect of these topics. The recommendations relating to the topics to be scoped out of the ES have been informed by initial on-site surveys, desk-based assessment, consultation with the relevant consultees and professional judgement of the topic specialists.

5.1.3 The PINS guidance relating to *Nationally Significant Infrastructure Projects: Technical Advice Page for Scoping Solar Development* (20 September 2024)³⁶ has been considered in this Chapter. A summary of the reasoning behind scoping out topics is presented in each section of this Chapter and summarised in **Chapter 15 Conclusions** of this Scoping Report.

5.1.4 Given the Site’s rural location, the Scheme is not anticipated to result in transboundary effects when considering the PINS Advice ‘*Nationally Significant Infrastructure Projects: Advice on Transboundary Impacts and Process*’ (20 September 2024)³⁷. For this reason, an assessment of these effects is proposed to be scoped out of the ES.

³⁶ Nationally Significant Infrastructure Projects: Technical Advice for Scoping Solar Development, Planning Inspectorate, 20 September 2024

³⁷ Planning Inspectorate (2024) Nationally Significant Infrastructure Projects: Advice on Transboundary Impacts and Process. Available at: <https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-advice-on-transboundary-impacts-and-process>

5.2 Air Quality

Introduction

- 5.2.1 This Section should be read in conjunction with **Chapter 8 Ecology and Biodiversity** and **Chapter 10 Transport and Access**, of this Scoping Report.

Overview of Legislation, Policy and Guidance

- 5.2.2 This section of the Scoping Report has had regard to the following legislation, policy and guidance documents:

- Overarching National Policy Statement (NPS) for energy EN-1³⁸;
- NPS for Renewable Energy Infrastructure EN-3³⁹;
- The National Planning Policy Framework (NPPF);⁴⁰
- Planning Practice Guidance (PPG) for Air Quality⁴¹;
- Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction⁴²;
- Environmental Protection UK (EPUK), and IAQM Land-Use Planning & Development Control: Planning for Air Quality⁴³;
- Defra Local Air Quality Management Technical Guidance (LAQM.TG(22))⁴⁴;
- The Greater Norwich Local Plan (GNLP) March 2024;
- The South Norfolk Development Management Policies Document October 2015;
- Environment Act 2021;
- The Air Quality Standards Regulations 2010⁴⁵;
- The Air Quality Standards (Amendment) Regulations 2016⁴⁶;
- The Environment Targets (Fine Particulate Matter) (England) Regulations 2023⁴⁷;
- The Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 (Volume 1) (Volume 2)⁴⁸; and
- The Clean Air Strategy 2019⁴⁹.

³⁸ Department for Energy Security & Net Zero (2023) Overarching National Policy Statement for Energy (EN-1),

³⁹ Department for Energy Security & Net Zero (2023) Overarching National Policy Statement for Renewable Energy Infrastructure (EN-3)

⁴⁰ Ministry of Housing, Communities and Local Government (2012) National Planning Policy Framework (NPPF)

⁴¹ UK Government (2014) Planning Practice Guidance for Air Quality

⁴² IAQM (2024) Guidance on the assessment of dust from demolition and construction

⁴³ IAQM (2017) Land-Use Planning & Development Control: Planning For Air Quality

⁴⁴ Defra (2024) LAQM.TG(22) Supplementary Guidance England excl. London Determining the impact of air quality improvement measures.

⁴⁵ The Stationery Office (2010) Statutory Instrument 2010, No 1001, The Air Quality Standards Regulations 2010, London

⁴⁶ The Stationery Office (2016) Statutory Instrument 2016, No 1184, The Air Quality Standards (Amendment) Regulations 2016, London

⁴⁷ The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023

⁴⁸ Defra (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland

⁴⁹ Defra (2019) The Clean Air Strategy

- 5.2.3 In addition, this section of the Scoping Report has had regard to the PINS Technical Advice *Page for Scoping Solar Development – Solar Scoping Table*. PINS have provided this non-statutory guidance and advice on the scope of NSIP solar developments. The guidance recommends that information is included on air quality receptors and the anticipated impacts. This is discussed further within this section of the report below.
- 5.2.4 The guidance also provides examples of the types of evidence/assumptions to be provided in the EIA Scoping Report as follows:
- anticipated number, type of vehicle movements, and vehicle routing for all phases;
 - anticipated duration of activities (including earthworks);
 - typical plant and non-road mobile machinery to be used and expected locations for all phases;
 - location and characterisation of roads that construction traffic is to be routed along;
 - identification of the locations of any sensitive receptors (such as air quality management areas);
 - likelihood of exceedance of relevant thresholds set out in the appropriate guidance on the need to undertake an assessment of effects (such as IAQM guidance); and
 - The guidance also provides examples of the types of proposed mitigation to be summarised in the commitments register:
 - dust management measures set out in a draft control document;
 - traffic management measures set out in a draft control document;
 - buffer zones and / or screening.
- 5.2.5 Evidence and assumptions relied upon in scoping out aspects of the assessment are provided within this section of the report below.
- 5.2.6 The Commitments Register, submitted alongside the Scoping Report provides the mitigation proposed and relied upon based on the scope of the assessment presented in this Chapter.

Baseline

Air Quality Management Areas

- 5.2.7 The Site is located within the administrative boundary of SNC. The Joint Air Quality Annual Status Report 2023 (ASR) for SNC and Broadland District Council (BDC)⁵⁰ states that the Councils have not declared any Air Quality Management Areas (AQMA). The nearest AQMA is the Central Norwich AQMA, declared by Norwich

⁵⁰ Broadland District Council and South Norfolk Council (2023). '2023 Air Quality Annual Status Report (ASR)'. June, 2023.

City Council due to exceedances of the annual mean nitrogen dioxide (NO₂) national air quality objective (NAQO), approximately 9.6km from the Site.

Local Air Quality Monitoring

- 5.2.8 SNC does not undertake any automatic (continuous) monitoring. However, the Council undertook non-automatic (i.e. passive) monitoring of NO₂ at thirty sites during 2022. The closest monitoring sites are located along the A140 in Long Statton, approximately 800m – 1.5km from sub-Site 4B and approximately 700m – 900m from CRC 4.
- 5.2.9 The Joint ASR 2023⁵⁰ for SNC and BDC shows that there have been no exceedances of the annual mean NO₂ NAQO of 40µg/m³ at any of the monitoring sites in the Councils' administrative areas in recent years.

DEFRA Background Pollutant Concentrations

- 5.2.10 DEFRA provides estimated background concentrations of NO₂ and particulate matter (PM₁₀ and PM_{2.5}) which cover the whole country on a 1x1km grid⁵¹. The range of the latest 2021-based estimated background concentrations in 2024 for grid squares which the Site covers are provided in **Table 5.1**, below.
- 5.2.11 The estimated annual mean background concentrations for NO₂, PM₁₀ and PM_{2.5} are well below the NAQOs.

Table 5.1 2021-Based DEFRA Estimated Annual Mean Background Concentrations

Annual Mean Concentration (µg/m ³)	NO ₂	PM ₁₀	PM _{2.5}
Site Area	5.5 – 6.4	10.9 – 16.0	5.6 – 6.2
NAQO	40	40	20

Existing Sensitive Receptors

- 5.2.12 There are a number of ecological receptors in the area, including Shotesham-Woodton Hornbeam Woods Site of Special Scientific Interest (SSSI), Hedenham Wood SSSI, Pulham Market Big Wood SSSI and several areas of Ancient Woodland that are located directly adjacent to or in close proximity to the Site. Further details of designated ecological sites in the area are provided in **Chapter 8 Ecology and Biodiversity**.
- 5.2.13 There are also sensitive human receptors in the area, including residential properties, schools, nurseries and care homes in villages surrounding the Site, as well as several farms.

⁵¹ DEFRA (2020). '2018 Reference Year Background Maps'. [online]. Available at: <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018>. Last accessed: 11/10/2024.

Consultation

- 5.2.14 Consultation has been undertaken with the Environmental Health Officer at SNC during a pre-app meeting on 27th November 2024. It was agreed that the latest background concentrations from the 2021-based background maps should be considered and calibration of background concentrations with local monitoring data undertaken, if required. After Scoping, further consultation will be undertaken with the Environmental Health Officer at SNC to discuss whether detailed assessment is required once the Scheme's final traffic flow data has been provided by the Project's transport consultants.

Likely Significant Effects and Proposed Mitigation

Construction

- 5.2.15 During construction, there is potential for dust soiling and ecological and human health effects as a result of fugitive dust and PM₁₀ (including PM_{2.5}) emissions associated with construction activities and the operation of construction plant. A construction dust risk assessment in accordance with the Institute of Air Quality Management's (IAQM's) 'Guidance on the assessment of dust from demolition and construction' (V2.2, January 2024) will be undertaken and included within the ES to identify the risk of dust impacts.
- 5.2.16 The Study Area for the construction dust risk assessment will be 250m from the boundary of the Site and 50m from the route used by construction vehicles (up to 250m from site entrances). The risk of dust and PM₁₀ (including PM_{2.5}) impacts will be minimised through the implementation of standard best practice measures, as required. The measures will be incorporated into the Outline Construction Environmental Management Plan (OCEMP). With the implementation of suitable site-specific air quality and dust management measures through the OCEMP, the residual effects of construction dust and particulates on existing sensitive receptors will not be significant and have therefore been scoped out of the ES.
- 5.2.17 As outlined in the IAQM construction dust guidance, impacts from exhaust emissions from Non-Road Mobile Machinery (NRMM) are unlikely to be significant as NRMM must adhere to the emission standards for NO₂ and particulate matter as set out in European Directive 2016/1628. Therefore, the effects of NRMM on local air quality are considered to be 'not significant' and have been scoped out of the ES.
- 5.2.18 Temporary construction road traffic emissions have the potential to impact on sensitive human receptors and ecological sites in the local area. Assuming the construction activities associated with the CRC and Solar PV Arrays occur simultaneously on a worst-case basis, initial vehicle trip generation estimates indicate that there is expected to be a maximum of approximately 108 daily two-way HGV movements during the peak construction period. In addition, a maximum of approximately 44 daily two-way light goods vehicle (LGV) movements and 472 daily two-way car movements are estimated during peak construction activities.

These trips will be distributed across the Site, accessing the Site via a number of access points and the local road network.

- 5.2.19 EPUK and the IAQM provide indicative screening criteria in their document 'Guidance on land-use planning and development control: planning for air quality' (v1.2, 2017). The screening criteria are used to identify where there is a possibility that significant air quality impacts could occur and a detailed (dispersion modelling) assessment would be required. The EPUK / IAQM screening criteria are:
- a change of LDV traffic flow on local roads with relevant receptors of more than 100 AADT within an AQMA (500 AADT elsewhere); and
 - a change in HDV traffic flow of 25 AADT within an AQMA (100 AADT elsewhere).
- 5.2.20 Changes to existing vehicle flows on the road network due to the Scheme's construction vehicle trip generation will be temporary (approximately 24 months). If the peak flows are converted to annual average daily traffic (AADT), the total number of HDV and LDV two-way movements generated by the Scheme would slightly exceed the EPUK / IAQM screening criteria of 100 HDV AADT and 500 LDV AADT outside of an AQMA.
- 5.2.21 Peak construction activities are not expected to be carried out for more than a few months and periods between peak activities would require fewer vehicle trips. Furthermore, the traffic flows would be distributed across the road network and between individual Site access points and therefore would be expected to be below the EPUK / IAQM screening criteria on any single road link. Consequently, the potential for a significant effect on local air quality from road traffic emissions during the construction of the Scheme is not anticipated and is consequently scoped out of the ES.
- 5.2.22 Mitigation measures set out in the Outline Construction Traffic Management Plan (OCTMP) will also be implemented, as secured by the DCO to mitigate the effects of road traffic emissions during construction. The OCTMP will ensure that the appropriate vehicle routing for the construction phase is implemented. The vehicle routing will include consideration of the proximity of human receptors to construction traffic routes in order to reduce exposure to PM_{2.5} emissions associated with construction road traffic.
- 5.2.23 Overall, an assessment of air quality effects during construction as a result of construction dust and road traffic emissions is scoped out of the ES.
- 5.2.24 Further review of traffic data will be presented in the ES and compared to the EPUK / IAQM screening criteria to confirm whether a more detailed assessment of road traffic emission impacts is required once the Scheme's vehicle trip generation and distribution across the network has been refined. Should a detailed (i.e. dispersion modelling) assessment of road traffic emission impacts be required, this will be undertaken in accordance with a methodology agreed with the Local Planning Authority (LPA) and presented in a standalone air quality assessment report.

Operation

- 5.2.25 During operation, there are anticipated to be a limited number of visits per week for maintenance which would be below the EPUK / IAQM screening criteria. These would typically be made by car, van, or other LGV. Therefore, air quality effects arising from road traffic emissions associated with the Scheme during its operation are not considered to be significant.
- 5.2.26 There is no operational plant that will emit emissions to the air, nor any combustion processes proposed as part of the Scheme. A heating, ventilation and air conditioning (HVAC) system is proposed as part of the BESS. These systems do not produce emissions to air.
- 5.2.27 In the unlikely event of a fire within the BESS, unplanned air emissions could result in the release of Hydrogen Fluoride (HF), which may impact nearby receptors depending on the location of the BESS in relation to sensitive receptors and the design of the BESS. However, this is unlikely to occur. A key design principle applied to the design is that BESS will not be located closer than 100m to sensitive human receptors (as described above) which will be secured through the DCO.
- 5.2.28 This requirement will also be included in the Outline Battery Fire Safety Management Plan (OBSMP) in addition to other fire safety design measures to minimise fire risk and to ensure a fire is contained and extinguished quickly and does not result in a 'runaway' event, which would be agreed with the National Fire Chiefs Council. Should the DCO consent be granted, these measures would minimise the fire risk and the risk of a fire spreading, limiting the potential impact on local air quality from unplanned emissions and impact on human health (also see **Section 5.14 Human Health** and **Section 5.4 Major Accidents and Disasters**). On this basis, unplanned air emissions will not be assessed further as sufficient measures are considered to be in place to mitigate the potential for this impact to occur, making it highly unlikely.
- 5.2.29 An assessment of air quality effects during operation is therefore scoped out of the ES.

Solar PV Panel and Battery Replacement

- 5.2.30 As detailed in **Chapter 3 Scheme Description**, the panels are expected to be replaced up to two times, and the batteries up to four times over the lifetime of the Scheme.
- 5.2.31 The number of HDV and LDV vehicle movements required during solar PV panel replacement will be far fewer than those required during the construction phase of the Scheme. Mitigation measures similar to those required during the construction phase of the Scheme, such as a Traffic Management Plan and Environmental Management Plan are expected to be implemented during the solar PV panel replacement and will reduce the impact of the operation of the Scheme during the solar PV panel and battery replacement, including measures to reduce emissions of and exposure to PM_{2.5}.

- 5.2.32 As such, an assessment of air quality effects resulting from solar PV panel replacement is therefore scoped out of the ES, provided appropriate mitigation measures such as those implemented during the construction phase, are in place.

Decommissioning

- 5.2.33 Emissions during the decommissioning phase are anticipated to be similar to, or less than the construction phase and would be similarly managed, via the implementation of an Outline Decommissioning Environmental Management Plan (ODEMP), to ensure impacts on air quality are not significant. The ODEMP will include measures to reduce exposure to and emissions of PM_{2.5}.
- 5.2.34 An assessment of air quality effects during decommissioning is therefore scoped out of the ES.
- 5.2.35 Whilst Air Quality is proposed to be scoped out of the ES, pertinent matters will be included within an Other Matters chapter in the ES to draw out key mitigation measures and the results of the further assessment work.

Cumulative Effects

- 5.2.36 The approach to assessing in-combination effects and cumulative effects is described in **Chapter 14 Cumulative and in-combination effects**. In-combination effects on ecological or human receptors will be addressed in the Cumulative and In-Combination Effects Chapter of the ES. It is unlikely there would be significant cumulative effects from dust generated by the Scheme and other committed developments due to the mitigation measures that would be required for each individual development. There are also unlikely to be any other committed developments within 250m of the Scheme, limiting the potential cumulative impacts. However, this will be reviewed at the ES stage to confirm.
- 5.2.37 Due to the low levels of construction traffic and operational traffic flows likely generated by the Scheme it is unlikely that there would be significant cumulative effects with other committed developments. It is also highly unlikely there would be significant unplanned air quality cumulative effects from a fire occurring at two solar farms (that have BESS on site) at the same time in the local area. Therefore, overall, it is considered there is unlikely to be any in-combination or cumulative air quality effects.

Summary

- 5.2.38 **Table 5.2** below sets out the reasons for scoping out Air Quality from ES, in tabulated form, having regard to guidance *Technical Advice for Scoping Solar Development* (including the guidance in the *Solar Scoping Table*), issued by PINS⁵².

⁵² Planning Inspectorate (2024) Nationally significant Infrastructure Projects: Technical Advice Page for Scope Solar Development

Table 5.2 Potential Air Quality effects and justification for scoping out

Air Quality effect	Justification for Scoping Out of the Assessment
Construction	
Construction Dust	Construction dust risk assessment in accordance with the IAQM's 'Guidance on the assessment of dust from demolition and construction' will be undertaken at the ES stage. Impacts of dust will be minimised through the implementation of standard best practice and mitigation measures, as required. The measures will be incorporated into the OCEMP to be submitted with the DCO Application and secured by a Requirement. Residual effects of construction dust and particulates on existing sensitive receptors will not be significant.
Exhaust emissions from Non-Road Mobile Machinery (NRMM)	NRMM must adhere to the emission standards for NO ₂ and PM ₁₀ as set out in European Directive 2016/1628. Effects of NRMM on local air quality are therefore considered to be not significant.
Temporary construction road traffic emissions	On a worst-case basis, initial vehicle trip generation estimates indicate that there is expected to be a maximum of approximately 108 daily two-way HGV movements during the peak construction period. In addition, a maximum of approximately 44 daily two-way light goods vehicle (LGV) movements and 472 daily two-way car movements are estimated during peak construction activities. Peak construction activities are not expected to be carried out for more than a few months and periods between peak activities would require fewer vehicle trips. Furthermore, the traffic flows would be distributed across the road network and between individual Site access points and therefore would be expected to be below the EPUK / IAQM screening criteria on any single road link. Therefore, the potential for a significant effect on local air quality due to the Scheme is not anticipated as a result of road traffic emissions during the construction phase.
Construction Vehicle Routing	Vehicle routing for all phases of the Scheme will be provided in the OCTMP to be submitted with the DCO Application and secured by a Requirement.
Operation	
Operational Traffic	During operation, there are anticipated to be a limited number of visits per week for maintenance which would be below the EPUK / IAQM screening criteria. These would typically be made by car, van, or other LGV. Therefore, air quality effects arising from road traffic emissions associated with the Scheme during its operation are not considered to be significant. During solar PV and battery replacement, the number of vehicle movements are expected to be less than those generated during construction. Similar mitigation measures to those required during the construction phase of the Scheme, are expected to be implemented during the solar PV panel replacement. An assessment of air quality effects resulting from solar PV panel replacement is therefore scoped out of the ES, provided that appropriate mitigation measures are in place such as those implemented during the construction phase.
Combustion Plant	As no combustion plant is proposed, there will be no operational emissions associated with the proposed infrastructure under designed conditions.

Air Quality effect	Justification for Scoping Out of the Assessment
Emissions to air from unlikely BESS fire event	There is potential for a fire within the BESS. Although highly unlikely, this could result in unplanned air emissions. This is unlikely based on the design, in-built mitigation and the implementation of a BSMP. On this basis, unplanned air emissions have been scoped out of a formal assessment.
Decommissioning	
Identified effects are as per Construction	Scoped out.

5.3 Water Environment

Introduction

- 5.3.1 This section discusses the potential impacts from the Scheme on the Water Environment, including hydrology and hydrogeology, flood risk and water quality.

Overview of Legislation, Policy and Guidance

- 5.3.2 The following are relevant to the assessment of the water environment:
- 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;
 - 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 171 to 178. 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)
- 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).

5.3.3 In addition, this section of the Scoping Report has had regard to the PINS *Technical Advice Page for Scoping Solar Development – Solar Scoping Table*. The guidance recommends that information is included on water environment receptors and the anticipated impacts. This is discussed further within this section of the report below. The guidance also provides examples of the types of evidence/assumptions to be provided in the EIA Scoping Report as follows:

- Identification of water receptors;
- Anticipated impact pathways; and
- Commitment to provide an FRA.

Baseline

5.3.4 The baseline Study Area for the assessment of the water environment is the limits of the Site boundary and watercourses located in close proximity (less than 1km) to the Site.

Hydrology & Hydrogeology

5.3.5 The principal watercourses within proximity to the Site are:

- The Hempnall Beck (main river), which flows between Sites 7 and 4-6;
- The River Tas (main river) (Head to Tasburgh), which flows along the boundaries between sub-Sites 8A and 8B; and
- The Broome Beck, which flows in a south-westerly direction as an ordinary watercourse adjacent to the southern boundaries of sub-Sites 10A and 10C and becomes a main river shortly downstream of sub-Site 10A.

5.3.6 Ordinary watercourse tributaries of the River Tas and the Starston Brook flow along or adjacent to the eastern boundary of sub-Site 7A and the south-western corner of sub-Site 4A, respectively.

5.3.7 The Site and CRC are not located within any Drinking Water Protected Areas (surface water) or Drinking Water Safeguard Zones (both surface and groundwaters), with the exception of sub-Site 3A which is covered by a Drinking Water Safeguard Zone for surface water. The Drinking Water Safeguard Zone for Surface Water is an extensive designation covering a large part of South Norfolk

and extends in to adjoining authorities, encompassing rural and urban areas. The south-western areas (sub-Site 2A and CRCs 2-3), southern and central areas (northern part of sub-Site 3B, sub-Sites 7D-7L and CRCs 6, 8, 10, 12 and 13) and eastern areas (sub-Sites 10A-10D and CRCs 9 and 14) of the Site are located within a Zone III (Total Catchment) groundwater Source Protection Zone⁵³.

- 5.3.8 The bedrock geology beneath the Site and CRC (Norwich Crag and Chalk Formations) is classified as a Principal aquifer. The Lowestoft Formation (diamicton) superficial deposits underlying the majority of the Site and CRC is classified as 'Secondary (undifferentiated)' and areas along watercourse corridors (sand and gravel/alluvium superficial deposits) adjacent to sub-Site 7B, CRC6-7 and sub-Site 10A are classified as a 'Secondary A' aquifer.
- 5.3.9 The vulnerability of the above aquifers to pollutants discharged at surface level (groundwater vulnerability) across the majority of the Site and CRC is classified as 'Medium', with areas adjacent to the Hempnall Brook (CRC7 and sub-Site 7B) in the north-western area of the Site classified as 'Medium-High'.

Flood Risk

- 5.3.10 The Environment Agency's (EA's) Flood Zone map (Flood Map for Planning) shows that the majority of the Site and CRC are located within Flood Zone 1 'Low Probability' (defined as less than a 1 in 1000 (0.1%) annual probability (AP) of fluvial or sea flooding).
- 5.3.11 Small areas of Flood Zone 2 'Medium Probability' (between a 1 in 100 (1.0%) and 1 in 1000 (0.1%) AP of fluvial flooding) and Flood Zone 3 'High Probability' (greater than a 1 in 100 (1.0%) AP of fluvial flooding) are located just within or adjacent to the boundaries of sub-Sites 7B, 8A, 8B, CRC6, CRC7 and the southern area of CRC4.
- 5.3.12 The Site lies outside of areas at risk of tidal flooding.
- 5.3.13 The EA 'Risk of Flooding from Surface Water' (RoFSW) map indicates the majority of the Site and the CRC has a 'Very Low' risk (less than a 1 in 1000 (0.1%) AP) of surface water flooding. Flow routes with 'Low' (between a 1 in 100 (1.0%) and 1 in 1000 (0.1%) AP) to 'High' (greater than a 1 in 30 (3.3%) AP) surface water flood risk run through and along the boundaries of some of the land parcels and parts of the CRC: these are associated with the routes of main rivers and ordinary watercourses running close to the Site or localised topographic depressions in the area.
- 5.3.14 Maximum depths along the flow routes are typically less than 300mm, increasing to between 300 to 900mm in the centre of the flow routes in the 1 in 1000 (0.1%) AP event. One flow route through CRC6 has maximum depths greater than 900mm in this event.

⁵³ DEFRA (2023). *Magic Map Application*. [online] Defra.gov.uk. Available at: <https://magic.defra.gov.uk/MagicMap.aspx>. Accessed 24 September 2024

- 5.3.15 The Greater Norwich Area Strategic Flood Risk Assessment (SFRA) 'Areas Susceptible to Groundwater Flooding' mapping⁵⁴ indicates that the majority of the Site and CRC are not considered to be at risk from groundwater flooding. Sub-Sites 4A, 4B, 5A, 5B, 7A and the western areas of sub-Sites 7B and 10A are shown to have a <25% susceptibility of groundwater flooding ('Low' risk).
- 5.3.16 A small area in the southern part of sub-Site 5B, the eastern half of sub-Site 7B and the southern boundary of sub-Site 7C have a 25-50% susceptibility of groundwater flooding ('Low-Medium' risk), although this mapping is a high-level screening tool covering the country and based on an overview of the geology and topography rather than detailed modelling or historic data.
- 5.3.17 The areas of higher groundwater flood risk are in proximity to the Hempnall Brook and the Broome Beck. They also occur within areas where sand and gravel members/alluvium overlie the Norwich Crag Formation (sand) in the central and eastern areas of the Site (notably Sites 4, 5, 7 and 10), and the Lewes, Seaford, Newhaven, Culver and Portsdown Chalk Formations at Site 4 and sub-Site 7A.
- 5.3.18 It is envisaged that the groundwater would be in broad continuity with the water level in the watercourses, and as such the groundwater table would slope towards the lowest areas of the parcels.
- 5.3.19 The EA 'Flood Risk from Reservoirs' mapping⁵⁵ confirms that the Site and CRC are not considered to be at risk from reservoir flooding.
- 5.3.20 Given the rural nature of the Site, it is unlikely that significant sewerage infrastructure is present in the area or across it, and therefore the risk of sewer flooding from existing sewers is considered to be 'Very Low'.
- 5.3.21 In summary, the Site and CRC are considered to have a 'Very Low' to 'Low' flood risk from all sources.

Water Quality

- 5.3.22 The aim of the Water Framework Directive⁵⁶ (WFD) is to ensure that all surface water and groundwater bodies are of good chemical quality. Chemical status is an assessment of the concentrations of priority substances in surface water bodies. Ecological status is an assessment of the quality of surface water ecosystems.
- 5.3.23 Water quality data available from the EA's online 'Catchment Data Explorer'⁵⁷ has been reviewed. The Site lies within the Anglian River Basin District. The majority of the Site is located within the Yare Operational Catchment and the south-western

⁵⁴ *Greater Norwich Area Strategic Flood Risk Assessment (SFRA)*, November 2017. [online] Available at: <https://www.broads-authority.gov.uk/planning/planning-policies/sfra/sfra>. Accessed 15 October 2024

⁵⁵ *Environment Agency Opendata*. [online] Available at: <https://experience.arcgis.com/experience/753ad2ebd3554fa696885b8c366c3049/page/Open-Data/>. Accessed 15 October 2024

⁵⁶ *The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017*. Legislation.gov.uk, 2017, www.legislation.gov.uk/uksi/2017/407/regulation/1/made. Accessed 24 September 2024

⁵⁷ *Environment Agency Catchment Data Explorer*. [online] Available at: <https://environment.data.gov.uk/catchment-planning>. Accessed 24 September 2024

and north-eastern areas of the Site are located within the Waveney Operational Catchment.

- 5.3.24 The Hempnall Brook and River Tas are designated as '*not artificial or heavily modified*' watercourses. The Broome Brook is designated as '*heavily modified*'. These watercourses all have a 'fail' chemical status. The Hempnall Brook has a '*poor*' ecological status and '*moderate*' physio-chemical status (physical and chemical properties of water including temperature, oxygenation and nutrient conditions). The River Tas and Broome Brooks have a '*moderate*' ecological and physio-chemical status.
- 5.3.25 A '*good*' standard for chemical status was achieved for all watercourses up to 2016 and failed in 2019 under the measurement of '*priority hazardous substances*', notably polybrominated diphenyl ethers (PBDE).
- 5.3.26 It was identified that '*measures [have been] delivered to address issues, awaiting recovery*', although the projected timescales to achieve the targeted 'good' classification for the problematic chemical substances is identified as up to 40 years, due to the natural conditions and chemical status recovery time.
- 5.3.27 The receiving catchments of the River Tas (Tasburgh to River Yare) and the River Waveney (Ellingham to Burgh St. Peter) have similar designations to the upstream watercourses adjacent to the Site ('*Moderate*' physio-chemical and ecological status and '*fail*' chemical status).
- 5.3.28 In conclusion, the available information indicates that surface water quality over the Site and CRC and the receiving watercourses is considered to be '*moderate*'.

Consultation

- 5.3.29 Initial enquiries have been undertaken with the EA, Norfolk County Council as the Lead Local Flood Authority (LLFA) for the area to obtain modelled output and flood history information in relation to the Site. The Water Management Alliance (WMA) for Norfolk Rivers; and Waveney, Lower Yare and Lothingland Internal Drainage Boards (IDBs) have also been contacted with regards to easement requirements from their watercourses.
- 5.3.30 It is anticipated that further consultation will be undertaken with the LLFA and with the WMA as part of the preparation of the FRA and surface water drainage strategy for the Site.

Likely Significant Effects and Proposed Mitigation

- 5.3.31 Whilst there are areas of higher fluvial and surface water flood risk within localised areas of the Site and the CRC, a sequential approach will be applied to demonstrate that the Scheme is located outside of the areas of highest flood risk and that built development such as compounds and cabins do not impede surface water flood flow routes.

- 5.3.32 The height of the solar panel arrays will be designed as such that they will be raised adequately above the ground so that any surface water can continue to flow across the Site unimpeded.
- 5.3.33 Otherwise, the Scheme has the potential to have a variety of impacts on surface water and flood risk receptors, as set out below.
- 5.3.34 Impact pathways during the construction, operational and decommissioning phases include the following:
- impacts on water quality from sediment/pollutant mobilisation, contamination from potential harmful materials (e.g. lead, lithium and other heavy metals) from solar panels/batteries during construction and decommissioning;
 - impacts on local water supplies/groundwater from spills during construction and decommissioning; and
 - impacts on water quantity/surface water runoff from increases in impermeable areas during operation.
- 5.3.35 Measures will be included within the OCEMP and ODEMP to manage risks to water quality and prevent contamination of water sources from spillages and other contamination, such as silt traps and spill procedures.
- 5.3.36 Any compounds, substations, the cable routes and the BESS will incorporate a surface water drainage strategy to sufficiently manage surface water runoff arising from increases in impermeable area due to the Scheme, in accordance with the requirements of NCC as the LLFA for the area. The strategy will incorporate suitable water quality treatment before surface water runoff is discharged to the receptor (i.e. the receiving watercourse or into the ground as appropriate), as such, there will be no significant impact to the aforementioned WFD water ecological, chemical and physio-chemical status of the receiving watercourses.
- 5.3.37 The ground levels along the CRC will be kept at or as close to existing levels as necessary, to maintain surface water flow routes.
- 5.3.38 The operational phase will not generate any additional water outputs apart from those used for cleaning the solar panels.
- 5.3.39 As detailed in **Chapter 3**, planned panel and battery replacement may be required over the operational lifetime of the Scheme, and this would be managed in a similar way to the construction and decommissioning phases through the implementation of measures included within a CEMP and DEMP.
- 5.3.40 As such, based on the above, any effects to watercourse or groundwater receptors from the Scheme following mitigation are not considered to be significant.
- 5.3.41 A site-specific FRA will be prepared which will set out the existing baseline conditions (as above), summarise the potential direct and indirect impacts of the Scheme, and the mitigation measures required to prevent, reduce or offset its residual effects. This will also set out the details of the existing surface water drainage regime at the Site, and the proposed surface water management

arrangements for the Scheme, based on the principles of Sustainable Drainage Systems (SuDS).

- 5.3.42 The FRA will also include an assessment of future flooding from potential impacts of climate change upon surface water run-off for the anticipated 60-year operational lifespan of the Scheme, in accordance with the EA's 'Flood Risk Assessments Climate Change Allowances' guidance, updated in May 2022⁵⁸.
- 5.3.43 Available existing studies and documents, including evidence-based studies undertaken in support of the preparation of local planning policy, such as the Strategic Flood Risk Assessment (SFRA) and Preliminary Flood Risk Assessment (PFRA) will be reviewed to identify the best available data to inform the FRA.
- 5.3.44 Impacts during the operational phase of the Scheme will be managed through the surface water management system at the Site and SuDS will be built into the design to manage both quantity and quality of surface water runoff from the substations, conversion units and BESS areas. These measures will be set out in the FRA or a separate Drainage Strategy report as required.

Cumulative Effects

- 5.3.45 Cumulative effects are not considered likely in respect of the Water Environment due to the mitigation measures proposed in relation to flood risk and drainage. It is also assumed that the identified surrounding developments will implement similar measures in respect to flood risk and drainage. If any cumulative effects arise, these will be reported within the Cumulative and In-Combination Effect chapter of the ES.

Summary

- 5.3.46 As stated within the PINS guidance, water receptors have been provided and anticipated impact pathways. For the protection of ground and surface water quality a variety of measures have been suggested above which align with the PINS guidance that include:
 - Buffer zones and offsets to sensitive water receptors embedded into the design, such as locating equipment outside of high-risk flood zones;
 - Commitment to best practice measures in the OCEMP, which will include spill response procedures;
 - Drainage solutions built into the design of impermeable surfaces, as detailed in the Drainage Strategy; and
 - As stated elsewhere in this Scoping Report, the provision of a BSMP which will include measures on management of fire water.
- 5.3.47 To manage flood risk, an FRA will be prepared which will set out the existing baseline conditions (as above), summarise the potential direct and indirect impacts of the Scheme, and the mitigation measures required to prevent, reduce or offset

⁵⁸ Flood Risk Assessments: Climate Change Allowances." GOV.UK, www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances#full-publication-update-history. Accessed 24 September 2024

its residual effects in accordance with national and local planning policy requirements.

- 5.3.48 The FRA will also set out the details of the existing surface water drainage regime at the Site, and the proposed surface water management for the Scheme based on the principles of SuDS.
- 5.3.49 In summary, it has been concluded that the flood risk at the Site is 'Very Low' to 'Low' from all sources. With the proposed embedded mitigation measures implemented the effects on surface water and flood risk from the Scheme during its construction, operational and decommissioning phases are not expected to be significant. As such, it is proposed to scope out an assessment of likely significant effects in relation to the water environment from the ES, the FRA will, however, be appended to the ES. **Table 5.3** further outlines the justification for scoping out the water environment.

Table 5.3: Potential Water Environment effects and justification for scoping out

Water Environment Effects	Justification for Scoping Out of the Assessment
Construction	
Ground and surface water quality	Commitment to best practice measures in the OCEMP and ODEMP which will include spill response procedures.
Water supplies/ groundwater	
Operation	
Surface water quantity/ surface water runoff	A Drainage Strategy will be prepared and implemented during operation to manage water runoff from impermeable surfaces.
Flood Risk	An FRA will be prepared implemented to manage existing flood risks and the change to flood risk as a result of the Scheme.
Decommissioning	
Identified effects are as per Construction	Scoped out

5.4 Major Accidents & Disasters

Introduction

- 5.4.1 There is no definition of 'major accidents or disasters' provided in the EIA Regulations. However, the IEMA Primer Major Accidents and Disasters in EIA⁵⁹ produced by Arup in 2020 provides the following definitions:

Disaster: 'May be a natural hazard (e.g. earthquake) or a man-made/external hazard (e.g. act of terrorism) with the potential to cause an event or situation that meets the definition of a major accident.'; and

⁵⁹ IEMA (2020) IEMA Major Accidents and Disasters in EIA Guide. Available at: https://www.iema.net/media/brbdeibt/j27374_iema_major_accidents__disasters_final-1.pdf

Major Accident: ‘Events that threaten immediate or delayed serious environmental effects to human health, welfare and/or the environment and require the use of resources beyond those of the client or its appointed representatives to manage. Whilst malicious intent is not accidental, the outcome (e.g. train derailment) may be the same and therefore many mitigation measures will apply to both deliberate and accidental events.’

Relevant Legislation, Policy and Guidance

- 5.4.2 Schedule 4, Paragraph 5 and 5(d) of the EIA Regulations 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)”.*
- 5.4.3 Further, Schedule 4, Part 8 of the EIA Regulations 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.”*
- 5.4.4 The PINS solar scoping guidance recommends that information is included on major accidents and disasters’ receptors and the anticipated impacts. This is discussed further within sections below. The guidance also provides examples of the types of evidence/assumptions to be provided in the EIA Scoping Report as follows:
- explanation as to how potential major accident and disaster risks have informed the site selection and the Scheme description in the Scoping Report;
 - a major accident and disaster risk identification screening exercise, taking into consideration the potential consequence and anticipated likelihood of occurrence, with consideration given to any relevant thresholds for significance identified within industry guidance, for example battery fire; and
 - identification of any sensitive receptors in relation to the site including for example Control of Major Accident Hazards Regulations (COMAH) sites.
 - The guidance also provides examples of the types of proposed mitigation to be summarised in the commitments register:
 - commitment to providing, or provision of plans to manage risks identified in the Scoping Report, for example drainage strategy (OCEMP), battery safety management plan.
- 5.4.5 Evidence relied upon in scoping out aspects of the assessment are provided below.
- 5.4.6 The Commitments Register, submitted to PINS alongside this Scoping Report provides the mitigation proposed and relied upon based on the scope of the assessment presented in this Section.

Likely Significant Effects and Mitigation

5.4.7 **Table 5.4** provides the potential major accidents and/ or disasters that could occur during the construction, operation or decommissioning of the Scheme, the potential receptors and the reasoning for scoping out this topic from the ES, highlighting the mitigation measures that will be in place to ensure no likely significant effects.

Table 5.4 Summary of Major Accidents and Disasters Reasoning for Scoping Out

Potential Major Accident or Disaster	Potential Receptor	Comments and Reasoning for Scoping Out
Electrical fires and explosions	Local residents, infrastructure and buildings, habitats and species.	As detailed above in Section 5.2 Air Quality , there is a risk of electrical fire within the BESS. The design of the BESS will be undertaken in accordance with relevant guidance and legislation, with appropriate temperature regulatory equipment installed and monitoring procedures in place. In addition, a BSMP will be implemented. An OBSMP will be submitted with and secured via the DCO.
Glint and glare	Pilots/ aviation facilities Road users Residents	Based on design and implementation of appropriate measures, glint and glare is not anticipated to result in significant effects. See below Section 5.7 .
COMAH Sites	Local residents, habitats and species	There are no designated COMAH Regulations Sites located within 3 miles of the Site ⁶⁰ . No significant effects are likely to occur from the interaction with COMAH Sites.
Utilities damage/ strike	Utility providers	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. Discussions will be undertaken with utility and infrastructure providers to ascertain the locations of all assets. Where required, protective provisions will be generated and the design of the Scheme will be considered to avoid potential strikes and implement appropriate offsets. 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.

⁶⁰ Health and Safety Executive COMAH 2015 Public Information Search. Available at: <https://notifications.hse.gov.uk/COMAH2015/search.aspx>

Potential Major Accident or Disaster	Potential Receptor	Comments and Reasoning for Scoping Out
Unexploded ordnance (UXO)	Local residents, habitats and species	The majority of the Site is at a low hazard potential of UXO, with a number of isolated areas of moderate and high potential, typically associated with the World War II Airfield and other associated wartime features. Further details can be found in Appendix 5.2 Phase 1 Ground Conditions Assessment (Volume III), which will be updated and appended to the ES. Appropriate best practice and mitigation measures will be in place via the CEMP. Operational inspections and maintenance, replacement and decommissioning phases would have an even lower risk of encountering UXO as the ground would have been disturbed during construction so if a UXO was identified it would have already been managed in accordance with the CEMP. However, the relevant management plans would include measures to manage UXO risks.
Unstable ground conditions	Local residents and on-Site workers	Ground instability risks are not considered likely to be significant and are scoped out of the ES. Further details are provided in Appendix 5.2 Phase 1 Ground Conditions Assessment.
Traffic and road accidents	Road users	Traffic and road accidents are covered in Chapter 10 Transport and Access and are scoped into the ES. A CTMP would be implemented to carefully manage access and routing to ensure any potential risks are managed appropriately. An outline of this document will be submitted with and secured by the DCO.
Climate change and extreme weather-related events	Local residents, habitats and species and on-Site workers	Section 5.3 of this Chapter covers the risks associated with flooding which is scoped out of the ES. However, an FRA and surface water drainage strategy will be submitted with and secured by the DCO. Climate change risks, including flooding, increasing temperatures, heatwaves and storm and/or wind damage are covered in Chapter 12 of this Scoping Report and are scoped into the ES. As well as a design that considered climate change risks, other management plans such as the CEMP, LEMP and DEMP will ensure the risk of climate change and extreme weather-related events are controlled.
Accidental spillages	Ecological, human and geological receptors	Accidental spillages that meet the scale of those required to constitute a major accident or disaster are considered very unlikely as a result of the Scheme. Therefore, there are

Potential Major Accident or Disaster	Potential Receptor	Comments and Reasoning for Scoping Out
		unlikely to be any significant impacts relating to accidental spillages.
Infestation/ spread of vegetation pests and diseases	Habitats and species	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 OLEMP that will be submitted with the DCO Application.
Crime/ terrorism	Surrounding population National infrastructure	Solar energy systems are connected to the electrical grid through power electronic devices like inverters and may have frequent communication with utility control and automation systems. It is widely accepted that there are threats posed to critical national infrastructure from terrorism, both 'conventional' and cyber, due to the reliance on Information and Communications Technologies (ICTs) in the electricity system which presents vulnerability. The Scheme could be vulnerable to crime such as vandalism or arson which may either result in death or injury to the person concerned or could result in a fire. Fire risk is considered under Electrical Fires and Explosions above.

Cumulative Effects

- 5.4.8 Cumulative effects in relation to major accidents and disasters are not considered likely. Should cumulative effects be identified, these will be addressed within the Cumulative Effects chapter within the ES.

Summary

- 5.4.9 As detailed in the table above, to manage any potential risks, the Scheme will be designed and built in accordance with the relevant health and safety legislation, regulations and industry guidance, and relevant management plans will be implemented to control and mitigate risks.
- 5.4.10 It is therefore proposed that a separate topic Chapter on major accidents and disasters is scoped out of the ES, as likely significant effects on sensitive receptors which may give rise to major accidents and disasters will be considered in the relevant chapters in the ES, which will be sign-posted to within an 'Other Matters' chapter within the ES.

5.5 Electric, Magnetic and Electromagnetic Fields

Introduction

- 5.5.1 Electromagnetic fields (EMF) arise from the generation, transmission, distribution and use of electricity. They occur around all electronic infrastructure and appliances that use electricity. In relation to the Scheme the most significant sources will be from electricity cables, substations and associated infrastructure which will connect the Scheme to the National Grid.
- 5.5.2 Electricity infrastructure emits low-frequency electromagnetic radiation (EMR) which creates an EMF. EMFs comprise electric and magnetic fields. Electric fields are the result of voltages applied to electrical conductors and equipment. In most cases they do not extend far from the source. Fences, shrubs and buildings easily block electric fields. Magnetic fields are produced by the flow of electric current; however, unlike electric fields, most materials do not readily block magnetic fields. The intensity of both electric fields and magnetic fields diminishes with increasing distance from the source. EMFs can have both direct and indirect effects on human health.

Overview of Legislation, Policy and Guidance

- 5.5.3 There is no statutory provision in NSIP legislation regarding issues relating to protection from, EMF. However, in 2012, the Department for Energy and Climate Change (DECC)⁶¹ advised that guidelines published by the International Commission on Non – Ionizing Radiation Protection (ICNIRP) in 1998⁶² for both occupational and public exposure should be considered.
- 5.5.4 These guidelines state that “*overhead power lines at voltages up to and including 132 kV, underground cables at voltages up to and including 132 kV and substations at and beyond the publicly accessible perimeter*” are not capable of exceeding the ICNIRP exposure guidelines for electromagnetic fields. Furthermore, the intensity of both electric fields and magnetic fields diminishes with increasing distance from the source.
- 5.5.5 PINS guidance states “*Where proposed cables are over 132kV, an EMF assessment should be provided in an appendix to the Environmental Statement. This should include the location, routing and voltages of any cables over 132kV and a risk assessment to any human and ecological sensitive receptors within the ZoI*”. The guidance also states that EMF does not warrant a separate ES chapter.

⁶¹ DECC (2012), Power Lines: Demonstrating compliance with EMF public exposure guidelines, A Voluntary Code of Practice

⁶² International Commission on Non-Ionizing Radiation Protection (ICNIRP) (1998); ICNIRP Guidelines: For limiting exposure to time-varying electric, magnetic and electromagnetic fields (up to 300GHz), Health Physics 74 (4): 494-522

Baseline

- 5.5.6 Based on existing legislation and guidance, it is considered appropriate to restrict the Study Area to the Site boundary and any immediately adjacent residential and ecological receptors.
- 5.5.7 Within the Site the predominant existing feature that would generate EMF is the existing 400kV overhead line that bisects the western portion of the Site. The remaining majority of the Site comprises agricultural land which will not generate EMF. No baseline surveys have been undertaken in relation to EMF, and no additional survey work has been identified as required at this stage.

Likely Significant Effects and Mitigation

- 5.5.8 The Scheme is anticipated to use cables and infrastructure with a maximum voltage up to and including 400kV. Within each solar PV array the on-Site cabling is expected not to exceed 132kV. 400kV cabling will be laid underground between the 400kV Substations and National Grid Substation. Underground power cables eliminate the electric field altogether because it is screened out by the sheath around the cable, but they still however produce a magnetic field⁶³. The other sources of EMF will all be from within the solar sites themselves, comprising the new substations and the BESS. The substations and BESS would not be publicly accessible. Employees accessing the on-site substations and BESS would be protected under exposure limits set in the Control of Electromagnetic Fields at Work Regulations 2016⁶⁴.
- 5.5.9 There will be no generation of EMF during construction and decommissioning. The risk of EMF will be considered for the operational phase. Good design practice will contribute to the placement of potentially EMF generating equipment and infrastructure, to reduce potentially significant impacts on human and ecological receptors. Embedded measures relevant to EMF include:
- The use of underground cabling;
 - Locating the BESS and Substations away from residential and ecological receptors;
 - A minimum of 15m offset from all infrastructure to PRow; and
 - The design of the Scheme's electrical infrastructure will be in accordance with all relevant codes and practices.
- 5.5.10 With the implementation of these measures, the effects are therefore anticipated to be not significant. It is proposed that this topic is scoped out of the ES.

⁶³ National Grid, "undergrounding high voltage electricity transmission lines. The technical issues.," 2015. [Online]. Available: https://www.nationalgrid.com/sites/default/files/documents/39111-Undergrounding_high_voltage_electricity_transmission_lines_The_technical_issues_INT.pdf.

⁶⁴ UK Statutory Instruments, "The Control of Electromagnetic Fields at Work Regulations," 2016. [Online]. Available: <https://www.legislation.gov.uk/ukSI/2016/588/contents/made>.

5.5.11 Discussion around the risk of EMF based on the Scheme design will be made within an 'Other Matters' chapter within the ES in the form of a risk assessment, which will cover the following infrastructure:

- Above ground and underground cabling (those exceeding 132kV);
- Substations over 132kV; and
- BESS.

Cumulative Effects

5.5.12 Cumulative effects in relation to EMF are not considered likely. Should cumulative effects be identified, these will be addressed within the Cumulative Effects chapter within the ES.

5.6 Telecommunications, Television Reception and Utilities

Overview

5.6.1 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. Utilities searches will be conducted for the Site to feed into the design, to aim to avoid any cable or utilities strikes or diversions of existing telecommunications or utilities, where they are known. Although, if diversion is required, the necessary easements to existing utilities will be provided, and the Applicant will consult with the relevant providers and provide evidence of agreements to any diversions in the ES. For example, the Applicant has already met with National Gas Transmission (10th January 2025) to discuss their infrastructure within the area, and consultation will continue throughout the process.

5.6.2 Due to the nature of solar development and the generally low levels that will be across the Site (as detailed in **Chapter 3 Scheme Description**), it is considered that solar developments are not at a height to affect above ground telecommunications. 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.

5.6.3 Given the nature of the Scheme, likely significant effects on television reception are not anticipated.

5.6.4 It is therefore proposed that telecommunications, television reception and utilities as a topic is scoped out of the ES, however, discussion will be provided within an 'Other Matters' chapter within the ES, including any further survey work and discussions with third parties to identify utilities.

Cumulative Effects

- 5.6.5 Cumulative effects in relation to telecommunications, television reception and utilities are not considered likely. Should cumulative effects be identified, these will be addressed within the Cumulative Effects chapter within the ES

5.7 Glint and Glare

Overview

- 5.7.1 This section of the Scoping Report considers the assessment of likely significant Glint and Glare effects of the Scheme during its operational phase, with particular focus on risk to road safety, residential amenity, railway operations and infrastructure, public rights of way, and aviation activity.
- 5.7.2 Glint is defined as: A momentary flash of bright light that may be produced as a direct reflection of the sun in the solar panel.
- 5.7.3 Glare is defined as: A continuous source of excessive brightness experienced by a stationary observer located in the path of reflected sunlight from the face of the PV panel.
- 5.7.4 A Glint and Glare assessment will accompany the application, as an appendix to the ES, as per PINS guidance⁶⁵, with any likely significant effects being mitigated through the design stage (layout changes and/or screening) prior to the application being submitted.

Baseline Conditions

- 5.7.5 The location of the Scheme is semi-rural, surrounded by roads, dwellings, PRow, and general aviation non-licenced aerodromes.
- 5.7.6 A 1km Study Area is considered when identifying ground-based receptors surrounding the Site. The following receptors have been identified:
- Users of the A140;
 - Users of the B1527;
 - Users of local roads;
 - Users of PRow; and
 - Residential dwellings.
- 5.7.7 A 500m Study Area is considered appropriate when identifying railway receptors. No railway receptors have been identified within the assessment area.

⁶⁵ Planning Inspectorate (2024). Technical advice page for scoping solar developments. Available at: <https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-technical-advice-page-for-scoping-solar-development>

- 5.7.8 A 15km Study Area is considered when identifying aviation receptors. **Table 5.5** below outlines the following receptors that have been identified and the distances from the Scheme.

Table 5.5 Aviation Receptors

Aerodrome	Description	Approximate distance from the Scheme
Hardwick Airfield	Non-licenced utilised by general aviation	30m south of sub-Site 3A
Seething Airfield	Non-licenced utilised by general aviation	220m north-east of sub-Site 10B
Norfolk Gliding Airfield (Tibenham Airfield)	Non-licenced utilised by general aviation and gliders	1.0km west of sub-Site 1A
Topcroft Farm Airfield	Non-licenced, utilised by general aviation	1.1km south-east of sub-Site 3A
Long Stratton Airfield	Non-licenced, utilised by general aviation	2.1km south-west of sub-Site 1A
Nut Tree Farm Airfield	Non-licenced, utilised by general aviation	2.3km south of sub-Site 3A
Tibenham Poriy Airstrip	Non-licenced aerodrome utilised by general aviation/microlights	3.7km west of sub-Site 1A

- 5.7.9 Common existing sources of glint and glare with the potential for a specular like reflection will include existing nearby solar farms (adjacent to sub-Site 4A), bodies of water, road surfaces (especially when wet), and building facades. Within the Site boundary there are therefore surface which could be a glint and glare source, such as roads.

Overview of Legislation, Policy and Guidance

- 5.7.10 There is no known legislation, local policy or guidance related to glint and glare. Pager Power (author of this section and the glint and glare assessors for the Scheme) has however produced guidance for glint and glare and solar photovoltaic developments in 2017, updated in 2022. This methodology defines a comprehensive process for determining the impact upon road safety, residential amenity, and aviation activity.
- 5.7.11 In addition, this Scoping Report has considered the National Policy Statement for Renewable Energy Infrastructure (NPS EN-3), last updated on 17 January 2024.
- 5.7.12 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).*”
- 5.7.13 NPS EN-3 does not state which receptors should be considered as part of a quantitative glint and glare assessment. Based on industry experience, typical

receptors in accordance with the Scheme include road users, residential dwellings, and aviation activity.

Scope of the Assessment

- 5.7.14 As described above, the assessment will consider both a fixed scheme (i.e. fixed-tilt panels) and panels implementing a single-axis tracker system. The construction and decommissioning phase of the Scheme is not considered within the assessment, as there would be no potential impacts during these phases that would not occur during the operational phase. The operational phase therefore assesses the worst-case. Similarly, the replacement of panels would not result in changes to the assessment of the operation phase and is therefore not considered within the assessment.
- 5.7.15 The Glint and Glare assessment has considered guidance ‘Nationally Significant Infrastructure Projects: Technical Advice Page for Scoping Solar Development’ published Planning Inspectorate to geometrically model the glint and glare assessment. The following constraints had been considered:
- Panel locations, heights and directionality;
 - Panel design/type, for example tracker panels
 - Panel locations and extent;
 - Identification of sensitive receptors (as outlined in the Baseline Conditions and Study Area); and
 - Where any proposed mitigation is secured.
- 5.7.16 The Glint and Glare assessment methodology is based on Pager Power’s Glint and Glare Guidance (Fourth Edition) which was developed in line with information provided through consultation with stakeholders and by reviewing the available studies. The methodology for a glint and glare assessments 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 the adopted guidance - the main considerations being duration, field-of-view, and intensity, although this varies per receptor type;
 - Identification of areas that require mitigation, if any; and
 - Development of a mitigation strategy if required.

Likely Significant Effects and Proposed Mitigation

- 5.7.17 Likely significant effects for road users occur when solar reflections are predicted within a road user’s primary field-of-view.
- 5.7.18 Likely significant effects of the Scheme visible through windows for residents at dwellings occur when solar reflections are predicted for more than three months per year or occur for more than 60 minutes on any given day.

- 5.7.19 Likely significant effects of the Scheme towards road users occur when solar reflections occur within a road user's main field-of-view, defined as 50 degrees either side relative to the direction of travel.
- 5.7.20 Any predicted impact towards the ground-based receptors (roads and dwellings) can likely be solved with relatively simple embedded mitigation strategies – the most common being the provision of screening at the Site perimeter to obstruct views of potentially reflecting panels. Where views of reflecting panels are obstructed, no effects can be experienced. Other embedded mitigation strategies consider changes to the design, such as reorientating panel direction and reconfiguring panel tilt.
- 5.7.21 Likely significant effects for aviation receptors occur when solar reflections have an intensity of greater than 'low potential for temporary after-image'. Solar reflections of this intensity were formerly not permissible under the interim guidance provided by the Federal Aviation Administration in the USA for on-airfield solar. Therefore, the glare scenario is evaluated in a technical and operational context to determine the impact significance.
- 5.7.22 For significant impacts towards aviation receptors, other solutions such as layout modifications can be considered but are rarely required in practice. Considering the relative location of the Scheme with respect to the surrounding aviation activity, it is unlikely to be required.
- 5.7.23 No significant impacts from glint and glare are considered possible upon pedestrians/ users along PRow. The reasoning is due to the sensitivity of the receptors (in terms of amenity and safety) being concluded to be of low significance due to:
- The typical density of pedestrians and PRow users at these locations is considered to be low considering the surrounding landscape and its features;
 - Any resultant effect is much less serious and has far lesser consequences than, for example, solar reflections experienced towards a road network whereby the resultant impacts of a solar reflection can be much more serious to safety;
 - Glint and glare effects towards receptors are transient, and time and location sensitive whereby a pedestrian could move beyond the solar reflection zone with ease with little impact upon safety or amenity;
 - There is no safety hazard associated with reflections towards an observer on a footpath.
- 5.7.24 The preliminary Glint and Glare assessment has identified the following likely significant effects:
- Solar reflections towards sections of the A140 and B1527 are within a road user's primary field-of-view and visible. Therefore mitigation would be recommended for these sections of road.
 - The duration of solar reflections towards some residential dwellings occur for more than three months but less than 60 minutes on any given day. Therefore, mitigation would be recommended for these dwellings.

- Solar reflections towards some aerodromes are greater than the acceptable limits of 'low potential for temporary after-image' and would therefore require consideration to the aerodrome's specific operations. If the glare scenario cannot be operationally accommodated, mitigation would be recommended.

5.7.25 Since the identified effects can be readily mitigated, it is therefore recommended that Glint and Glare is scoped out of the ES. A detailed Glint and Glare assessment will be undertaken and will accompany the DCO Application outlining the receptors assessed, assessment methodology and impact assessment, which will be included within an 'Other Matters' chapter of the ES. The scope of the Assessment is summarised below in **Table 5.6**.

Table 5.6: Glint and Glare Assessment Summary

Scheme phase	Scoped in or out?
Construction	Out
Operation	In
Decommissioning	Out

Cumulative Effects

- 5.7.26 Cumulative Glint and Glare effects are predicted as possible a result of the Scheme and other nearby solar developments that are consented, under construction, or operational, and will therefore be considered cumulatively within the ES and assessed as relevant.
- 5.7.27 An assessment of the potential cumulative effects will be made within the ES.

Consultation

- 5.7.28 Consultation with the identified aerodromes has been undertaken and ongoing. To date, Norfolk Gliding Club (Tibenham Airfield) has responded outlining its concerns of glint and glare, engine failure after take-off and thermal updrafts. The Applicant is meeting with the Norfolk Gliding Club to discuss their response, in late January 2025.

5.8 Lighting

- 5.8.1 It is proposed to scope lighting out of the ES for the reasons set out below. In addition, PINS guidance states that a separate lighting chapter is not expected for lighting.

"A separate chapter assessment is not expected for lighting, however, this should be assessed within other relevant chapters including landscape and visual, cultural heritage and ecology where there is potential for a likely significant effect."

- 5.8.2 Except in emergencies, lighting for the construction and decommissioning of the Scheme is not anticipated to occur during the hours of darkness, outside of the agreed working hours, and will be designed as far as reasonably practicable to

avoid nuisance outside of the Site boundary onto sensitive human and ecological receptors. Standard best practice will be adopted to minimise light spill, including glare during construction and decommissioning.

- 5.8.3 According to the LUC Light Pollution and Dark Skies Map⁶⁶ the Site is not located in an area sensitive for dark skies. Construction and decommissioning lighting will be controlled by measures set out in the CEMP and DEMP, that will be implemented during construction and decommissioning, respectively. An OCEMP and ODEMP will be provided with the DCO Application.
- 5.8.4 Given that lighting effects during construction and decommissioning works are expected to be limited in extent, intensity and duration, effects on the night sky and sensitive landscape, heritage and ecological receptors during these phases are unlikely to be significant. Therefore, an assessment of these effects is also proposed to be scoped out of the Landscape and Visual ES Chapter, Ecology and Biodiversity ES Chapter and Cultural Heritage ES Chapter.
- 5.8.5 During the operational phase, there will be no permanent lighting within the Solar PV Arrays. Motion sensing security lighting will be provided within the Substations, ancillary infrastructure and within the BESS for security and maintenance purposes, during hours of darkness. Any lighting requirements during the eventual replacement of panels and batteries will be temporary and designed in line with best practice, with measures adopted in construction implemented. On this basis, it is not anticipated to result in likely significant effects on sensitive ecological receptors or the existing character of the night sky. Further details are provided in **Chapter 7 Landscape and Visual** and **Chapter 8 Ecology and Biodiversity** of this Scoping Report.
- 5.8.6 Therefore, lighting is proposed to be scoped out of the ES. A standalone Lighting Strategy will be developed detailing the lighting design approach to minimise light spill and avoid direct intrusion into nearby properties and other sensitive receptors (such as ecology and cultural heritage assets), and other measures to avoid and mitigate lighting effects. The Lighting Strategy will be submitted with and secured via the DCO.

5.9 Minerals

Overview

- 5.9.1 A preliminary minerals resource assessment based on a desk study has been undertaken and a copy is appended to this Scoping Report (**Appendix 5.1 Volume III**). The key findings of this study are outlined below:
- The Site is underlain by non-mineral bearing bedrock strata which are overlain by superficial deposits which over the majority of the Site are classified as non-mineral bearing.
 - Locally, small parts of the Site are underlain by superficial strata of Alluvium, Leet Hill Sand and Gravel Member, Lowestoft Formation Sand and Gravel and

⁶⁶ England's Light Pollution and Dark Skies. Available from: <https://www.cpre.org.uk/light-pollution-dark-skies-map/>

River Terrace Deposits. These are classified as sand and gravel mineral resources and are consequently safeguarded under the current Norfolk Joint Minerals and Waste Development Framework (MWDF).

- There are no allocated or safeguarded existing or proposed mineral sites nor consultations for these within 250m of any part of the Site in the current MWDF.
- The Scheme (primarily the solar PV array areas and cable routes) will sterilise minerals on parts of the Site, noting that the sterilisation is temporary in nature and that the duration of the operation of the Scheme is short term enough not to damage the mineral resource. However, these on-site minerals are not considered to be economically viable or practical to extract due to a combination of the mineral resource being limited in area or constrained by the presence of nearby roads, watercourses and residential properties.
- The Scheme (primarily the solar PV array areas and cable routes) is not considered to sterilise off site minerals in the land surrounding the Site. This is because the Solar PV Arrays and CRC would not be affected by off-site mineral extraction activities and thus would not present a constraint to them being extracted in the future.

5.9.2 From a review of the Coal Authority interactive viewer⁶⁷ the Site is not located in a Coal Mining Reporting Area.

Likely Significant Effects and Proposed Mitigation

5.9.3 Whilst strata classified as sand and gravel mineral resources and which are safeguarded under the current Norfolk Joint MWDF are present on parts of the Site, these parts constitute a very small proportion of the total area of the Site (less than 10%). Likely significant effects for minerals have therefore not been identified.

5.9.4 Extraction undertaken prior to development could be undertaken as a mitigation measure. However, this is not considered to be economically viable or practical as it depends on a wide variety of other issues, such as minerals demand, land ownership and extraction rights, consent under a different planning regime (Town and Country Planning Acts). For this reason, an assessment of minerals is scoped out of the ES.

Cumulative Effects

5.9.5 Cumulative effects in relation to minerals are not considered likely. Should cumulative effects be identified, these will be addressed within the Cumulative Effects chapter within the ES.

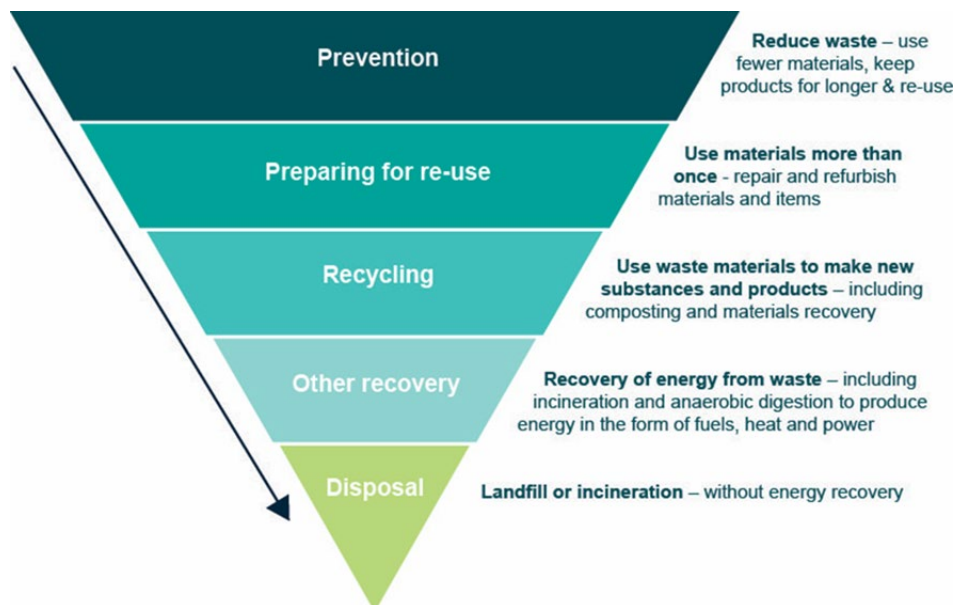
5.10 Waste & Materials

5.10.1 This section of the Scoping Report assesses whether the Waste and Materials impacts of the Scheme are likely to have significant adverse environmental effects,

⁶⁷ The Coal Authority (2023) The Coal Authority Map Viewer. Available at: <https://datamine-cauk.hub.arcgis.com/>

as defined by the IEMA guide to: Materials and Waste in Environmental Impact Assessment⁶⁸.

- 5.10.2 A Materials and Waste assessment has been scoped out for the Scheme as it is not expected to have a significant impact on material availability or waste landfill capacity in the region, for the reasons outlined below.
- 5.10.3 The construction phase of the Scheme is not expected to have a significant impact on regional material resources, with the likely construction materials consisting mainly of a steel structure on which to mount the solar panels, which will be manufactured and transported to the Site.
- 5.10.4 The Scheme will require the excavation of soil during construction and will generate other waste streams during this period. A Site Waste Management Plan (SWMP) will be implemented to ensure best practice in waste management, handling and diversion during the construction phases. The SWMP will guide efforts to minimise resource usage, reduce waste generation, and support landfill diversion. An Outline SWMP will be submitted with and secured via the DCO.
- 5.10.5 The operational phase of the Scheme will produce minimal waste resulting from maintenance work. As a result, this phase has not been further considered in this scoping. Any waste generated will be managed in line with the Waste Hierarchy⁶⁹.



Insert 1: The Waste Hierarchy⁷⁰

- 5.10.6 Upon reaching end-of-life and replacement of the solar panels, batteries and other infrastructure and eventual Scheme decommissioning, further work will be carried out to ensure that material generated will also be managed in line with the Waste Hierarchy. Additionally, consideration will be given to any technological advances

⁶⁸ IEMA - Materials and Waste in EIA (March 2020)

⁶⁹ IEMA (2024). Limiting liability: the waste hierarchy [online]. Available at: <https://www.iema.net/articles/limiting-liability-the-waste-hierarchy>

⁷⁰ DEFRA (2014) The Waste Hierarchy

that may become available with which to improve the environmental outcomes of decommissioning.

Overview of Legislation, Policy and Guidance

- 5.10.7 In the UK, the Waste Electrical and Electronic Equipment (WEEE) Regulations 2013⁷¹ 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.
- 5.10.8 Overarching National Policy Statement for Energy (EN-1) 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 2021⁷².
- 5.10.9 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.
- 5.10.10 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)⁷³ and other supplementary DPDs and revised Policies Map.
- 5.10.11 The PINS solar scoping guidance states that anticipated waste streams and quantities should be provided to aid in scoping out the topic. It goes on to state that commitment must be made to waste management through:
- best practice measures;
 - demonstrate adherence to the waste hierarchy; and
 - appropriate monitoring measures to ensure compliance.

Consultation

- 5.10.12 Consultation with the Local Authority has not yet been carried out regarding waste management for the Scheme. Consultation with the Local Authority will be carried out in order to inform the SWMP.

⁷¹ Office for Product Safety and Standards and Department for Environment, Food & Rural Affairs (2013) Regulations: Waste Electrical and Electronic Equipment (WEEE)

⁷² Waste Management Plan for England 2021, Department for Environment, Food and Rural Affairs

⁷³ Core Strategy and Minerals and Waste Development Management Policies DPD 2010-2026 Norfolk County Council, Adopted September 2011.

Baseline

- 5.10.13 In terms of material and waste scoping, the East of England Region would be considered as the secondary Study Area, as defined within the IEMA Guidance.
- 5.10.14 The Site is currently in agricultural use and thus is not generating municipal, commercial and industrial (C&I), or construction and demolition (C&D) waste, with the exception of waste associated with general farming activities.

Landfill Capacity

- 5.10.15 DEFRA⁷⁴ estimates that 59.1 million tonnes of non-hazardous C&D waste was generated in the UK in 2020, with 92.6% of the C&D waste being diverted from landfill.
- 5.10.16 At the end of 2022 there were 7 licenced landfill sites across the East of England recorded, with a total remaining capacity of 5.1Mm³, as shown in **Table 5.7**.

Table 5.7 East of England – Landfill Capacity (End 2022)

Region	Landfill Type	Number of landfill sites	Remaining Capacity (m ³)
East of England	Inert	4	1,585,768
	Non-hazardous	3	3,558,189

Waste Generation

Construction

- 5.10.17 Anticipated waste from the Scheme is expected to originate from excavation works and from temporary construction compounds and associated waste. These compounds will include portacabins for construction workers, perimeter security fencing, parking areas for vehicles, secure storage, temporary hardstanding areas, storage bins and skips for recyclables and other waste, and temporary lighting during construction periods.
- 5.10.18 Construction of a temporary access track will also generate waste through excavation of soil and use of aggregate.
- 5.10.19 Excavation on the agricultural land for the cable laying works will be the primary activity generating material. Reuse of the excavated soil on-Site will be preferred outcome in accordance with the waste hierarchy.
- 5.10.20 If required, excavated material will be removed from Site by a licenced waste contractor following Waste Duty of Care protocols and any haulier will be required

⁷⁴ DEFRA (2023) Waste Summary Tables for England [online]. Available at: <https://www.data.gov.uk/dataset/59ab8448-3905-49c6-9122-ae762f96f66b/2023-waste-data-interrogator>

to hold a waste carrier's licence. The excavated soil could be used under a deposit for recovery environmental permit or sent to a landfill site with an appropriate environmental permit.

Operation

- 5.10.21 Operational waste generated during construction by workers on-site, such as pallets, plastic wrapping, personal protective equipment (PPE) and food waste where possible will be separated into recyclable streams. Any materials that cannot be reused or recycled will be managed in line with the Waste Hierarchy.
- 5.10.22 In the event of panel and or battery replacement, components would be recycled where possible and disposed of in line with manufacturer's guidance and the local and national regulations. It is not possible to identify exact materials to be recycled however typical examples of materials to be expected to be recycled may include; aluminium, glass, crystalline silicon solar cells and copper wiring.

Decommissioning

- 5.10.23 As detailed in **Chapter 3 Scheme Description**, all infrastructure will be removed upon end of life with the exception of the National Grid Substation, which will remain in situ. The underground cabling can be removed from the joint bays for recycling. However, the underground cabling ducting will be decommissioned in accordance with the latest regulations and good practice prevailing at that time and are anticipated to be left in-situ.
- 5.10.24 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 prevailing at the time. Possibilities to re-use or recycle materials will be explored. As with the replacement of infrastructure it is not possible to identify exact recyclable materials at this time.
- 5.10.25 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. Furthermore, a DEMP will be produced, and secured by the DCO, that will include procedures and practices to be followed during decommissioning, which will be in line with the Waste Hierarchy.

Likely Significant Effects and Proposed Mitigation

- 5.10.26 A small portion of the waste generated on-Site during construction could be sent to landfill, with most of the waste being diverted through reuse, or other methods as advised by the waste hierarchy. When following the IEMA methodology and significance guidance, the landfill capacity identified in **Table 5.7**, together with a likely high diversion rate from landfill, indicates that no significant impacts would be expected.

- 5.10.27 Waste management will be considered throughout the design and construction of the Scheme to ensure compliance with legislation and to minimise costs associated with waste disposal.
- 5.10.28 Duty of Care requirements are expected to be fulfilled by the Scheme's Principal Contractor, who have not yet been appointed. This includes using licenced waste carriers, to carry and transfer the excavated waste as well as record waste movements through use of waste transfer notes.
- 5.10.29 The SWMP will seek to support efficient management of construction, replacement and decommissioning waste including building materials, and will also seek to ensure that excavated waste is disposed of legally, fly tipping is reduced, and reuse of the excavated soil is optimised.

Summary

- 5.10.30 The best practice measures and principles of the Waste Hierarchy will be embedded throughout the design and construction of the Scheme. This will enable high diversion from landfill rates during the construction phase of the Scheme.
- 5.10.31 A SWMP will be implemented to support the Scheme to deliver best practice waste management and complies with local and national regulations. Considering the Scheme, it is anticipated that the waste generated from the construction of the Scheme would not significantly reduce regional landfill capacity, so no significant effects in EIA terms would be expected. Therefore, it is proposed to scope Materials and Waste out of the ES, with inclusion of the SWMP and other pertinent matters included within an 'Other Matters' chapter of the ES.
- 5.10.32 As detailed above, infrastructure removed during replacement and decommissioning will be dealt with in line with the industry and local standards, with adherence to the Waste Hierarchy. Significant effects are therefore not considered likely, and a separate Waste and Materials chapter is scoped out of the ES.

5.11 Socio-Economics

Baseline

- 5.11.1 The Site is located on agricultural land, alongside a number of rural settlements (the largest being Long Stratton, Hempnall, Tasburgh and Woodton) comprising resident populations, businesses, community facilities and recreational assets, such as Public Rights of Way (PRoW).

Consultation

- 5.11.2 No consultation has been undertaken to date in respect of socio-economics. Comments received during the consultation process will be fed into the Socio-Economic Statement where appropriate.

Overview of Legislation, Policy and Guidance

National Policy

5.11.3 The Overarching National Policy Statement for Energy (EN-1) (2023) came into force on 17 January 2024. It recognises that the construction, operation and decommissioning of energy infrastructure may have socio-economic impacts at local and regional levels, which may include:

- *‘The creation of jobs and training opportunities...;*
- *The contribution to the development of low-carbon industries at the local and regional level as well as nationally;*
- *The provision of additional local services and improvements to local infrastructure, including the provision of educational and visitor facilities;*
- *Any indirect beneficial impacts for the region hosting the infrastructure, in particular in relation to use of local support services and supply chains;*
- *Effects (positive and negative) on tourism and other uses of the area impacted; and*
- *The impact of a changing influx of workers during the different construction, operation and decommissioning phases of the energy infrastructure. This could change the local population dynamics and could alter the demand for services and facilities in the settlements nearest to the construction work (including community facilities and physical infrastructure such as energy, water, transport and waste). There could also be effects on social cohesion depending on how populations and service provision change as a result of the development.’*

5.11.4 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. 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.

Regional Policy

5.11.5 The Joint Strategy for Broadland, Norwich and South Norfolk has a policy relating to socio-economics:

- Policy 5: The Economy; and
- Policy 8: Culture, leisure and entertainment.

Likely Significant Effects and Proposed Mitigation

- 5.11.6 Given the Site's location and nature of the Scheme, there is the potential for the Scheme to provide both beneficial and adverse socio-economic effects during the construction, operation and decommissioning phases, but which are either anticipated to be not significant, or will be considered by other technical assessments, such as Landscape and Visual, Transport and Access, and Noise and Vibration. **Table 5.8** provides further details.

Table 5.8: Socio-Economic Receptors, Potential Effects and Justification for Scoping Out of the Assessment

Receptor	Description of Potential Effect	Justification for Scoping Out of the Assessment
Farm businesses	Adverse Disruption to existing farming activities which could lead to decreased agricultural productivity. Beneficial Opportunity for landowners to diversify their income streams.	Construction/ Decommissioning Phase The Site currently comprises land under agricultural uses. Whilst the current farming activities on the Site will be disrupted by the Scheme, there is the potential for the Site to remain in some of agricultural use, for example, for the grazing of sheep on fields housing the solar panels. Furthermore, following decommissioning, the land within the Site will be restored and returned to its original use as far as possible. Agricultural effects, including the economic effects, are considered in a separate chapter (refer to ES Scoping Report Chapter 13 Soils and Agriculture). Operational Phase Despite the loss of farming activities, the Scheme will provide landowners with an alternative income stream, resulting in no financial loss to existing farm businesses. Effects on farm businesses are therefore anticipated to be not significant. In the event of planned maintenance or panel and/or battery replacement there will be no further effects on farm businesses.
Employment and Skills	Beneficial Employment and upskilling opportunities for local residents and the wider supply chain Adverse No adverse effects relating to employment and skills are anticipated	Construction/ Decommissioning Phase Whilst the construction and decommissioning phase will support employment across a range of occupation and skill levels, these are not anticipated to be new jobs – rather a temporary relocation of an existing specialised workforce providing limited opportunities for new job creation for local residents. Indirect employment will be supported as a result of spin-off and

Receptor	Description of Potential Effect	Justification for Scoping Out of the Assessment
		multiplier effects in the supply-chain. However, based on the current understanding of the supply chain it is likely that the physical components of the Scheme are predominantly sourced from outside of the UK providing limited opportunities within the local supply chain. Whilst there is the potential for landscaping, maintenance and more routine occupation/material requirements to be sourced locally, these are anticipated to be not significant. Operational Phase Limited employment opportunities (approximately 5 FTE jobs) will be supported during the operational phase associated with routine maintenance and security, which is so small as to be insignificant. In the event of panel and/or battery replacement further employment will be supported. However, similar to employment during the construction phase, these jobs are not anticipated to be new jobs – the operational tasks will be undertaken by an existing specialist workforce resulting in a non-significant effect on local employment and skills.
Economic Output	Beneficial Employment supported will create Gross Value Added (GVA) contributing to the regional economy. Adverse There are no adverse effects to economic output anticipated.	Construction/ Decommissioning Phase Whilst a beneficial effect to the economy will be realised through GVA generated by construction employment, the workforce will be sourced from within the UK meaning that the area of impact for this receptor is the wider UK. In the context of national GVA, the effect is anticipated to be not significant. Operational Phase Whilst the operational phase has the potential to support employment local to the Site, the small workforce (approximately 5 FTE) will create GVA that is so small as to be considered not significant. In the event of panel and/or battery replacement further GVA will be generated from the required operational workforce. However, similar to employment during the construction/decommissioning phases, the workforce required for these operational tasks is specialised and will

Receptor	Description of Potential Effect	Justification for Scoping Out of the Assessment
		be sourced from within the UK. In the context of national GVA, the effect on economic output is anticipated to be not significant.
Tourist Accommodation	Beneficial/ Adverse If some of the workforce temporarily relocates to the area, this may impact the availability of accommodation for tourists. However, conversely it could support the local tourist accommodation providers during off-peak periods.	Construction/ Decommissioning Phase Temporary portacabins will be constructed on the Site to accommodate the temporary construction workforce. This places no demand on tourist accommodation in the local area. Operational Phase The operational workforce is small (approximately 5 FTE jobs) and anticipated to be sourced from the local area. This places either no demand on local tourist accommodation, or only a small demand which would be not significant. In the event of panel and/or battery replacement it is assumed that the required workforce will be significantly smaller than the anticipated construction and decommissioning workforce. Consequently, even if the workforce did have to temporarily relocate to the area, the demand on local tourist accommodation would be not significant.
Tourism	Adverse Tourist attractions within the vicinity of the Site could be adversely affected as there is the potential for their amenity value to be reduced as a result of the Scheme. Beneficial No beneficial effects to tourism are anticipated.	Existing tourist attractions in the locality of the Site are limited, with the main attraction being Norfolk Gliding Club (offering glider experiences). Construction/ Decommissioning Phase Existing tourism activities may be affected from construction activities of the Scheme. Such effects will be related to amenity value attributed to noise, visual and transport effects. Such effects are considered by other technical assessments (refer to ES Scoping Report Chapters 7 Landscape and Visual, 10 Transport and Access and 11 Noise and Vibration). It is therefore not considered necessary to undertake a specific amenity assessment within the socio-economic topic. Operational Phase Existing operation of the Norfolk Gliding Club may be affected as a result of glint and glare from the Photovoltaic Panels affecting flying activities. However, such effects are considered as a specific topic

Receptor	Description of Potential Effect	Justification for Scoping Out of the Assessment
		(refer to Section 5.7) and therefore not included in the socio-economic topic.
Shops	Beneficial Local shops could benefit from additional footfall and expenditure created by the workforce. Adverse No adverse effects to local shops are anticipated.	Construction/ Decommissioning Phase Given that on-Site accommodation will be provided for the construction workforce, it is anticipated that workforce expenditure will be limited to predominantly food and drink. Whilst this will benefit local shops and services, the effects are anticipated to be not significant. Operational Phase The operational workforce is small (approximately 5 FTE jobs), which would only provide a small benefit to local shops and service which would be not significant. In the event of panel and/or battery replacement the number of workers required for these tasks is considered to be less than construction/ decommissioning, therefore any effects on local shops are anticipated to be not significant.
PRoW	Adverse Access to PRoW could be temporarily or permanently disrupted, thus impacting on recreational enjoyment and individuals' health and wellbeing. Beneficial No beneficial effects to PRoW are anticipated.	Construction/ Decommissioning/ Operational Phase The network of PRoW and recreational routes as identified in Chapter 2, have the potential to be impacted by construction and decommissioning of the Scheme. However, it is anticipated that they will remain open and accessible throughout these phases, and embedded measures such as offsets will be implemented to separate the construction activities from the PRoW network. Additional measures will be included within the CEMP to limit construction-related effects to PRoW users. During operation embedded measures to mitigate the impact on PRoW users will be implemented, including the preparation of the LEMP which will outline measures for landscape enhancements incorporating opportunities to increase green infrastructure, connect existing networks, enhance landscape views, enhance PRoW to improve access to the countryside, or create new permissive paths. Further consideration of PRoWs will be provided by the Landscape and Visual

Receptor	Description of Potential Effect	Justification for Scoping Out of the Assessment
		assessment (refer to Chapter 7 of the Scoping Report). In the event of panel and/or battery replacement, the effects are considered to be no greater than anticipated at construction. Additionally, the landscaping mitigation measures associated with the PRow network will have been established creating enhanced screening from replacement activities to users of the PRow network. Therefore, no significant impacts are anticipated.
Resident Population	Adverse Transport, noise and visual effects have the potential to impact resident amenity, and the arrival of a new workforce may lead to a change in community dynamic (i.e. the size and characteristics of the people living in the area) due to the influx of construction workers. Beneficial No beneficial effects on the resident population are anticipated.	Construction/ Decommissioning/ Operational Phase (including replacement of panels and/or batteries) Amenity effects on the local resident population attributed to noise, visual, transport effects will be mitigated by a number of measures to be outlined in the CEMP, LEMP and DEMP. Such effects and mitigation measures are considered in other assessments (e.g. Scoping Report Chapters 7 Landscape and Visual), 10 Transport and Access and 11 Noise and Vibration. It is therefore not considered necessary to undertake a specific amenity assessment within the socio-economic topic. There are not anticipated to be any significant effects in relation to community dynamic between existing residents and the Scheme's workforce, as the workforce is anticipated to be relatively small (estimated to be 300-700 people at the peak of construction) in comparison to the resident population of the local area (approximately 13,300 people⁷⁵). Significant impacts are therefore not anticipated for any phase of the Scheme.

- 5.11.7 For the reasons set out in **Table 5.8** above it is proposed that Socio-Economic effects are scoped out of the ES. However, a standalone Socio-Economic Statement will be prepared to accompany the ES to report the socio-economic benefits of the Scheme which will be submitted alongside the DCO, with pertinent information included within the 'Other Matters' ES Chapter.

⁷⁵ Office for National Statistics (ONS) 2022 Mid-Year Population Estimate for the three South Norfolk electoral wards of Fornsett, Hempnall and Stratton [downloaded from NOMIS <https://www.nomisweb.co.uk/> on 2 October 2024]

Cumulative Effects

- 5.11.8 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.

5.12 Human Health

Overview

- 5.12.1 The effects of the Scheme on human health during construction, operation and decommissioning will be assessed as part of the Transport and Access (**Chapter 10**), Noise and Vibration (**Chapter 11**) and Climate Change (**Chapter 12**) ES chapters. The assessment of ground conditions is scoped out of the ES, for reasons provided in **Section 5.14** of this Scoping Report (and associated **Appendix 5.2 Phase 1 Ground Conditions Assessment**), as there are anticipated to be no significant impacts to human health as a result of the Scheme.
- 5.12.2 The design of the Scheme will minimise any impacts on human health by implementing appropriate offsets and through the use of appropriate construction methods. Likely significant effects from the Scheme on human health in respect of air quality are not anticipated, through the use of appropriate mitigation measures and design. Additionally, during operation, a BSMP will be in place to manage potential impacts in the event of a battery fire. For these reasons a separate topic chapter on human health is proposed to be scoped out of the ES. Further reasoning for scoping out this topic is provided in **Table 5.9**, which aligns with the health determinants set out in detail within the IEMA guidance⁷⁶.

Overview of Legislation, Policy and Guidance

National Policy

- 5.12.3 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.

⁷⁶ Institute of Environmental Management and Assessment (IEMA) Effective Scoping of Human Health in Environmental Impact Assessment (IEMA, 2022)

5.12.4 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.

- 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

5.12.5 Norfolk County Council have developed a supplementary guidance document on Community Engagement and Wellbeing⁷⁷.

5.12.6 The Joint Strategy for Broadland, Norwich and South Norfolk has a policy relating to human health:

- Policy 7: Supporting Communities – *“healthier lifestyles will be promoted by maximising access by walking and cycling and providing opportunities for social interaction and greater access to green space and the countryside”*.

Guidance

5.12.7 Guidance relevant to human health includes:

- Public Health England, 2020. Health Impact Assessment in spatial planning: a guide for local authority public health and planning teams
- 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
- PINS guidance on solar scoping: Human Health.

Consultation

5.12.8 Representatives from Norfolk County Council’s Public Health team were consulted, and a meeting took place on 21 October 2024. They provided additional information

⁷⁷ Suffolk County Council (2024) Community Engagement and Wellbeing, Supplementary Guidance Document

in respect of addressing impacts on Human Health, comprising IEMA and local guidance.

Likely Significant Effects

5.12.9 **Table 5.9** details the potential health effects and justification for scoping out Human Health from the ES.

Table 5.9: Potential Health Effects and Justification for Scoping Out of the Health Assessment

Health Effect	Justification for Scoping Out of the Assessment
Lifestyles (Health-related behaviours)	
Physical activity	There are PRoW throughout the Site. During construction and decommissioning it is anticipated that these will remain open allowing for continued use. During operation the PRoWs would again remain open. As mentioned previously, there is also the opportunity within the design for the inclusion of permissive paths to improve access across the Site and wider area. For the above reasons, physical activity is scoped out.
Risk-taking behaviour (including use of alcohol, cigarettes, non-prescribed drugs, sexual activity and other risk-related activity)	As detailed in Section 5.11 the influx of construction (and decommissioning) workers are not anticipated to significantly change community dynamics and lead to increased risk-taking behaviour. During operation, there will be limited maintenance visits, restricted to periodic visits, involving a limited number of workers. During periods of panel or battery replacement the numbers of workers will increase, however are not anticipated to be any greater than during the construction phase. For the above reasons, risk-taking behaviour is scoped out.
Diet and nutrition	The Scheme will result in the temporary loss of agricultural land. This impact of the Scheme on soils and agricultural land will be assessed within a chapter within the ES. Further details on the scope of this Chapter are in Chapter 13 of this Scoping Report. For the above reasons, diet and nutrition is scoped out.
Social and community influences on health (Social environment)	
Housing	Scoped out. See Section 5.11 .
Relocation	The Scheme will not involve the relocation of any residents. For this reason, relocation is scoped out.
Open space, leisure and play	The Site does not currently comprise areas occupied for open space, leisure and play. The PRoW network within the Site will remain accessible throughout the construction, operation and decommissioning of the Scheme. For this reason, open space, leisure and play is scoped out.
Transport modes, access and connections	Transport matters are scoped in and are discussed further in Chapter 10 Transport and Access of this Scoping Report.
Community safety	Fencing and security will be installed surrounding the perimeter of the Site. Palisade fencing up to a height of 3m will be installed around key infrastructure including the BESS and

Health Effect	Justification for Scoping Out of the Assessment
	Substations. These measures will remain throughout the construction, operation and decommissioning phases. Measures to ensure community safety during construction, decommissioning and replacement of panels and batteries will be detailed within the CEMP and CTMP. During operation a BSMP will be in place, which will be secured by the DCO via an outline version. For the above reasons, community safety is scoped out.
Community, identity, culture, resilience and influence	As detailed in Section 5.11 the influx of construction (and decommissioning) workers is not anticipated to significantly community dynamics across the Scheme phases. Any changes to how the local community perceive their surroundings would be impacted during construction. However, this would be temporary, and measures to reduce negative impacts will be set out within the CEMP. Continual community engagement will occur throughout the pre-construction phase and during construction to ensure that the needs of the local community are met. 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 mitigation⁷⁸. This can align with the community's cultural and environmental values, reinforcing a sense of shared identity and purpose. Any visual impacts during the operational phase will be assessed within the Landscape and Visual Impact Assessment (further details are provided in Chapter 7 of this Scoping Report). Measures will be incorporated within the LEMP to soften and screen views of the Scheme. As detailed in Section 5.11 the Scheme will provide opportunities to contribute to the local community's economy, local employment and allowing for farming business diversification. For the above reasons, community, identity, culture, resilience and influence is scoped out.
Social participation, interaction and support	The Scheme will not directly impact any local community facilities or areas used for social participation, interaction and support. For this reason, social participation, interaction and support is scoped out.
Economic conditions affecting health (Economic environment)	
Education and training	Scoped out. See Section 5.11 .
Employment and income	Scoped out. See Section 5.11 .
Living/environmental conditions affecting health (Bio-physical environment)	
Climate change and adaptation	During construction and decommissioning carbon and climate altering pollutant emissions are not expected to be of the scale to have significant health effects during this temporary phase. Furthermore, plans such as the CEMP and CTMP will be in

⁷⁸ International Renewable Energy Agency, 2021. Empowering Communities to Reap the Multiple Benefits of Renewable Energy

Health Effect	Justification for Scoping Out of the Assessment
	place to manage and reduce emissions to air. Therefore, this effect is not considered to lead to a significant population health effect and is proposed to be scoped out. As detailed in Chapter 12, the vulnerability of the Scheme to changes in the climate are scoped out of the assessment as the Scheme will be designed as such to accommodate anticipated changes in the climate during its operational life. Additionally, 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 by being part of a mixed approach to renewable energy generation. For these reasons, climate change and adaptation in respect of human health is scoped out. An assessment of Greenhouse Gas Emissions will be made in the ES and presented in the Climate Change Chapter.
Air quality	Scoped out, see Section 5.2 .
Water quality or availability	Scoped out, see Section 5.3 .
Land quality	Land quality in terms of soil quality (best and most versatile land) will be covered in the ES within the Soils and Agricultural Land Chapter. See Chapter 13 of this Scoping Report for further details. As detailed in Section 5.14, Ground Conditions is scoped out of the ES. During operation and maintenance, including replacement activities, it is unlikely that operations during this phase would significantly impact land quality. During replacement measures similar to those within the CEMP would be implemented. As a result, effects on land quality is scoped out.
Noise and vibration	Vibration impacts are considered within Chapter 11 Noise and Vibration of this Scoping Report, and an assessment of construction vibration will be made in the ES. Noise impacts will be assessed within the ES. See Chapter 11 Noise and Vibration of this Scoping Report for further details. The potential for noise and vibration 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 of the ES.
Radiation	Radiation is scoped out of the ES, as levels are anticipated to be low. See Section 5.5. Discussion of Electric, Magnetic and Electromagnetic Fields will be made within an Other Matters chapter within the ES.
Access and quality of services (Institutional and built environment)	
Health and social care services	Any potential increased demand on local health infrastructure as a result of workers being injured at work would be temporary, and would not be expected to be significant for the following two reasons: Only 3% of construction workers are injured at work, on average, per year⁷⁹, therefore meaning that the percentage of construction workers on Site likely to be injured and require health services within the local area is very low.

⁷⁹ ONS, 2021. Labour Force Survey – Table 1: Estimated prevalence and rates of self-reported illness caused or made worse by current or most recent job, by industry for people working in the last 12 months

Health Effect	Justification for Scoping Out of the Assessment
	Measures will be set out in the CEMP to minimise risk of accidents and injury during construction. The operational worker demand will be far less than during construction, limited to periodic maintenance and replacement visits. For the reasons above, as it is unlikely that the Scheme would significantly strain the health and social care services, this topic is therefore scoped out.
Built environment	During construction and decommissioning the Scheme will not significantly impact the existing built environment in respect of human health due to the rural location of the Site. The CEMP and CTMP will detail measures to mitigate any potential negative impacts to the built environment, such as maintaining road clearance and routing traffic to avoid congestion on the existing road network. These documents will be secured by outline versions submitted with the DCO. The operation of the Scheme would introduce new built form into the environment. However, as detailed in Section 1.9, the UK Government has set ambitious targets, aiming for net zero carbon emissions by 2050, including increasing solar capacity to 70GW by 2035⁸⁰. The BESS incorporated into the Scheme allows for enhanced resilience for the energy sector. It is therefore considered that the land used within the Scheme will have an overarching positive effect and will not impact local community infrastructure. For the above reasons, built environment is scoped out.

Cumulative Effects

- 5.12.10 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.

Summary

- 5.12.11 Based on the evidence provided above it is proposed to scope out human health from the ES. However, due to the sensitivities surrounding this topic and its connections to the mental health of communities and individuals, the topic of human health specifically and where not covered elsewhere in the ES will be discussed within an 'Other Matters' ES chapter. The human health section will act as a sign-posting document to draw upon the conclusions of the wider assessments in terms of human health (such as noise and vibration and landscape and visual), and where necessary include other pertinent information relating to the impact of the Scheme

⁸⁰ Solar Power Portal, 2024. Solar Energy UK: 50GW of solar needed by 2030 alongside 30GW energy storage

on human health, such as responses to consultation responses and how the issues raised are dealt with in the ES.

5.13 Arboriculture

Overview

- 5.13.1 The Site predominantly comprises agricultural fields that are lined, in places, with trees and hedgerows. A topographical survey has been carried out to preliminarily identify arboricultural features. Targeted further survey work will be undertaken to inform the design and landscape assessment.
- 5.13.2 As detailed in **Chapter 3 Scheme Description**, the removal of hedgerows and trees will be avoided as far as reasonably practicable to reduce impacts relating to loss of vegetation, such as landscape and visual, cultural heritage and ecology. The final CRC, to be submitted with the DCO application will be designed to avoid any tree loss, and minimise impacts on hedgerows.
- 5.13.3 In certain areas, subject to final design, it is likely that there will be the need for vegetation removal (for example in the vicinity of access points to create visibility splays). Targeted arboriculture surveys will inform these decisions to ensure there is limited impacts to remaining surrounding vegetation. Any removal will be done in line with relevant guidance and legislation.
- 5.13.4 Offsets to vegetation will be included within the design, further advised by the targeted arboriculture surveys to avoid impacts to retained vegetation. Additionally, measures will be included within the CEMP to ensure retained vegetation is protected during construction, with similar measures included within the subsequent DEMP. Where vegetation removal is required, the removal will be done so in accordance with best practice methodologies to ensure that impacts are limited.
- 5.13.5 For these reasons, arboriculture is scoped out of the ES.

5.14 Ground Conditions

Overview

- 5.14.1 This section considers the potential impacts and associated effects from the disturbance of land and soils on the Scheme, human health, and the environment during the construction, operational and decommissioning phases and should be read alongside **Appendix 5.2 Phase 1 Ground Conditions Assessment** (Phase 1 GCA).
- 5.14.2 **Appendix 5.2** summarises the current and former land uses in the context of contamination generation potential, including potential for unexploded ordnance (UXO) and the environmental setting in terms of geology (including geomorphological features), groundwater (including private water supplies), surface water, and the built environment. The environmental setting information has

been obtained from a variety of sources including; British Geological Survey (BGS) online data, Environment Agency (EA) data, a Groundsure Insight® Report and information provided by South Norfolk and Broadland District Council.

5.14.3 The Phase 1 GCA presents a Tier 1 contamination Preliminary Risk Assessment which has been prepared following guidance on how to assess and manage the risks from land contamination provided in Land Contamination Risk Management (LCRM)⁸¹. Whilst the Phase 1 GCA is a comprehensive ground conditions assessment the following topics are considered elsewhere in this Scoping Report and therefore will not form part of this ground conditions summary for the Scoping Report:

- Impacts to groundwater and surface water are considered in Water Environment (see **Chapter 5 Section 5.3** of this Scoping Report).
- Minerals (see **Chapter 5 Section 5.9** of this Scoping Report).
- UXO is considered in Major Accidents and Disasters (see **Chapter 5 Section 5.4** of this Scoping Report).
- Ecology (see **Chapter 8** of this Scoping Report).
- Cultural Heritage (see **Chapter 9** of this Scoping Report) in respect of existing buildings (e.g. off-site listed buildings / heritage assets).
- Soils and Agriculture (see **Chapter 13** of this Scoping Report).

Overview of Legislation, Policy and Guidance

5.14.4 Legislation on contaminated land is principally contained in Part 2A of the Environmental Protection Act, 1990 (which was inserted into the 1990 Act by section 57 of the Environment Act 1995). The Statutory Guidance⁸² that accompanies the legislation provides a definition of what constitutes “*contaminated land*” and sets out the responsibilities of the LPA and the EA in the identification and management of contaminated land. The regulations also include a definition of ‘risk’, where a risk is said to be a combination of “(a) *the likelihood that harm, or pollution of water, will occur as a result of contaminants in, on or under the land; and (b) the scale and seriousness of such harm or pollution if it did occur*”.

5.14.5 National Policy Statements (NPS) set out the primary policy tests against which the application for a DCO for the Scheme would be considered. The text below provides details of the elements of the NPS for Energy (EN-1) and NPS for Renewable Energy Infrastructure (EN-3) that are relevant to this section.

- EN-1 5.11.5 – “*Where pre-existing land contamination is being considered within a development the objective is to ensure that the site is suitable for its intended use. Risks would require consideration in accordance with the contaminated land statutory guidance as a minimum*”.
- EN-1 5.11.14 – “*Applicants are encouraged to develop and implement a Soil Management Plan which could help minimise potential land contamination. The sustainable reuse of soils needs to be carefully considered in line with good*

⁸¹ Available at: <https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm>

⁸² Department for Environment, Food and Rural Affairs, 2012, Environmental Protection Act 1990: Part 2A – Contaminated Land Statutory Guidance

practice guidance where large quantities of soils are surplus to requirements or are affected by contamination”.

- EN-1 5.11.17 – *“Applicants should ensure that a site is suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination”.*
- EN-1 5.11.18 – *“For developments on previously developed land, applicants should ensure that they have considered the risk posed by land contamination, and where contamination is present, applicants should consider opportunities for remediation where possible. It is important to do this as early as possible as part of engagement with the relevant bodies before the official pre-application stage”.*
- EN-3 3.10.19 – *“Applicants are encouraged to develop and implement a Soil Resources and Management Plan which could help to use and manage soils sustainably and minimise adverse impacts on soil health and potential land contamination”.*
- EN-3 2.10.147 – *“Where developments are proposed on peat, to ensure the development will result in minimal disruption to the ecology, or release of CO₂, and the carbon balance savings of the scheme are maximised, the Secretary of State should be satisfied that the solar farm layout and construction methods have been designed to minimise soil disturbance during construction and maintenance of roads, tracks and other infrastructure and in England should take into account the policies set out in the England Peat Action Plan 2021”.*

- 5.14.6 Reference has been made to Planning Practice Guidance, including Land Affected by Contamination⁸³, which describes how to deal with land affected by contamination, minerals⁸⁴ which describes how mineral resources can be safeguarded against sterilisation by unsuitable development and also Land Stability⁸⁵, which describes how to ensure development is suitable for the ground conditions. It is noted that the overarching national guidance against which the Scheme will be assessed remains the NPS.
- 5.14.7 Guidance on the assessment of land contamination is provided in LCRM.
- 5.14.8 Guidance on the assessment of Ground Conditions for EIA is limited but reference has been made to LA 109 – Geology and Soil⁸⁶.
- 5.14.9 Reference has also been made to Nationally Significant Infrastructure Projects: Technical Advice Page for Scoping Solar Development.

⁸³ Department for Levelling Up, Housing and Communities, 2019, Planning Practice Guidance – Land Affected by Contamination, available online at <https://www.gov.uk/guidance/land-affected-by-contamination>

⁸⁴ Department for Levelling Up, Housing and Communities, 2014, Planning Practice Guidance – Minerals, available online at <https://www.gov.uk/guidance/minerals>

⁸⁵ Department for Levelling Up, Housing and Communities, 2019, Planning Practice Guidance – Land Stability, available online at <https://www.gov.uk/guidance/land-stability>

⁸⁶ Design Manual for Roads and Bridges LA 109 Geology and Soils, 2019 (replaces DMRB Volume 11, Section 3, Part 11 & Part 6)

Baseline

Mobilisation and Migration of Contamination

- 5.14.10 **Appendix 5.2** includes a review of information regarding the geology, hydrogeology and hydrology. The surface geology across the vast majority of the Site comprises Lowestoft Formation – Diamicton which is a clay deposit with small areas in the central part of the Site underlain by more granular deposits. Figure 3 of the Phase 1 GCA shows the type and distribution of the Superficial Deposits. In terms of migration of contamination, the presence of predominately clayey soil (as confirmed by targeted ground investigation on parts of the Site including sub-Site 3A) are considered to have lower permeability and higher retardation such that there will be limited migration potential.

Potential Ground Instability Hazards

- 5.14.11 An assessment of potential naturally-occurring geological and anthropogenic hazards that may give rise to instability or adverse foundation or construction conditions is provided in **Appendix 5.2** and summarised as follows.
- Collapsible Ground Stability: Very Low.
 - Compressible Ground Stability: Very Low to Moderate. The Moderate element of this hazard potential relates to the limited areas of the Site within which the deposits of Peat (CRC7) and Alluvium (CRC6, CRC7, sub-Site 7A) are recorded by the BGS.
 - Dissolution: Moderate. The potential for dissolution features to occur will be locally influenced by the thickness of the overlying deposits, the depth of any historical buried valley features and the elevation of the groundwater vs. the chalk interface.
 - Landslide Ground Stability: Very Low, locally Low on valley slopes.
 - Running Sand: Very Low to Moderate. The Moderate potential for running sands relates to areas of the Site underlain at the surface by the predominantly granular deposits of the Leet Hill Sand and Gravel Member, River Terrace Deposits and the discrete sand and gravel deposits of the Lowestoft Formation (sub-Sites 4A, 5A, 5B, 7B and 7C, and cable routes CRC6, CRC7, CRC8).
 - Shrinking or Swelling Clay: Low to Moderate. The cohesive Diamicton of the Lowestoft Formation that forms the surface geology across the majority of the Site (excluding areas where granular deposits are present) is expected to typically be of low to medium volume change potential. The upper weathered layers being typically medium volume change potential and the in-situ non-weathered material typically being of low volume change potential.

Sources of Potential Contamination

- 5.14.12 The existing land use for the vast majority of the Site is undeveloped agricultural land. The potential for contamination associated with this land use is limited to residual concentrations of agricultural chemicals (such as fertilisers, pesticides or herbicides).

- 5.14.13 There are six localised land uses, mostly historical activities, that have been identified within the Site where the potential for contamination is assessed as being higher including a Refuse Tip, a sewage treatment works and two former airfields. Eight land uses with a greater potential for contamination have been identified off Site within 250m. The locations of these sources of potential contamination are presented on **Figure 5.1 (ES Volume II)**, with further information and typical contaminants of concern associated with each source identified in **Appendix 5.2**.

Consultation

- 5.14.14 Whilst requests for information have been made, for example, to the Local Planning Authority and Environment Agency, consultations on the approach and assessment findings have not been undertaken.
- 5.14.15 A consultation request has been received from a resident regarding a private water abstraction approximately 300m to the east of sub-Site 3A (with a subsequent linked request from the Member of Parliament for South Norfolk). Consultation in this regard is on-going at the time of writing.
- 5.14.16 The Phase 1 GCA (**Appendix 5.2**) will be updated following statutory consultation with the Council Officer responsible for land contamination and receipt of a constraints assessment for UXO that fulfils the requirements of CIRIA Report C681⁸⁷ “Unexploded Ordnance, A Guide for the Construction Industry” which states that, for UXO *“the purpose of the preliminary risk assessment is a qualitative screening exercise to assess the likely potential of finding a UXO at a site. The process requires the user to consider basic factors that affect the potential for a UXO to be present at the site and the likelihood for any hazard to occur”*. The updated document will be appended to the ES. At this time, it is not proposed to undertake any intrusive ground investigations as such works are best undertaken at detailed design stage to ensure that appropriate data is collected and aborted work is avoided.

Likely Significant Effects and Proposed Mitigation

- 5.14.17 Property (Buildings). The construction of the Scheme will require very limited ground disturbance, the key aspects of which are described below.
- The majority of the Scheme comprises solar PV arrays which will be mounted on metal frames, either secured by metal ‘mini-piles’ that will be driven into the ground at a depth of up to 4m or weighed down using concrete ballast or other non-ground penetrative techniques. For the purposes of this assessment, it is assumed that the driven ‘mini-pile’ foundation option will be used.
 - At present, the final cable route is yet to be determined. The proposed cable trenching is likely to be typically up to 1.2m in width, and shallow (anticipated to be less than 2m below ground level), with the cable surrounded by a permeable backfill material above which the excavated overburden will be replaced.

⁸⁷ CIRIA, 2009, Unexploded ordnance (UXO) A guide for the construction industry (C681), ISBN: 978-0-86017-681-7

- All ancillary buildings, except for the BESS and National Grid Substation, will likely be prefabricated metal containers or reinforced glass and plastic kiosks. These structures will either be supported upon a platform of compacted aggregate and elevated above the platform by plinths/blocks or otherwise will be supported on prefabricated concrete pads. The BESS and National Grid Substation, and any associated external electrical equipment may rest upon deeper foundations, which would be subject to detailed design.
- 5.14.18 Due to limited ground disturbing works, the Scheme has a limited potential to impact off-Site structures during construction and decommissioning. Impacts to off-Site structures during the operational phase are not anticipated.
- 5.14.19 In the absence of mitigation there is the potential for the ground conditions to impact the stability and/or materials used in the construction of the Scheme. The likelihood of adverse effects due to ground conditions can be reduced during the construction and operational phases through geotechnical design (informed by the results of a targeted ground investigation) and layout optimisation of the Scheme to locate structures away from potential ground condition hazards. The ground investigation should follow the guidance outlined in BS 5930:2015+A1: 2020 Code of practice for ground investigations and BS10175:2011+A2:2017 Investigation of potentially contaminated sites – code of practice. The National Grid Substation will be constructed, operated and maintained by National Grid, who will not permit the substation and external electrical equipment to be built if it will not be safe for and from the environment, in respect of ground conditions. Any ground investigation will be agreed with the Environment Agency and Local Planning Authority prior to commencement. Impacts to proposed structures during the decommissioning phase are not anticipated as the receptor (the proposed structures) will be removed.
- 5.14.20 Peat excavation. The BGS' geological map shows CRC7 to include a band of peat associated with the nearby watercourse. In this area, only CRC is proposed, and will contain a trench with a typical width of 1.2m, and a maximum width of up to 7m (e.g. if multiple trenches are required). Therefore, if peat is present at the depth that the cable will be laid (up to 2m deep), the volume of peat extraction will be extremely low, and therefore significant effects during construction, operation or decommissioning are not anticipated. Furthermore, a hierarchy of peat management options will be followed starting with avoidance, minimisation of peat excavation, disturbance, and disposal only as a last resort.
- 5.14.21 Human Health. Potentially contaminated soils (if present) may be disturbed during the construction and decommissioning phases as a result of construction and decommissioning works, and during the operational phase as a result of in-ground maintenance works. Such disturbance could impact human health via inhalation, ingestion or dermal contact. During construction and decommissioning, the Construction (Design and Management) Regulations 2015 (CDM) regulate the health, safety and welfare of construction workers and will apply to the Scheme. The Health and Safety file compiled by the Principal Contractor will contain as-built drawings and plans of residual hazards including ground conditions. This document will also inform or form part of the Operation and Maintenance Manual for the Scheme to provide controls during the operational phase.

- 5.14.22 The legislative requirements for health and safety of workers alongside measures such as mitigation by design to avoid areas of potential geoenvironmental hazards, and standard good-practice measures contained within a CEMP and DEMP (e.g., methods for dust control, soil management plan, toolbox talks for construction workers relating to unexploded ordnance and hygiene) will ensure that potential impacts associated with the disturbance of ground contaminated during construction, operation and decommissioning, will be reduced to as low as reasonably practicable. Therefore, no significant impacts to human health during the construction, operation or decommissioning phases are anticipated.
- 5.14.23 Geomorphological Features. SSSI and CGS designated on the basis of their geomorphological features have not been identified on or within 250m of the Site and on this basis, geodiversity is not considered a credible receptor requiring consideration and no significant impacts are anticipated.

Cumulative Effects

- 5.14.24 Cumulative effects are not considered likely during the construction, operation or decommissioning phases in respect of the Ground Conditions. If any cumulative effects arise, these will be reported within the Cumulative and In-Combination Effect chapter of the ES.

Summary

- 5.14.25 In general, the potential for land contamination to be present on the Site is identified as Very Low for the vast majority of the land with only six discrete areas with a Moderate potential for contamination to be present. It is anticipated that through design evolution some of these areas will be avoided for example by routing the cable around the sewage treatment works. Consideration has been given to the anticipated installation methods/ foundations and associated ground disturbance for the various elements and in conjunction with a review of the mapped geology the potential for contaminant mobilisation and migration is considered to be low.
- 5.14.26 As potential risks associated with possible contamination have been identified associated with limited areas of the Site, a targeted ground investigation is recommended to characterise the ground conditions at those locations and also to confirm the anticipated absence of contamination across the majority of the Site. The ground investigation should be designed to allow the further evaluation of the pollutant linkages identified and facilitate design requirements for risk reduction measures, if required. The ground investigation should also be designed to delineate the potential extent of the areas underlain by peat and alluvium, and to determine whether slope instability mitigation measures are necessary in the steeper sloping areas of the Site. A detailed UXO desk-based threat assessment should be undertaken once the design is finalised to inform the need for mitigation measures required for during in-ground works including, targeted ground investigation.
- 5.14.27 Measures to be included in the OCEMP relating to ground conditions include:

- An awareness briefing regarding ground conditions and appropriate methods of working to limit disturbance of potentially contaminated soil or water, where possible. The methods will be informed by the findings of the targeted ground investigation.
- Measures to minimise exposure to contaminated soils e.g., by controlling dust generation and the adoption of good hygiene standards will prevent prolonged skin contact, inhalation, and ingestion of soils during construction.
- Measures to minimise and control runoff/leaching to Controlled Waters.
- Measures to protect soils, such as the use of tracked or low ground pressure machines (i.e., with large tyres), to impose low pressures on the soil – analogous to farming machinery. Vehicle tracking routes should be devised which minimise repeat journeys over the Site to reduce rutting and damage to the vegetation and soil structure.
- Vegetation disturbance should be minimised as much as possible and any bare ground resulting from construction should be re-seeded. On completion of the works the fields will be tilled using light farming machines and prepared appropriately for seeding to encourage early native vegetation growth, restoration of the soil structure and natural creation of an environment to encourage native meadow plants to flourish.
- Prevention measures including maintenance of construction vehicles, bunded storage, designated wheel washing areas, settling basins, screening stockpiles of materials, and dampening exposed soils as appropriate.
- A protocol (Discovery Strategy) for managing unexpected contamination.

5.14.28 As referenced in the PINS guidance, there will be a commitment to best practice measures in the OCEMP which will include providing:

- drilling fluid breakout plan;
- emergency spill response procedure;
- battery safety management plan;
- appropriate buffers / construction management measures; and
- best practice measures during each phase to reduce risk of contaminant mobilisation.

5.14.29 With the proposed mitigation measures implemented the effects on identified receptors from the Scheme during its construction, operational and decommissioning phases are not expected to be significant. As such, it is proposed to scope out an assessment of likely significant effects in relation to ground conditions from the ES, the updated Phase 1 GCA will, however be appended to the ES. **Table 5.10** further outlines the justification for scoping out ground conditions.

Table 5.10 Potential Ground Conditions effects and justification for scoping out ground conditions

Ground Condition Effects	Justification for Scoping Out of the Assessment
Construction	
Human Health	Health and Safety Legislation including the CDM Regulations 2015 will ensure that effects on construction workers are identified and adequately mitigated. The OCEMP will contain commitments to minimise contamination disturbance (to be

Ground Condition Effects	Justification for Scoping Out of the Assessment
	informed by targeted ground investigation) and measures to be implemented should disturbance not be avoided.
Buildings (on-Site)	The likelihood of adverse effects due to ground conditions can be reduced through design (informed by the results of targeted ground investigation) and layout optimisation of the Scheme to locate structures away from potential ground condition hazards.
Peat	The presence of peat is mapped along the surface water body in CRC7. Through design evolution the location of the cable corridor will be refined and a much narrower width of potential disturbance identified. There will be a commitment in the OCEMP to adhere to the peat management hierarchy. As the cable route under the surface water body will be constructed using HDD there is the potential to extend this so that the cable also goes under the peat deposit. If avoidance of disturbance is not possible it will be minimised through siting the HDD start compound outside of the peat.
Geomorphological Features	Features not identified on or within a credible zone of influence of the Site.
Operation (including replacement and maintenance)	
Human Health	The likelihood of adverse effects due to ground conditions can be reduced through design (informed by the results of targeted ground investigation). Examples include provision of gas protection measures into structures with enclosed space and/or person entry should ground gases be present. Measures similar to those implemented during construction will be implemented during replacement and maintenance to reduce contamination migration.
Buildings (on-Site)	There are no additional effects to those addressed during construction.
Peat	The solar arrays will be designed to maintain the current drainage such that the amount and location of water infiltration will not alter and the physical properties of the groundwater regime on which the peat may rely are not altered. Cabling will not be removed or replaced during operation, therefore there will be no further direct impacts to peat.
Geomorphological Features	Features not identified on or within a credible zone of influence of the Site.
Decommissioning	
Human Health	Considered to be no greater than construction.
Buildings	There are no additional effects to those addressed during construction.
Peat	The underground ducting along the CRC will also be decommissioned in accordance with the latest regulations and good practice prevailing at that time but are anticipated to be left in-situ to minimise adverse environmental effects therefore there will be no additional ground condition effects relating to peat.
Geomorphological Features	Features not identified on or within a credible zone of influence of the Site.

6 Topics to be Scoped In

6.1 Overview

- 6.1.1 As with the methodology set out in **Chapter 5** (Topics to be Scoped Out), the scoping exercise has been informed by desk-based research, preliminary assessments, professional judgment and other information available for the Site. The subsequent **Chapters (7 – 13)** present the topics that are proposed to be Scoped into the ES, as they are anticipated to result in likely significant environmental effects. **Chapters 7 – 13** therefore present pertinent information relating to each topic to form the basis of the scope that will be carried through in the EIA.

7 Landscape and Visual

7.1 Introduction

- 7.1.1 This Chapter of the Scoping Report sets out the proposed approach and methodology for undertaking an assessment of the likely significant landscape and visual effects of the Scheme during the construction, operation and decommissioning phases.
- 7.1.2 An overview of the landscape and visual baseline data that will be used within the assessment is provided, as well as landscape designations and published landscape character assessments which are relevant to the Site. Proposed view locations for the assessment of effects on visual amenity and the reasoning for their selection are also given. The scope of the landscape and visual impact assessment is outlined, and potential likely significant effects identified, based on the description of the Scheme set out at **Chapter 3 Scheme Description** of this Scoping Report.

7.2 Study Area

- 7.2.1 The extent of the Study Areas proposed has been derived from a combination of desktop study, site investigation and preliminary Zone of Theoretical Visibility (ZTV) analysis. Initially a search area extending to 5km beyond each Site and the CRC has been considered, ensuring that the area includes the wider landscape upon which the Scheme may have an influence.
- 7.2.2 Preliminary ZTV analysis has considered both a Digital Terrain Model (DTM), as a bare earth model and a Digital Surface Model (DSM). This includes landscape features and built form which may have an influence on reducing visibility of the Scheme. This DSM analysis shows that visibility of the Scheme is focused within the short to medium distance from the individual Sites, with limited visibility of the Scheme beyond 2km.
- 7.2.3 On this basis it is considered that there is limited potential for likely significant landscape or visual effects resulting from the Scheme to occur beyond 2km from each individual Site or sub-Site boundary (including the BESS), and the CRC. This judgement has been derived from professional experience of the nature of effects of solar farm developments. It takes into account the limited height of the solar panel and BESS elements, together with site characteristics, namely the generally flat topography within the landscape surrounding the Site. The presence of field boundary vegetation and woodland blocks within and adjacent to the individual Sites serve to provide screening and restrict visibility.
- 7.2.4 Whilst the National Grid Substation will contain newly-created features these will be seen in context of the existing, taller 400kV overhead line network and pylons. This view has been informed by preliminary Site walkovers, and consideration of a series of Preliminary ZTV analyses undertaken for each individual Site (see **Figure 7.1 (Volume II)**).

- 7.2.5 Substations will be required to support the Scheme. They include two 400kV Substations, which will likely be located within the BESS Site and Site 5 as described in **Chapter 2 Site Description** and **Chapter 3 Scheme Description**. As further detail (including geographical location) becomes available these assets will be assessed at the next stage of assessment and included in the ES.

7.3 Overview of Legislation, Policy and Guidance

Planning Policy

National Planning Policy

- 7.3.1 The Overarching National Policy Statement (NPS) EN-1 2023⁸⁸ sets out the Government's policy for delivery of major energy infrastructure and is the primary basis for decision making relating to energy projects.
- 7.3.2 The following paragraphs from NPS EN-1 Chapter 5.10 Landscape and Visual are considered of relevance to the Scheme:
- 5.10.4: *"Landscape effects arise not only from the sensitivity of the landscape but also the nature and magnitude of change proposed by the development, whose specific siting and design make the assessment a case-by-case judgement."*
 - 5.10.5: *"Virtually all nationally significant energy infrastructure projects will have adverse effects on the landscape, but there may also be beneficial landscape character impacts arising from mitigation."*
 - 5.10.6: *"Projects need to be designed carefully, taking account of the potential impact on the landscape. Having regard to siting, operational and other relevant constraints the aim should be to minimise harm to the landscape, providing reasonable mitigation where possible and appropriate."*
 - 5.10.7: *"National Parks, the Broads and Areas of Outstanding Natural Beauty [now referred to as National Landscapes] have been confirmed by the government as having the highest status of protection in relation to landscape and natural beauty. Each of these designated areas has specific statutory purposes. Projects should be designed sensitively given the various siting, operational, and other relevant constraints."*
 - 5.10.16: *"The applicant should carry out a landscape and visual impact assessment and report it in the ES, including cumulative effects...Several guides have been produced to assist in addressing landscape issues."*
 - 5.10.17: *"The landscape and visual assessment should include reference to any landscape character assessment and associated studies as a means of assessing landscape impacts relevant to the proposed project. The applicant's assessment should also take account of any relevant policies based on these assessments in local development documents in England..."*

⁸⁸ Department for Energy Security & Net Zero (2023), *Overarching National Policy Statement for Energy (EN-1)*. Available at: [overarching-nps-for-energy-en1.pdf](https://www.landscapeinstitute.org/publication/tgn-02-21-assessing-landscape-value-outside-national-designations/) <https://www.landscapeinstitute.org/publication/tgn-02-21-assessing-landscape-value-outside-national-designations/> Accessed Nov 24

- 5.10.19: *“The applicant should consider landscape and visual matters in the early stages of siting and design, where site choices and design principles are being established. This will allow the applicant to demonstrate in the ES how negative effects have been minimised and opportunities for positive benefits or enhancement have been recognised and incorporated into the design, delivery and operation of the scheme.”*
- 5.10.20: *“The assessment should include the effects on landscape components and character during construction and operation. For project which may affect a National Park, The Broads or an AONB the assessment should include effects on the natural beauty and special qualities of these areas.”*
- 5.10.21: *“The assessment should include the visibility and conspicuousness of the project during construction and of the presence and operation of the project and potential”.*

7.3.3 Chapter 5.11: Land Use, Including Open Space, Green Infrastructure, and Green Belt, at paragraph 5.11.27, states that:

- *“Existing trees and woodlands should be retained wherever possible. The applicant should assess the impacts on, and loss of, all trees and woodlands within the project boundary and develop mitigation measures to minimise adverse impacts and any risk of net deforestation as a result of the scheme. Mitigation may include, but is not limited to, the use of buffers to enhance resilience, improvements to connectivity, and improved woodland management.”*

7.3.4 NPS EN-3 for Renewable Energy Infrastructure⁸⁹, and NPS EN-5 For Electricity Networks Infrastructure⁹⁰, together with EN-1 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.

7.3.5 The following paragraphs from NPS EN-3 are considered of relevance to the Scheme:

- 2.10.96: *“Landscape and visual impacts should be considered carefully pre-application. Potential impacts on the statutory purposes of nationally designated landscapes should form part of the pre-application process.”*
- 2.10.97: *“Applicants should carry out a landscape and visual assessment and report it in the ES. Visualisations may be required to demonstrate the effects of a solar farm on the setting of heritage assets and any nearby residential areas or viewpoints.”*
- 2.10.100 and 2.10.101: *“The applicant should consider as part of the design, layout, construction, and future maintenance plans how to protect and retain,*

⁸⁹ Department for Energy Security & Net Zero (2023), *National Policy Statement for Renewable Energy Infrastructure (EN-3)*. Available at: <https://assets.publishing.service.gov.uk/media/65a7889996a5ec000d731aba/nps-renewable-energy-infrastructure-en3.pdf> <https://www.landscapeinstitute.org/publication/tgn-02-21-assessing-landscape-value-outside-national-designations/> Accessed Nov 24

⁹⁰ Department for Energy Security & Net Zero (2023), *National Policy Statement for Electricity Networks Infrastructure (EN-5)*. Available at: [nps-electricity-networks-infrastructure-en5.pdf https://www.landscapeinstitute.org/publication/tgn-02-21-assessing-landscape-value-outside-national-designations/](https://www.landscapeinstitute.org/publication/tgn-02-21-assessing-landscape-value-outside-national-designations/) Accessed Nov 24

wherever possible, the growth of vegetation on site boundaries, as well as the growth of existing hedges, established vegetation, including mature trees within boundaries. Applicants should also consider opportunities for individual trees within the boundaries to grow on maturity. The impact of the proposed development on established trees and hedges should be informed by a tree survey and arboricultural/hedge assessment as appropriate.”

- 2.10.131: *“Applicants should consider the potential to mitigate landscape and visual impacts through, for example, screening with native hedges, trees and woodlands.”*
- 2.10.132: *“Applicants should aim to minimise the use and height of security fencing. Where possible applicants should utilise existing features, such as hedges or landscaping, to assist in site security or screen security fencing.”*
- 2.10.133: *“Applicants should minimise the use of security lighting. Any lighting should utilise a passive infra-red (PIR) technology and should be designed and installed in a manner which minimises impact.”*

National Planning Policy Framework (NPPF)

- 7.3.6 Relevant aspects of the National Planning Policy Framework (NPPF, December 2024) will be addressed within the LVIA, including those relating to sustainable development (Section 2), design (Section 12), and the natural environment (Section 15).
- 7.3.7 Particular consideration will be given to Section 15 of the NPPF which covers both ecological and landscape matters.

Local Policy

Greater Norwich Local Plan⁹¹

- 7.3.8 The Greater Norwich Local Plan (GNLP) was adopted by South Norfolk Council on 25 March 2024. The adopted GNLP consists of three documents: The Strategy, The Sites Plan and The Monitoring Framework.
- 7.3.9 The Strategy consists of seven policies, of which the following are relevant to this Chapter:
- Policy 3 – Environmental Protection and Enhancement; and
 - Policy 4 – Strategic Infrastructure.

The South Norfolk Local Plan⁹²

- 7.3.10 The South Norfolk Development Management Policies Document (DMPD) was adopted on 26th October 2015 and forms part of the South Norfolk Local Plan. The Key Diagram, which sets out the spatial strategy for land use and transport planning in the DMPD, will be superseded by the Key Diagram in the GNLP Strategy.

⁹¹ South Norfolk Council (2024), *Greater Norwich Local Plan*. Available at: <https://democracy.southnorfolkandbroadland.gov.uk/ieListDocuments.aspx?CId=141&MId=804&Ver=4> Accessed Nov 24

⁹² South Norfolk Council (2024), *South Norfolk Development Management Policies Document*. Available at: [development-management-policies-document-0.pdf](#) Accessed Nov 24

However, the remainder of the document is to be carried forward and used in conjunction with the adopted plan.

7.3.11 The relevant policies in the DMPD are as follows:

- Policy DM1.4 – Environmental quality and local distinctiveness;
- Policy DM3.8 – Design principles applying to all development;
- Policy DM3.13 – Amenity, noise and quality of life;
- Policy DM4.4 – Natural environmental assets: designated and locally important open space;
- Policy DM4.5 – Landscape character and river valleys;
- Policy DM4.8 – Protection of trees and hedgerows;
- Policy DM4.9 – Incorporating landscape into design; and
- Policy DM4.10 – Heritage Assets.

Guidance and Standards

The Landscape Institute

7.3.12 This Chapter is based on professional experience based on the Landscape Institute (LI)/ Institute of Environmental Management and Assessment 'Guidelines for Landscape and Visual Impact Assessment' (3rd Edition, 2013) (GLVIA3)⁹³.

7.3.13 Technical Guidance Note (LITGN-2024-01); Notes and Clarifications⁹⁴ on aspects of the 3rd Edition Guidelines on Landscape and Visual Impact Assessment was published in August 2024. The TGN provides a compilation of clarifications on GLVIA3 which includes:

- Statements of clarification from 2013-2015', previously held on the Landscape Institute website.
- Answers provided by Landscape Institute's GLVIA Panel to questions raised during the Landscape Institute's December 2020 webinar 'GLVIA Misconceptions and Best Practice'.
- Answers provided by the Landscape Institute's GLVIA Panel to questions raised by Members via responses to the 2021 survey about GLVIA3 and sent to the Landscape Institute Technical email address.

7.3.14 The methodology for this Chapter accords with relevant aspects of the Landscape Institute TGN 06/19 Visual Representation of Development Proposals⁹⁵, TGN

⁹³ Environmental Management and Assessment, 'Guidelines for Landscape and Visual Impact Assessment' (3rd Edition, 2013) (GLVIA3). Accessed Nov 24

⁹⁴ Landscape Institute, *Technical Guidance Note (LITGN-2024-01); Notes and Clarifications*. Available at: LITGN-2024-01-GLVIA3-NC_Aug-2024.pdf (SECURED) Accessed Nov 24

⁹⁵ Landscape Institute *TGN 06/19 Visual Representation of Development Proposals*. Available at LI_TGN-06-19_Visual_Representation-1.pdf Accessed Nov 24

02/21: Assessing Landscape Value Outside National Designations⁹⁶, and TGN 04/2020 Infrastructure⁹⁷.

7.4 Baseline Environment

Landscape Designations

- 7.4.1 Landscapes may be valued at community, local, national or international levels. Existing landscape designations will be taken as the starting point for the assessment of the baseline conditions. The value of landscapes beyond designated areas with reference to the Landscape Institute Technical Guidance Note 02/21: Assessing Landscape Value Outside National Designations will also be considered where appropriate.

Table 7.1: Landscape Designations

Typical Designation Type and Importance (Value)	Designations Applicable to the Site or within the Study Area
World Heritage Sites (WHSs): <i>International (Very High)</i>	There are no WHS within the Study Area or within Norfolk County
National Parks and National Landscapes/Areas of Outstanding Natural Beauty (AONB): <i>National (High)</i>	There are no National Park or National Landscapes within the Site or Study Area. The Broads National Park lies approximately 3.8km to the south-east of the Site at its closest point.
Conservation Areas (CA), curtilage of Grade I, II* and II Listed Buildings (LBs) Register of Parks and Gardens of Special Historic Interest (RPG), Scheduled Monuments (SM), National Trails: <i>National (High)</i>	The Site is not within a CA and does not contain any LBs. The Site does not contain an RPG or SM. <u>Listed Buildings</u> A number of LBs lie within the study area for heritage assets. Within 1km there are the following Grade 1 Listed Buildings: St Michaels Church is located to the south of sub-Site 4B St Catherine's Church is located to the south of sub-Site 5B Church Farmhouse is located near sub-Site 4B There are numerous Grade II and Grade II* Listed buildings within 1km of the Site, outlined in Chapter 3 and Chapter 9 . <u>Scheduled Monuments</u> There are no SM within the Site. A SM entitled 'Village Camp' is located by the village of Tasburgh approximately 500m north of sub-Site 4A. No further SM are present in the Study Area. <u>Conservation Areas</u>

⁹⁶ Landscape Institute *TGN 02/21: Assessing Landscape Value Outside National Designations*. Available at: <https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2021/05/tgn-02-21-assessing-landscape-value-outside-national-designations.pdf>. Accessed Nov 24

⁹⁷ Landscape Institute *TGN 04/2020 Infrastructure*. Available at: <https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2018/01/LI-Infrastructure-TGN-FINAL-200924.pdf>. Accessed Nov 24

Typical Designation Type and Importance (Value)	Designations Applicable to the Site or within the Study Area
	A number of CAs lie within the 2km Study Area. These are: • Wacton - located north-west of sub-Site 2C; • Long Stratton - located south-west of sub-Site 4B; • Fritton - located immediately to the south of sub-Site 5B; • Pulham Market - located to the south-east of sub-Site 2A; • Hempnall - located immediately to the south of sub-Site 5B; • Saxlingham Nethergate - located to north-west of sub-Site 7D; • Shotesham - located north-west of sub-Sites 8B & 7D; • Saxlingham Green - located immediately to the north and north-east of sub-Sites 7D&7F; • Howe - located to north-west of sub-Site 9; • Brooke - located north and east of sub-Site 9; • Seething - located to north-east of sub-Site 10E; and • Hedenham - located to the south-east of sub-Site 10A. <u>Register of Parks and Gardens of Special Historic Interest</u> There are two RPG within the 2km Study Area. These are: • Rainthorpe Hall is located to the north and northeast of sub-Sites 4A & 7A. • Ditchingham Hall is located to the south-east of sub-Sites 10A & 10B. <u>National Trails</u> There are no National Trails with the Site or Study Area.
Special Landscape Areas (SLA), Areas of Great Landscape Value (AGLV), Recreational Routes / Long-Distance Paths, National Cycle Routes: <i>Regional or Local (High/ Medium)</i>	The Boudicca Way and Via Beata (Way of Blessing) routes intersect with the Site and are present within the 2km Study Area. There are no further Recreational Routes / Long-Distance Paths within the Site or 2km Study Area. There are no National Cycle Routes with the Site or Study Area.
Areas of Local Landscape Importance, Designated Public Open Space/Open Access Land, Tree Preservation Orders (TPO): <i>District (Medium/ Low)</i>	The Site does not lie within an area of Local Landscape Importance. <u>Open Access Land</u> There are multiple areas of Open Access Land⁹⁸ located within the Study Area. Three areas as follows interact with the Site (Cable Route Corridor) Crow Green, Wood Green, The Green (near Saxlingham Hall). <u>Ancient Woodland</u> There are a number of ancient woodlands within the Site and the 2km Study Area. <u>TPOs</u>

⁹⁸ As defined by the Countryside and Rights of Way Act 2000

Typical Designation Type and Importance (Value)	Designations Applicable to the Site or within the Study Area
	There are a number of TPOs within the Study Area, the assessment of which and exact locations will be the subject of an arboricultural assessment.
Non-designated landscape features, local public rights of way (PRoW): <i>Local (Medium/ Low)</i>	There are a number of PRoWs that are located within the Site and wider countryside surrounding the Site (shown on Figures 7.2.2 – 7.2.4 (Volume II)).

- 7.4.2 The nationally designated landscape of the Broads is a distinctive lowland wetland landscape with a strong sense of place and cultural pattern. This is reflected in the special qualities which underpins its National Park status.
- 7.4.3 The Broads National Park Local Plan (2019 – 2036)⁹⁹ provides a list of the 14 ‘Special Qualities’ of the National Park. They are:
- Rivers and open water bodies (Broads);
 - Fens, reed beds and wet woodland;
 - Grazing marshes and dyke networks;
 - Flood plains, estuary and coast;
 - Navigable, lock-free waterways;
 - Special wildlife;
 - Countryside access on land and water;
 - Views, remoteness, tranquillity, wildness and ‘big skies’;
 - The people, the visitors, the activities;
 - History: earth heritage, heritage assets, archaeology, historic structures;
 - Cultural assets, skills and traditions;
 - People’s interactions with the landscape;
 - The settlements; and
 - Variety of patterns and textures of the landscape.
- 7.4.4 The Special Qualities provide evidence on the physical and experiential qualities which make up the Broads National Park landscape character.
- 7.4.5 A small part of the Broads National Park (defined as the Broads Authority Executive Area) lies within the 5km Search Area, though it does not fall within the 2km Study Area. It is located approximately 3.8km to the south-east of the Site at its closest point as shown on **Figures 7.2.1 to 7.2.4 (Volume II)**.
- 7.4.6 Areas outside the Executive Area from which the designation is visible or areas of land which are visible from within the designations may theoretically form part of its setting.
- 7.4.7 The Broads National Park does not geographically define its setting. However, due to the Broads being typically low-lying protected wetland (comprising flood plains of the main rivers of the Bure, Yare and Waveney with their associated tributaries),

⁹⁹ Broads Authority (2019), *Local Plan for the Broads (2015 – 2036)*. Available at: Local-Plan-for-the-Broads.pdf (broads-authority.gov.uk) Accessed August 2024

and because of the distance between the Scheme and designation, it is considered the Scheme falls outside its setting.

- 7.4.8 Furthermore, the ZTV (see **Figure 7.1.1 (Volume II)**) indicates that there would be no intervisibility between the Scheme and the Broads Authority Executive Area. Consequently, due to the separation distance from the Site, lack of intervisibility, impacts on the Broads National Park and its setting are scoped out of this assessment.

Landscape Character

National Landscape Character

- 7.4.9 The Site and Study Area lie wholly within the National Landscape Character Area¹⁰⁰ 83: South Norfolk and High Suffolk Claylands. The South Norfolk and High Suffolk Claylands National Character Area (NCA) occupies a large area of central East Anglia stretching from just below Norwich in the north down to the River Gipping in the south.

- 7.4.10 Key characteristics of relevance include:

- Large plateau area of chalky glacial till that is generally flat or only gently undulating.
- Views are frequently open, only sometimes confined by hedges and trees, with some woodland present. The small valleys support quite confined landscapes with intimate views.
- Scattered areas of ancient woodland, game copses, shelterbelts, valley floor plantation and carr woodland as well as hedgerow trees provide a treed landscape character, despite much boundary loss.
- A mix of remnant medieval ancient countryside, some of it with a decidedly coaxial character, although irregular field patterns and large modern amalgamated open fields dominate.
- Extensive areas of arable land dominated by cereals with breakcropping of sugar beet and oilseed rape, and some pastures along valley floors.
- A dispersed settlement pattern of small nucleated market towns with architectural variety and colour, loosely clustered villages and scattered hamlets. Settlement is often focused around large medieval greens.
- Some major transport links including the Norwich to London main rail line but infrastructure routes are predominantly an extensive network of narrow lanes and byroads

District / Local Landscape Character

- 7.4.11 South Norfolk is a landscape substantially comprising arable farmland intersected by river valleys. The area remains a highly rural, undisturbed landscape. South Norfolk District Council undertook a district landscape character assessment,

¹⁰⁰ Natural England (2014) *National Character Area Profiles*: <https://nationalcharacterareas.co.uk> (Accessed 15.07.24)2. South Norfolk District. Landscape Character

entitled Landscape Character Assessment South Norfolk District¹⁰¹. This was a framework study of the entire district undertaken at 1:50,000 scale and identified seven generic landscape types. These reflected the subtly varied landscape of the district ranging from the rural river valleys to the plateau farmland. A more detailed study was subsequently undertaken comprising landscape character areas.

7.4.12 As shown on **Figure 7.3 (Volume II)**, the Site lies within the following published Landscape Character Areas (LCAs) and Landscape Character Types (LCT):

- A1 Tas Rural River Valley LCA within the Rural River Valley LCT;
- B1 Tas Tributary Farmland LCA within the Tributary Farmland LCT;
- B4 Waveney Tributary Farmland LCA within the Tributary Farmland;
- B5 Chet Tributary Farmland LCA within the Tributary Farmland LCT;
- C2 Thurlton Tributary Farmland with Parkland LCA within the Tributary Farmland with Parkland LCT; and
- E2 Great Moulton Plateau Farmland LCA within the Plateau Farmland LCT.

7.4.13 Further LCAs are located within the Study Area. However, it is considered that these LCAs would not experience significant effects as a result of the Scheme. It is proposed to scope these LCAs out of the main assessment when considering the baseline condition of the surrounding Site context and the limited visibility towards the Site from the wider landscape, due to the local topography and presence of nearby mature landscape features.

7.4.14 In addition to the South Norfolk District Landscape Character Assessment the Broads National Park Authority undertook its own landscape character assessment (Broads National Park Landscape Character Assessment and Guidelines¹⁰² (revised in April 2021)). The assessment identifies distinct LCAs and sub-type Landscape Types (LTs). The nearest LCA to the Site is LCA1: Waveney-Outney Common and Bath Hills Area located, approximately 5km south-east of the Site at its nearest point. The ZTVs (see **Figure 7.1 (Volume II)**) indicate that there would be no intervisibility between the Scheme and this LCA including any of its Landscape Types.

Landscape Character of the Site

7.4.15 The Site has been divided into Sites 1 to 10 (with further sub-division and sub numbering of the sites where appropriate), together with the BESS and National Grid Substation Site. An overview of the landscape character and landscape features of each individual Site is set out below.

7.4.16 The CRC will comprise a linear route across the landscape between the Sites, connecting to the two 400kV Substations and the National Grid Substation. Although the CRC is not defined in detail at this stage, its corridor location allows sufficient definition for the purposes of this Scoping Report. A description of the

¹⁰¹ South Norfolk District. Landscape Character Assessment. <https://www.southnorfolkandbroadland.gov.uk/asset-library/imported-assets/luc-2001-landscape-assesment-volume-4-introduction.pdf> (Accessed 15.07.24)

¹⁰² Landscape Character Assessment (broads-authority.gov.uk)

Landscape Character and Features of the CRC for this Scheme component will be fully set out and assessed within the ES.

Site 1

- 7.4.17 Site 1 is located within a large-scale landscape of openness and exposure, with extensive arable farmland and large-scale fields. It is part of a very flat, elevated plateau landform. Hedgerows and hedgerows trees present at the northern, southern and eastern boundaries Site 1, serve to limit visibility to the surrounding landscape. Field boundaries to the east are more limited with occasional trees present. In addition, remanent field boundaries and ditches subdivide Site 1, again with occasional trees being present.
- 7.4.18 Site 1 sits within a landscape which is sparsely settled with scattered farmhouses present. The settlement edge of Great Moulton abuts the northern edge of Site 1, and several PRoW interact with Site 1. An existing 400KV OHL is a prominent feature.

Site 2

- 7.4.19 Site 2 is located within a large-scale landscape of openness and exposure, with extensive arable farmland. Site 2 is subdivided into a series of irregular small to medium-scale fields, defined by a series of ditches, watercourses and hedgerows. The farmland is flat, with little topographic variation, with expansive distant views possible. These are often interrupted by frequent hedgerows and hedgerow trees, together with isolated blocks of mixed woodland.
- 7.4.20 The A140 is located to the east of Site 2, a linear feature which cuts through the landscape. The elevated water tower on the A140 to the east of Site 2 is a prominent feature and is a local landmark.

Site 3

- 7.4.21 Site 3 is located within a large-scale landscape which is contained by well-defined small tree and woodland blocks (including Ancient Woodland) set within extensive arable farmland. Site 3 is subdivided into a series of irregular medium-scale fields, defined by a series of ditches, hedgerows and tree groups. The farmland is flat, with little topographic variation and expansive distant views possible (especially in sub-Site 3B). Sub-Site 3A is very enclosed by the presence of woodland which surrounds the Site on the eastern and western boundaries.
- 7.4.22 Site 3 sits within a landscape which is sparsely settled with scattered farmhouses present. The settlement edge of Hempnall Green and Lundy Green are visible to the north of Site 3. Sub-Site 3A also includes a number of local PRoW.

Site 4

- 7.4.23 Site 4 straddles the A140 the south of Tasburgh. It is set within a gently undulating to flat and sloping landscape. The landscape comprises medium to large open arable fields divided by remnant hedgerows (effectively now just individual trees)

and watercourses. Field-bounding vegetation and small- to medium- sized woodland groups result in a series of framed open views across the landscape.

- 7.4.24 Settlement influence is limited to individual buildings, including St Michael's Church, which is a Grade I listed building located immediately south of Site 4, and a further listed building on the A127. An existing solar farm (Hall Farm) abuts the western boundary of Site 4. A PRow traverses Site 4 on a north to south orientation leading from Stratton St Michael's to the B1527.

Site 5

- 7.4.25 Site 5 is located to the north of the Fritton Conservation Area and the Grade I listed St Catherine's Church. It comprises a series of small- to medium-sized open arable fields, these divided by a series of hedgerows and remnant hedgerows with hedgerow trees. The landscape is gently undulating to flat and sloping and includes small to medium sized woodland groups. This allows a series of framed open views across the landscape. Several PRow traverse Site 5 linking Fritton to the surrounding isolated properties set within the landscape. A recreational route, the Boudicca Way, is located to the west and south of Site 5 (approximately 500m at its closest).

Site 6

- 7.4.26 Site 6 comprises an irregular large-scale field, which is defined by established tree belt, hedgerow, and hedgerow trees along the eastern southern and western boundaries. To the north the landscape is more open, and the farmland gently slopes, with the land rising to the north allowing for more expansive distant views.
- 7.4.27 Settlement influence is limited to individual farm buildings with Hempnall Green located to the south. At this location intervisibility is restricted by intervening vegetation.

Site 7

- 7.4.28 Site 7 comprises a series of irregular small- to medium-sized fields, which are defined by a network of established tree belts, hedgerows and woodland groups. The blocks and belts of deciduous woodland (including Ancient Woodland) are of high ecological and visual quality. These create wooded horizons which add variety to and create intimacy within the landscape. The landform is typically flat and elevated across a large proportion of Site 7 sloping to the west and rising to the north.
- 7.4.29 The settlement pattern in this area is characterised by a small number of hamlets and villages, namely Saxlingham Green and Saxlingham Nethergate to the north, Hempnall to the south, and Tasborough to the west. These provide a wealth of historic interest with numerous listed buildings and the Saxlingham Green and Saxlingham Nethergate CA to north and Hempnall CA to south.

- 7.4.30 A diverse and high concentration of PRow connect the surrounding settlements to the rural landscape. These including important recreational routes such as the Boudicca Way which lies within 100m at its closest position to the Site.

Site 8

- 7.4.31 Site 8 comprises a series of irregular small- to medium-sized fields, which are defined by a remnant hedgerow network, which have now become isolated trees. In the wider landscape established tree belts and woodland groups are present, and these are of high ecological and visual quality including Ancient Woodland. These create wooded horizons which add variety to and create intimacy within the landscape. The landform is varied and undulating a result of the watercourse which runs in a valley through the centre of Site 8. The landform rises to the north towards the settlement edge of Shotesham (a designated CA).

- 7.4.32 A diverse and high concentration of PRow connect the surrounding settlements to the rural landscape. These include important recreational routes such as the Boudicca Way which lies within 100m at its closest position to the Site.

Site 9

- 7.4.33 Site 9 comprises a series of regular rectangular small- to medium-sized fields, which are defined by a remnant hedgerow network, now often visible as isolated trees. In the wider landscape there are established tree belts and woodland groups. The blocks and belts of deciduous woodland (including Ancient Woodland) of high ecological and visual quality create a wooded horizons which add variety to and create intimacy within the landscape. The landform is typically flat and elevated, rising slightly to the south-west corner. Subtle undulations create a localised high point in the centre of Site 9.

- 7.4.34 Site 9 is surrounded by a series of isolated residential properties. To the north the settlement edge of Brooke is apparent. This is part of a designated CA, containing many listed buildings. A single PRow traverses Site 9 on a north to south orientation connecting Brooke to the surrounding settlements within the rural landscape, as well as isolated residential properties.

Site 10

- 7.4.35 The landform of Site 10 slopes gently from east to west but is typically flat in nature with localised undulations. Site 10 comprises predominately arable farmland with medium- to large-scale fields with boundary hedges and hedgerow trees, and woodland blocks including Ancient Woodland. The landscape is typically enclosed by the tree cover and field-bounding hedgerows.

- 7.4.36 The landscape at this location is relatively sparsely settled, with occasional rural farmsteads visible in the immediate area surrounding Site 10.

The BESS Site

- 7.4.37 The BESS Site is located within a large-scale landscape of openness and exposure, with extensive arable farmland and large-scale fields. It is part of a very flat, elevated plateau. Hedgerows and hedgerows trees are present to the northern southern and eastern boundaries of the Site, and these serve to limit visibility to the surrounding landscape. Field boundaries to the east include remnant hedgerow trees and ditches which about the Site.
- 7.4.38 The BESS Site sits within a landscape which is sparsely settled with scattered farmhouses nearby. A series of PRoW follow the BESS Site's eastern and northern boundary.

National Grid Substation Site

- 7.4.39 The location of the square-shaped National Grid Substation Site is located approximately 470m south of Site 1A and 1B and situated to the west of the BESS Site. The National Grid Substation Site comprises of grassland and is bordered by sporadic trees, as well as Hundred Lane to the northern corner. The topography of the National Grid Substation Site is relatively flat, which is similar to the surrounding areas. The National Grid Substation Site is screened by trees and hedgerows which border the fields.
- 7.4.40 There is a PRoW which crosses the centre of the National Grid Substation Site 'Tivetshall St Margaret FP2' from the south to north and connects to the PRoW 'Great Moulton RB19' at the northern boundary. The northern boundary is also bordered to Hundred Lane.
- 7.4.41 The National Grid Substation Site is situated adjacent to the existing Norwich to Bramford 400kV overhead line and 560m east of the Norwich to London railway line.

Cable Route Corridor

- 7.4.42 The CRC will comprise a linear route across the landscape between the Sites, connecting to the two 400kV Substations and the National Grid Substation. The Landscape Character and Features of the CRC as defined at this stage can be broadly described as:
- A large-scale open landscape with occasional shallow valleys of and exposure;
 - Flat, elevated landform, with extensive arable farmland with large-scale fields;
 - Small blocks of mixed woodland creating wooded horizons which add variety to and create intimacy within the landscape;
 - Expansive skies that are a defining feature with distant views available;
 - Hedgerows are sparse with fuller enclosure along roadsides. Remnant hedgerow trees are an important feature;
 - Sparsely settled with scattered farmhouses, some linear settlement and hamlets, with the occasional larger villages such as Long Stratton; and
 - A diverse network of recreational footpaths.
- 7.4.43 A small part of the CRC (namely, CRC7) crosses the River Tas and which has a differing character to that set out above. Here the landscape is more contained

because of the location within a flat valley floor containing pastoral farmland and woodland present on the valley sides which together create a fringe to the surrounding areas of open arable land.

- 7.4.44 Once the CRC is fully defined in detail, a description of the Landscape Character and Features of the CRC for this Scheme component will be undertaken and fully set out and assessed within the ES.

People's Views and Visual Amenity

- 7.4.45 Potential visual receptors are defined as people who are visiting, living or working within the 2km Study Area. Given the largely rural nature of land within the Study Area, such visual receptors are broadly limited to users of the local road network, residents of settlements surrounding the Site such as Long Stratton, isolated rural properties, and recreational users of the PRow network in the vicinity of the Site.
- 7.4.46 **Table 7.2** below lists the selected representative view locations for visual assessment. These locations have been selected as they are representative of the range of receptors within the Study Area likely to experience significant visual effects upon people's views and visual amenity. These view locations are shown on **Figure 7.3 (Volume II)**, and also on the series of Preliminary ZTV analyses undertaken for Sites 1-10, the National Grid Substation Site and BESS (**Figures 7.1.1 to 7.1.11 (Volume II)**).

Consultation

- 7.4.47 In advance of the submission of this Scoping Opinion Request, the early opinion regarding a preliminary list of potential view locations has been sought with Norfolk County Council and South Norfolk and Broadland Council. A copy of the correspondence is contained at **Appendix 7.2 (Volume III)**. This was in order to support efforts in gathering baseline data and conducting field work given seasonal constraints.
- 7.4.48 A meeting was held with South Norfolk and Broadland Council on 27 November to discuss (amongst other environmental matters) view locations with a view to seeking agreement on them. Further emails were exchanged with the landscape officer at the council in December 2024 and January 2025, to seek feedback on the suggested view locations set out in **Table 7.2**. At time of writing, no confirmation of acceptance of the suggested locations has been received, therefore the preliminary list is presented below.
- 7.4.49 **Table 7.2** has been organised by individual Site and Scheme component. A preliminary view on the Scheme elements (BESS, CRC or individual Sites) likely to be visible is also provided. Given that the CRC will be underground, visibility of this element will be limited to the construction phase of the Scheme.

Table 7.2: Proposed View Locations (VL) and Reasons for Inclusion

VL number	Distance from Site (nearest element)	Reason for Selection	Representative Receptors	Likely elements within view
VL1/Sub	20m (BESS Site)	PRoW Great Moulton RB19	Recreational users	BESS, National Grid Substation
VL2/Sub	275m (National Grid Substation)	PRoW Tivetshall St. Margaret FP1	Recreational users	National Grid Substation, BESS
VL3/Sub	430m (National Grid Substation Site)	PRoW Tivetshall St. Margaret FP12 junction with Station Road	Recreational users, road users	National Grid Substation, BESS
VL4/Sub	240m (BESS)	PRoW Tivetshall St Margaret FP11 junction with Station Road	Recreational users, road users	National Grid Substation, BESS
VL5/Sub	80m (BESS)	PRoW Tivetshall St. Margaret FP4	Recreational users	National Grid Substation, BESS
VL6/Sub	465m (BESS)	PRoW Tivetshall St. Margaret FP5	Recreational users	BESS
VL7/Sub	1.2km (BESS)	Origin of PRoW Tivetshall St Margaret FP11/FP12	Recreational users	National Grid Substation, BESS
VL1/SITE 1	250m (Site 1)	PRoW Great Moulton FP16	Recreational users	Site 1, National Grid Substation, BESS
VL2/SITE 1	Adjacent (Site 1)	Junction of PRoW Great Moulton FP15/RB18	Recreational users	Site 1
VL3/SITE 1	Adjacent (Site 1)	SE of Great Moulton settlement	Residential/road users	Site 1
VL4/SITE 1	475m (Site 1)	PRoW Great Moulton FP12	Recreational users	Site 1, BESS, Site 2
VL1/SITE 2	420m (Site 2)	PRoW Wacton RB40	Recreational users	Site 2, CRC, Site 1
VL2/SITE 2	270m (Site 2)	Junction of PRoW Wacton RB31/Wacton FP43	Recreational users	Site 2, CRC, Site 1
VL3/SITE 2	50m (Site 2)	A140 Ipswich Road west of French's Farm	Road users	Site 2, CRC, Site 1
VL4/SITE 2	120m (Site 2)	PRoW Tivetshall St Margaret RB6	Recreational users	Site 2, CRC, Site 1
VL5/SITE 2	10m (Site 2)	PRoW Tivetshall St. Margaret FP8	Recreational users, residents, road users	Site 2

VL number	Distance from Site (nearest element)	Reason for Selection	Representative Receptors	Likely elements within view
VL6/SITE 2	40m (Site 2)	Junction of PRoW Tivetshall St Margaret FP10/BR9	Recreational users	Site 2, BESS, CRC
VL7/SITE 2	1.1km	Junction of PRoW Tivetshall St Mary FP6/FP7	Recreational users	Site 2
VL1/SITE 3	980m (Site 3)	Burntoak Lane (Access track)	Recreational users	Site 3, CRC
VL2/SITE 3	400m (Site 3)	PRoW Shelton FP7	Recreational users	Site 3, CRC
VL3/SITE 3	220m (Site 3)	PRoW Hempnall FP29	Recreational users	Site 3, CRC
VL4/SITE 3	Adjacent (Site 3)	PRoW Hempnall FP28	Recreational users	Site 3, CRC
VL5/SITE 3	100m (Site 3)	PRoW Hempnall FP25	Recreational users	Site 3
VL6/SITE 3	750m (Site 3)	PRoW Shelton FP11	Recreational users	Site 3, CRC
VL1/SITE 4	450m (Site 4)	PRoW Long Stratton FP7	Recreational users, residents	Site 4, CRC
VL2/SITE 4	Adjacent (Site 4)	PRoW Long Stratton FP6 junction with Church Lane	Recreational users, road users	Site 4, CRC
VL3/SITE 4	500m (Site 4)	Brand's Lane north of Tharston Hall	Residents, road users	Site 4
VL4/SITE 4	200m (Site 4)	Brand's Lane east of Shrublands	Residents, road users	Site 4
VL5/SITE 4	200m (Site 4)	PRoW Long Stratton FP2	Recreational users, road users	Site 4, CRC
VL6/SITE 4	175m (Site 4)	PRoW Morningthorpe FP33	Recreational users, residents, road users	Site 4, CRC
VL7/SITE 4	Internal (Site 4)	Junction of PRoW Long Stratton FP3/FP4	Recreational users	Site 4, CRC
VL8/SITE 4	Adjacent (Site 4)	PRoW Long Stratton FP1	Recreational users, road users	Site 4
VL1/SITE 5	Adjacent (Site 5)	PRoW Morningthorpe RB4	Recreational users, road users	Site 5, CRC
VL2/SITE 5	Adjacent (Site 5)	PRoW Morningthorpe RB4 at junction with B1527	Recreational users, road users	Site 5, CRC
VL3/SITE 5	Adjacent (Site 5)	PRoW Morningthorpe FP5	Recreational users	Site 5

VL number	Distance from Site (nearest element)	Reason for Selection	Representative Receptors	Likely elements within view
VL4/SITE 5	Internal (Site 5)	PRoW Morningthorpe FP5 north of junction with FP9	Recreational users	Site 5
VL5/SITE 5	Adjacent (Site 5)	Origin of PRoW Morningthorpe FP9 on The Street	Recreational users, residents, road users	Site 5, CRC
VL6/SITE 5	Adjacent (Site 5)	PRoW Morningthorpe FP17	Recreational users	Site 5
VL7/SITE 5	750m (Site 5)	PRoW Morningthorpe FP18, near Fritton	Recreational users, residents	Site 5, CRC
VL1/SITE 6	540m (Site 6)	PRoW Hempnall FP12	Recreational users	Site 6, CRC
VL2/SITE 6	160m (Site 6)	PRoW Hempnall FP11	Recreational users	Site 6, CRC, Site 7
VL3/SITE 6	900m (Site 6)	Oxnead Lane north of Red House Farm	Road users	Site 6, CRC, Site 7
VL4/SITE 6	Adjacent (Site 6)	PRoW Hempnall FP14	Recreational users, residents, road users	Site 6
VL1/SITE 7	Adjacent (Site 7)	Boudicca Way LDP on Fairstead Lane	Recreational users, road users	Site 7
VL2/SITE 7	180m (Site 7)	Junction with Boudicca Way/PRoW Saxlingham Nethergate FP26	Recreational users, road users	Site 7, CRC
VL3/SITE 7	540m (Site 7)	Junction with Boudicca Way/PRoW Saxlingham Nethergate FP25	Recreational users, road users	Site 7
VL4/SITE 7	Adjacent (Site 7)	PRoW Saxlingham Nethergate FP25	Recreational users	Site 7
VL5/SITE 7	Internal (Site 7)	Junction of PRoW Saxlingham Nethergate FP12/FP14	Recreational users	Site 7
VL6/SITE 7	230m (Site 7)	Junction of PRoW Saxlingham Nethergate RB17/FP15	Recreational users	Site 7
VL7/SITE 7	Adjacent (Site 7)	PRoW Saxlingham Nethergate FP13 on The Green	Recreational users, residents, road users	Site 7
VL8/SITE 7	220m (Site 7)	PRoW Saxlingham Nethergate FP10	Recreational users	Site 7
VL9/SITE 7	Adjacent (Site 7)	PRoW Saxlingham Nethergate FP9	Recreational users	Site 7

VL number	Distance from Site (nearest element)	Reason for Selection	Representative Receptors	Likely elements within view
VL10/SITE 7	Adjacent (Site 7)	Fylands Road	Road users	Site 7, CRC
VL11/SITE 7	40m (Site 7)	PRoW Shotesham FP21	Recreational users (broadly residential Woodton Farm)	Site 7
VL12/SITE 7	Adjacent (Site 7)	Woodton Road north of Frog's Farm	Road users (broadly residential on Springwood Lane)	Site 7, CRC
VL13/SITE 7	Adjacent (Site 7)	PRoW Woodton RB10	Recreational users	Site 7, CRC
VL14/SITE 7	Internal (Site 7)	Bussey's Loke (road)	Road users	Site 7, CRC
VL15/SITE 7	330m (Site 7)	Origin of PRoW Hempnall FP5	Recreational users	Site 7, CRC
VL16/SITE 7	Internal (Site 7)	Junction of PRoW Hempnall FP5/Saxlingham Nethergate FP27	Recreational users	Site 7
VL17/SITE 7	Adjacent (Site 7)	Junction of PRoW Saxlingham Nethergate FP10/FP11	Recreational users	Site 7
VL18/SITE 7	Adjacent (Site 7)	PRoW Saxlingham Nethergate FP12 on Broaden Lane	Recreational users, road users	Site 7
VL19/SITE 7	Adjacent (Site 7)	PRoW Hempnall BR30	Recreational users	Site 7
VL20/SITE 7	Adjacent (Site 7)	PRoW Hempnall FP2 on Fairstead Lane	Recreational users, road users	Site 7, CRC
VL1/SITE 8	800m (Site 8)	Junction of PRoW Saxlingham Nethergate FP7/FP8/Boudicca Way	Recreational users	Site 8, CRC
VL2/SITE 8	160m (Site 8)	Origin of PRoW Shotesham FP18 on Wash Lane	Recreational users, residents, road users	Site 8
VL3/SITE 8	Adjacent (Site 8)	PRoW Shotesham FP16 on Market Lane	Recreational users, road users	Site 8, CRC
VL4/SITE 8	Adjacent (Site 8)	Market Lane south of Market Lane Farm	Residents, road users	Site 8, CRC
VL5/SITE 8	130m (Site 8)	Junction of PRoW Shotesham FP16/FP17	Recreational users	Site 8, CRC

VL number	Distance from Site (nearest element)	Reason for Selection	Representative Receptors	Likely elements within view
VL6/SITE 8	Adjacent (Site 8)	Origin of PRoW Shotesham FP22 on Brooke Road	Recreational users	Site 8, CRC
VL7/SITE 8	40m (Site 8)	PRoW Shotesham FP19 on southern Site boundary	Recreational users	Site 8, CRC
VL8/SITE 8	Adjacent (Site 8)	Dawson's Farm on Wash Lane	Residents, road users	Site 8, CRC
VL1/SITE 9	Internal (Site 9)	PRoW Brooke FP6	Recreational users	Site 9, CRC
VL2/SITE 9	Adjacent (Site 9)	Mill Lane at Brooke View Barns	Residents, road users	Site 9, CRC
VL3/SITE 9	125m (Site 9)	Junction of Mill Lane and Woodton Road at Oldhouse Farm	Residents, road users	Site 9, CRC
VL4/SITE 9	130m (Site 9)	PRoW Brooke BR5 near Wood Farm	Recreational users, residents, road users	Site 9, CRC
VL5/SITE 9	Adjacent (Site 9)	PRoW Brooke FP6 south of High Green Gardens	Recreational users, residents, road users	Site 9, CRC
VL6/SITE 9	100m (Site 9)	Littlebeck Lane near Littlebeck Farm	Residents, road users	Site 9
VL1/SITE 10	Adjacent (Site 10)	Harvey Lane west of Nene Valley Farm	Road users	Site 10, CRC
VL2/SITE 10	120m (Site 10)	Harvey Lane at commercial estate	Road users	Site 10, CRC
VL3/SITE 10	280m (Site 10)	Unnamed road leading south of Swargate Lane towards The Bungalow	Residents	Site 10, CRC
VL4/SITE 10	Adjacent (Site 10)	Ugate Road at junction with Seething Airfield entrance	Road users	Site 10, CRC
VL5/SITE 10	Adjacent (Site 10)	PRoW Hedenham RB9 on Harvey Lane/Ugate Road	Recreational users, road users	Site 10, CRC
VL6/SITE 10	380m (Site 10)	Low Road east of B1331 Norwich Road	Road users	Site 10
VL7/SITE 10	310m (Site 10)	Junction of B1332 Norwich Road and The Street	Residents, road users	Site 10
VL8/SITE 10	Adjacent (Site 10)	PRoW Woodton RB3 on Pound Lane (Track)	Recreational users	Site 10, CRC

VL number	Distance from Site (nearest element)	Reason for Selection	Representative Receptors	Likely elements within view
VL9/SITE 10	870m (Site 10)	PRoW Seething FP11 near residential property	Recreational users, residents	Site 10, CRC
VL1/CRCC	190m	Common Road near Parish Farm	Residents, road users	CRC, Site 2
VL2/CRCC	220m	Wood Lane near Ashleigh Farm	Residents, road users	CRC, Site 2
VL3/CRCC	420m	PRoW Long Stratton FP26 near Hawthorn Farm	Recreational users	CRC
VL4/CRC	Adjacent	Hall Lane at junction of Long Stratton FP19	Recreational users, residents	CRC
VL5/CRC	Adjacent	PRoW Morningthorpe RB22 / Morningthorpe FP24 near Friars Farm	Recreational users, residents	CRC, Site 4
VL6/CRC	Internal	Brick Kiln Lane at junction of PRoW Morningthorpe FP21	Recreational users, road users	CRC, Site 4, Site 5
VL7/CRC	Internal	PRoW Hempnall FP31	Recreational users	CRC, Site 3, Site 5
VL8/CRC	Adjacent	Junction of PRoW Morningthorpe FP8/FP29	Recreational users	CRC, Site 5, Site 6
VL9/CRC	Adjacent	PRoW Morningthorpe FP2/Boudicca Way north of Devil's Wood	Recreational users	CRC, Site 5, Site 4
VL10/CRC	60m	PRoW Morningthorpe FP33/Boudicca Way	Recreational users	CRC, Site 5, Site 4
VL11/CRC	Internal	PRoW Hemplingall FP34/Boudicca Way at Fairstead Lane	Recreational users, road users	CRC, Site 4, Site 7
VL12/CRC	Internal	PRoW Hempnall FP11 on Bussey's Loke	Recreational users, road users	CRC, Site 6, Site 7
VL13/CRC	500m	PRoW Woodton RB10/Nobb's Lane (Track) west of Winter's Grove	Recreational users, road users	CRC, Site 6, Site 7
VL14/CRC	60m	PRoW Woodton FP1 near Ash's Beds (woodland)	Recreational users, road users	CRC, Site 7

VL number	Distance from Site (nearest element)	Reason for Selection	Representative Receptors	Likely elements within view
VL15/CRC	1.3km	Southern origin of PRow Woodton BR5 west of Woodton	Recreational users, residents, road users	CRC, Site 7, Site 10

7.5 Embedded Mitigation

- 7.5.1 The Scheme is evolving through an iterative design process and will continue to develop following receipt of a Scoping Opinion. A series of design principles will be embedded into the design evolution and will include the consideration of landscape and visual impacts which, given its significance as an environmental topic, will be one of the key criteria for assessment and sensitive design modification. It will also be an important component in the eventual assimilation of the Scheme within its setting.
- 7.5.2 Embedded mitigation and design principles for the Scheme will be referenced in the Commitments Register. They are likely to include the following:
- Restricting development in environmentally sensitive locations and applying appropriate development offsets and buffers from receptors, as well as landscape features including PRow, ancient woodland, hedgerows and watercourses;
 - Retention and enhancement of existing vegetation throughout the Site, wherever possible;
 - Reinforcement of existing field boundaries, where appropriate; and
 - New soft landscape planting and features to provide visual screening, break up the extent of visible infrastructure, and link existing habitats to provide enhanced green infrastructure and biodiversity opportunities.
- 7.5.3 An OLEMP and supporting landscape plans will be prepared to accompany the DCO Application, together with an OCEMP and ODEMP. These will detail the planting strategy and its management to ensure its establishment and successful implementation throughout construction, operation and eventual decommissioning.

7.6 Methodology

- 7.6.1 A summary of the proposed methodology for the Landscape and Visual Impact Assessment (LVIA) has been set out in **Appendix 7.1 (Volume III)**.
- 7.6.2 Determining the magnitude of effect will be assessed in terms of its size or scale which is based on professional judgement (**Appendix 7.1** Table 7.1.6), the geographical extent of the area influenced (**Appendix 7.1** Table 7.1.7), its duration (**Appendix 7.1** Table 7.1.8) as well as the degree of reversibility, which is based on professional judgement about the prospects and practicality of the effect being reversed (**Appendix 7.1** Table 7.1.9).

- 7.6.3 The significance of landscape and visual effects will be determined from a combination of the receptor sensitivity and the magnitude of effects (**Appendix 7.1** Table 7.1.16). Minor and negligible levels of significance are identified as ‘not significant’.

7.7 Likely Significant Effects

Potential Landscape and Visual Effects

- 7.7.1 Potential landscape and visual effects arising from the Scheme during its construction are likely to comprise reversible and temporary effects as a result of increased vehicle movements and activity during construction and decommissioning of the Scheme.
- 7.7.2 Potential landscape and visual effects arising from the Scheme during the operation phase are likely to comprise:
- Reversible and long-term effects on landscape features of the Site;
 - Reversible and long-term effects to landscape character and views from sensitive receptors in the vicinity of the Site; and
 - Permanent and medium- to long-term effects to landscape features and character resulting from the introduction and establishment of new landscape measures and features.
- 7.7.3 Potential landscape and visual effects arising from the Scheme during the decommissioning phase are likely to be similar in nature to those arising from the construction phase.
- 7.7.4 During the operation of the Scheme panel and battery replacement will occur. The likely significant effects of this are considered to be no greater than reported during the construction phase. Further, as a result of the implementation of the proposed landscape strategy for the Scheme including retention of existing vegetation where practicable and supplementary planting, effects on landscape character and visual receptors are likely to be much less. For this reason, panel and battery replacement are not considered further within this assessment.

Likely Significant Effects

- 7.7.5 Likely significant effects are predicted to occur on the following CAs:
- Wacton;
 - Long Stratton;
 - Fritton;
 - Hempnall;
 - Saxlingham Nethergate;
 - Saxlingham Green; and
 - Brooke.
- 7.7.6 At this stage it is not possible to confirm that significant landscape or visual effects will not occur to areas of Open Access Land given the proximity of this receptor

type to the Site. An assessment of Open Access Land will be undertaken and reported in the ES.

- 7.7.7 Likely significant effects are predicted to occur to landscape character, particularly on land within the Site boundary following the introduction of the Scheme. There is also likely to be the potential for wider effects on the following LCAs:
- A1: Tas Rural River Valley;
 - B1: Tas Tributary Farmland;
 - B4: Waveney Tributary Farmland;
 - B5: Chet Tributary Farmland;
 - C2: Thurlton Tributary Farmland with Parkland; and
 - E2: Great Moulton Plateau Farmland.
- 7.7.8 There is the potential for significant effects to occur to other landscape character and landscape features. These are proposed to be assessed in detail as part of the ES. It is anticipated that with appropriate mitigation that, over time and enshrined within Scheme commitments and delivery vehicles such as the LEMP, effects will reduce as proposed measures establish. These will help to assimilate the Scheme into the landscape in the longer term.
- 7.7.9 With regard to visibility, the assessment of view locations illustrated on **Figure 7.2 (Volume II)** will provide information on the perceived significance of effects from representative locations within the 2km Study Area. View locations will be agreed with the Local Planning Authorities as described above. The preliminary selection has been chosen to represent a suitable geographical spread and range of receptors within the Study Area.
- 7.7.10 The Landscape and Visual chapter of the ES will take cognisance of the Glint and Glare assessment (which is scoped out as a separate ES chapter as described previously) and which will be appended to the ES. Where appropriate, the impacts of reflectivity will be considered within the assessment of visual effects.

Cumulative Effects

- 7.7.11 The assessment will undertake a cumulative assessment of landscape and visual effects that will consider the Scheme along with the other committed developments identified as part of the assessment process insofar as they affect landscape assets. The approach and scope of developments to be included within the cumulative assessment will be agreed with relevant stakeholders, and in accordance with relevant legislation and PINS advice.

7.8 Impacts Scoped Out of the Assessment

- 7.8.1 As a result of the Scheme, no significant landscape effects are predicted for the Broads National Park, including its setting. This conclusion takes into account the stated Special Qualities of the Broads National Park. The Scheme will have no direct effects on land within these designations; and although indirect effects may occur as a result of the Scheme, these are not predicted to be significant in nature given a combination of the overall distance between the designation and the Site,

the general low lying and level topography of the Site (as demonstrated on **Figure 7.4 (Volume II)**), and presence of intervening landscape features (trees and hedgerows) which collectively restrict intervisibility.

- 7.8.2 No potential landscape or visual significant effects are predicted on the following CAs given that none lie within the Site and their separation distances from the Site. Where any indirect visual effects of the Scheme occur, these are considered to not be significant on the following CAs:
- Pulham Market;
 - Shotesham;
 - Seething;
 - Hedenham; and
 - Howe.
- 7.8.3 No potentially significant landscape or visual effects are predicted for the RPG of Special Historic Interest located within the Study Area, namely Rainthorpe Hall and Ditchingham Hall, which are both located at the outer edge of the Study Area and outside of the zone of visibility identified in the ZTVs (**Figures 7.1.1 to 7.1.11 (Volume II)**).
- 7.8.4 No significant landscape or visual effects are predicted for the National Cycle Network given that none lie within the Site, and any indirect effects incurred to the Network in the wider landscape as a result of the Scheme would not be significant.
- 7.8.5 No significant effects are predicted for National Landscape Character Area¹⁰³ 83: South Norfolk and High Suffolk Claylands in view of the dispersed nature of the footprint of the Scheme within the much wider extent of that LCA.
- 7.8.6 No significant landscape effects are predicted for the South Norfolk District¹⁰⁴ LCAs of: A5 Waveney Rural River Valley; B2 Tiffey Tributary Farmland; B3 Rockland Tributary Farmland; D1 Wymondham Settled Plateau Farmland; D2: Poringland Settled Plateau Farmland E1 Ashwelthorpe Plateau Farmland. These receptors are remote from the Site and therefore the potential for effects is limited to indirect effects only. Given that the Scheme will seek to retain existing defining features (woodland and hedgerows within the agricultural landscape) and typically result in low height development not readily visible from the wider landscape, indirect effects are not expected to be significant. Furthermore, any potential effects will further decrease in relation to increasing distance from the Site.
- 7.8.7 The Site and 2km Study Area do not lie within a designated 'dark sky area'; and given the nature of the Scheme, permanent lighting during operation would not be required. Instead, it is assumed that lighting would be limited to emergency and motion-activated security lighting around ancillary structures.

¹⁰³ Natural England (2014) *National Character Area Profiles*: <https://nationalcharacterareas.co.uk/> (Accessed 15.07.24)2. South Norfolk District. Landscape Character

¹⁰⁴ South Norfolk District. Landscape Character Assessment. <https://www.southnorfolkandbroadland.gov.uk/downloads/-file/1319/land-use-consultants-2001-landscape-assessment-volume-4-introduction> (Accessed 15.07.24)

- 7.8.8 Similarly, lighting effects during construction and decommissioning are expected to be limited in extent, intensity and duration with best practice and mitigation measures followed to limit light spill and nuisance. Therefore, although there may be a slight increase in these factors during the winter months, they are predicted to remain insignificant overall.
- 7.8.9 Therefore, night-time lighting effects from a landscape and visual perspective are proposed to be scoped out of the assessment for the construction, operational and decommissioning phases. As detailed in **Section 5.8** a Lighting Strategy will be developed to secure measures necessary to avoid and mitigation lighting effects.

7.9 Proposed Approach to the ES

7.9.1 The proposed approach to the ES for Landscape and Visual is as follows:

- Identification and recording of the baseline environment through a combination of desk study and Site visits (including the worst-case winter scenario);
- Consultation with relevant stakeholders during this scoping and pre-assessment period to agree landscape and visual assessment methodology and view locations illustrated on the Preliminary ZTVs and View Locations Plan;
- Identification of mitigation measures as required, following an iterative design process;
- Embedding of landscape and visual mitigation strategy into the final design aspirations;
- Assessment of the reasonable worst-case for landscape and visual receptors predicted to experience significant effects as a result of the Scheme during construction, operation and following successful implementation of the mitigation measures;
- Assessment of the Scheme's likely significant cumulative effects with other developments, including Hall Farm Solar Farm, as appropriate; and
- Outline summary and conclusions following assessment.

7.10 Summary of Effects & Impacts

7.10.1 **Table 7.3** below outlines receptors which are proposed to be scoped in or out of the landscape and visual assessment and provides their predicted magnitude of effect, level of sensitivity, and likely significance of effect at scoping stage.

Table 7.3: Summary of Effects & Impacts

Receptor	Anticipated importance / sensitivity	Anticipated Magnitude	Likely Significance of effect at Scoping Stage	Proposed Approach – Scoped in / Scoped Out
The Broads National Park (BNP) and its setting	High to Very High	Indistinct to Negligible	Negligible to Minor (Not Significant)	Scoped Out
National Character Area 83: South Norfolk and High Suffolk Claylands	Medium	Moderate	Moderate (Significant)	Scoped In

South Norfolk District: A1 Tas Rural River Valley; B1: Tas Tributary Farmland; B4: Waveney Tributary Farmland; B5: Chet Tributary Farmland; C2: Thurlton Tributary Farmland with parkland; E2: Great Moulton Plateau Farmland.	Medium	Negligible to Major	Negligible to Major (Not Significant to Significant)	Scoped In
Non-designated landscape features of the Site	Medium	Major	Major (Significant)	Scoped In
Listed Buildings	High	Negligible to Major	Negligible to Major (Not Significant to Significant)	Scoped In within Chapter 9 Cultural Heritage
Scheduled Monuments	High	Slight to Moderate	Negligible to Moderate (Not Significant to Significant)	Scoped In within Chapter 9 Cultural Heritage
Conservation Areas: Pulham Market; Shotesham; Seething; Hedenham; Howe.	High	Negligible	Negligible (Not Significant)	Scoped Out
Conservation Areas: Wacton, Long Stratton, Fritton, Hempnall, Saxlingham Nethergate, Saxlingham Green, Brooke,	High	Negligible to Major	Negligible to Major (Not Significant to Significant)	Scoped In
Register of Parks and Gardens of Special Historic Interest (RPG)	High	Negligible	Negligible (Not Significant)	Scoped Out
Recreational Routes (PRoWs)	Medium to High	Negligible to Major	Negligible to Major (Not Significant to Significant)	Scoped In
National Cycle Routes	Medium to High	Indistinct to Slight	Negligible (Not Significant)	Scoped Out
Open Access Land	Medium	Slight to Moderate	Minor to Moderate (Not Significant to Significant)	Scoped In
People's Views and Visual Amenity within the Study Area including reference to glint and glare	High	Indistinct to Major	Negligible to Major (Not Significant to Significant)	Scoped In

People's Views and Visual Amenity beyond the Study Area	Low to High	Indistinct to Major	Negligible to Major (Not Significant)	Scoped Out
Night-time views and perception of the night sky	Low	Negligible	Negligible (Not Significant)	Scoped Out

Assumptions and Limitations

- 7.10.2 In accordance with the EU Directive 2014/52/EU and GLVIA3, the LVIA will identify the likely significant landscape and visual effects arising from the Scheme, rather than identifying every conceivable landscape and visual effect.
- 7.10.3 The LVIA will assume the maximum parameters for the Scheme and the worst-case scenario.
- 7.10.4 The LVIA and consideration of visual effects arising from the Scheme will be made from publicly-accessible locations, with no assessment of private views.
- 7.10.5 Baseline photography from representative view locations (to be agreed) will be undertaken in a winter and summer scenario. The winter scenario represents a worst case, as vegetation is generally without leaves and therefore visibility is increased within the landscape.
- 7.10.6 The LVIA will provide baseline information on cultural heritage designations and protected trees and vegetation (ancient woodland), as these receptors inform overall judgements on landscape value. As receptors in their own right, they will be assessed within **Chapter 9 Cultural Heritage** and **Chapter 8 Ecology and Biodiversity** respectively.

8 Ecology and Biodiversity

8.1 Introduction

- 8.1.1 An assessment of the likely significant effects of the Scheme on the environment with respect to Ecology and Biodiversity will be undertaken. This Chapter provides a summary of baseline ecological information collected to date, and the further baseline data collection to be undertaken to inform the assessment of the likely significant effects of the construction, operation (and maintenance) and decommissioning phases of the Scheme, as described in **Chapter 3 Scheme Description** of this scoping report. An overview of assessment methodology and likely significant effects proposed to be assessed within the ES chapter, is also provided.
- 8.1.2 Baseline data has been compiled from a desk study, as well as from habitat surveys, as described later in this Chapter. Additional species-specific surveys are currently being undertaken to inform the Scheme DCO Application. Further habitat and species surveys will be undertaken and presented within the ES.
- 8.1.3 The Ecology and Biodiversity chapter of the ES will set out the ecological baseline and an assessment of potential impacts and subsequent effects on any identified important ecological features. It will provide details of the agreed avoidance, mitigation, compensation and enhancement measures required to ameliorate potentially significant adverse effects and confirm the residual effects once these measures have been implemented.
- 8.1.4 This Chapter is supported by:
- **Figure 8.1 (Volume II):** International/European Statutory Designated Sites¹⁰⁵ within 0km to 10km of the Site;
 - **Figure 8.2 (Volume II):** National and Locally Statutory Designated Sites¹⁰⁶ within 0km to 5km of the Site;
 - **Figure 8.3 (Volume II):** Non-Statutory Designated Sites¹⁰⁷ within 0km to 2km of the Site; and
 - **Figures 8.4 to 8.35 (Volume II):** Baseline Habitat Survey Results.

8.2 General Site Description

- 8.2.1 The Site is described in **Chapter 2 Site Description** of this scoping report. The Sites are typical of the wider South Norfolk landscape, comprising moderately-sized agricultural fields, largely in arable production and separated by a network of hedgerows, ditches and occasional blocks of woodland habitats. The soils are a mix of loamy and clay soils with impeded drainage, and slowly permeable seasonally

¹⁰⁵ For the purpose of this report International/European Statutory Designated Sites relate to Special Areas of Conservation (SAC's), Special Protection Areas (SPA's), and Ramsar sites.

¹⁰⁶ For the purpose of this report national Statutory Designated Sites relate to Sites of Special Scientific Interest (SSSI) and local Statutory Designated Sites relate to Local Nature Reserves (LNR's).

¹⁰⁷ For the purpose of this report Non-Statutory Designated Sites relate to County Wildlife Sites (CWS's) and Roadside Nature Reserves (RNR's).

wet slightly acid but base-rich soils. These soil types are generally suitable for a wide range of arable produce including cereals, sugar beet and oilseed rape.

8.3 Study Area

- 8.3.1 The proposed Study Areas to inform the assessment of impacts to ecological features are set out below. Due to differing Zones of Influence (Zol) within which ecological features may be subject to impacts and subsequent effects during the Scheme's construction, operation and decommissioning phases, a range of Study Areas have been used. The selection of the Study Areas has been informed by the Chartered Institute of Ecology and Environmental Management (CIEEM) *Guidelines for Ecological Impact Assessment in the UK and Ireland*¹⁰⁸.
- 8.3.2 Based on this CIEEM guidance, the Zol for the Scheme will vary for different ecological features depending on their sensitivity to an environmental change. The identified Zol have been used to establish the scope of baseline ecological surveys and the extent of survey area and desk study.
- 8.3.3 The Zol within and surrounding the Scheme adopted for the desk study will consequently comprise:
- **Statutory designated sites:** within 0km-5km of the Sites and Cable Route Corridor (CRC), extended to 10km for European/International Sites (comprising Special Protection Areas (SPA), Special Areas of Conservation (SAC) and Ramsar sites¹⁰⁹);
 - **Non-statutory designated sites:** within 2km of the Sites and CRC;
 - **Priority habitats:** within 2km of the Sites and CRC (e.g. Ancient Woodland and Natural Environment and Rural Communities (NERC) Act 2006 Section 41 Priority Habitats)¹¹⁰; and
 - **Protected and priority species:** within 2km of the Sites and CRC.
- 8.3.4 For field surveys, the proposed Study Area comprises all land within the Scheme. For some species, including great crested newts *Triturus cristatus* and badgers *Meles meles*, this will be extended beyond the Site boundary where appropriate and where access to the land is secured. Current proposed Study Area boundaries consist of:
- **Habitats:** land within the Sites and CRC;
 - **Invertebrates:** land within the Sites;
 - **Breeding birds:** land within the Sites;
 - **Great crested newts:** on-Site ponds/waterbodies and accessible ponds/waterbodies within 250m of the Sites and CRC;
 - **Bats (roosting):** a ground-level assessment of all trees within the Sites;

¹⁰⁸ CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.3*. Chartered Institute of Ecology and Environmental Management, Winchester. Available at: <https://cieem.net/wp-content/uploads/2018/08/EcIA-Guidelines-v1.3-Sept-2024.pdf> (accessed October 2024)

¹⁰⁹ Based on professional judgement and guidance provided within Nature Scot. (2016). *Assessing Connectivity with Special Protection Areas (SPAs) – Version 3*. Available at: <https://www.nature.scot/sites/default/files/2022-12/Assessing%20connectivity%20with%20special%20protection%20areas.pdf> (accessed September 2024).

¹¹⁰ This is a standard requirement to inform planning applications, as detailed within CIEEM. (2020). *Guidelines for Accessing, Using and Sharing Biodiversity Data in the UK*. Chartered Institute of Ecology and Environmental Management, Winchester. Available at: <https://cieem.net/wp-content/uploads/2016/03/Accessing-and-Using-Biodiversity-Guidance-Version-3.pdf> (accessed September 2024).

- Bats (foraging/commuting): land within the Sites;
- **Badger:** land within the Sites (and surrounding 30m) and CRC (and surrounding 30m); and
- **Water vole/otter:** If habitats within 10m of a ditch/watercourse banks are considered likely to be impacted by proposed construction activities, all adjoining watercourses/ditches within 100m will be subject to targeted surveys within the Sites and CRC.

8.4 Overview of Legislation, Policy and Guidance

8.4.1 The Ecology and Biodiversity Chapter will be informed by the following international and national legislation with regards to species and habitats:

- The Conservation of Habitats and Species Regulations 2017 (as amended);
- The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019;
- Convention on Wetlands of International Importance especially as Waterfowl Habitat 1971 (hereafter referred to as the 'the Ramsar Convention');
- The Wildlife and Countryside Act 1981 (as amended);
- The Environment Act 2021;
- Natural Environment and Rural Communities (NERC) Act (2006);
- Infrastructure Planning (Environmental Impact Assessment) Regulations 2017;
- Countryside and Rights of Way (CROW) Act 2000;
- Protection of Badgers Act 1992;
- The Wild Mammals (Protection) Act 1996;
- Hedgerow Regulations 1997; and
- The Invasive Non-native Species (Amendment etc.) (EU Exit) Regulations 2019.

8.4.2 The following national policy documents will inform the final Ecology and Biodiversity Chapter within the ES:

- Overarching National Planning Statement for Energy (EN-1)¹¹¹;
- National Planning Statement for Renewable Energy Infrastructure (EN-3)¹¹²; and
- National Planning statement for Electricity Networks Infrastructure (EN-5)¹¹³.
- The National Planning Policy Framework (NPPF)¹¹⁴;

8.4.3 The following local policy documents will inform the final Ecology and Biodiversity Chapter within the ES:

- Greater Norwich Local Plan (Policy 3)¹¹⁵; and

¹¹¹ Available at: <https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1> (accessed November 2024).

¹¹² Available at: <https://www.gov.uk/government/publications/national-policy-statement-for-renewable-energy-infrastructure-en-3> (accessed November 2024).

¹¹³ Available at: <https://www.gov.uk/government/publications/national-policy-statement-for-electricity-networks-infrastructure-en-5> (accessed November 2024).

¹¹⁴ Available at: <https://www.gov.uk/guidance/national-planning-policy-framework> (accessed November 2024).

¹¹⁵ Available at: <https://www.gnlp.org.uk/sites/gnlp/files/2024-03/Strategy%20-%20draft%20final%202.pdf> (accessed November 2024).

- The Greater Norwich Local Plan Growing Stronger Communities Together, Document 1 - The Strategy¹¹⁶.

8.4.4 The following guidance documents / resources will be referred to and inform the final Ecology and Biodiversity Chapter within the ES:

- Nationally Significant Infrastructure Projects: Technical Advice Page for Scoping Solar Development¹¹⁷;
- Chartered Institute of Ecology and Environmental Management (CIEEM) *Guidelines for Ecological Impact Assessment in the UK and Ireland*;
- Building Research Establishment (BRE) Biodiversity Guidance for Solar Developments;
- Norfolk Habitat and Species Action Plans¹¹⁸;
- Claylands Wilder Connections¹¹⁹;
- South Norfolk Council Interim Advice Note for Designing Strategically Significant Biodiversity Net Gain (BNG)¹²⁰; and
- Norfolk Local Nature Recovery Strategy (expected in 2025)¹²¹.

8.4.5 In addition to the above-named resources the final Ecology and Biodiversity Chapter within the ES will refer to multiple species/habitat/site specific guidance documents, informed by the results of the baseline ecology surveys discussed above in **Section 8.3**.

8.5 Baseline Environment

8.5.1 Baseline information in relation to ecological features which may be affected by the Scheme will be collected through desk study and ecological field surveys.

8.5.2 Full details of baseline studies, field surveys and any consultation will be provided within the ES. Appropriate survey areas have been adopted or will be adopted or updated as necessary during the preparation of the EIA to account for any changes to the design of the Scheme as it evolves¹²², and where permitted land access allows.

Initial Desk Study

8.5.3 The following organisations/web resources were consulted during the desk study:

¹¹⁶ Available at: https://www.gnlp.org.uk/sites/gnlp/files/2024-11/Adopted_GNLP_2024_STRATEGY_final_24-10-18_0.pdf (accessed November 2024).

¹¹⁷ Available at: https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-technical-advice-page-for-scoping-solar-development?utm_medium=email&utm_campaign=govuk-notifications-topic&utm_source=2ef29f6b-8e65-4f1a-b8c2-0cba49981a46&utm_content=daily (accessed October 2024).

¹¹⁸ Available at: <https://www.norfolkbiodiversity.org/habitats-and-species/> (accessed November 2024).

¹¹⁹ Available at: <https://www.norfolkwildlifetrust.org.uk/claylands-wilder-connections> (accessed November 2024).

¹²⁰ Available at: <https://www.southnorfolkandbroadland.gov.uk/asset-library/imported-assets/06.02.24-snc-bng-advice-note.pdf> (accessed November 2024).

¹²¹ Available at: <https://www.norfolk.gov.uk/article/39010/What-a-Local-Nature-Recovery-Strategy-is> (accessed November 2024).

¹²² Such design evolution would include the refinement of the CRC to a 50m working corridor.

- Norfolk Biodiversity Information Service¹²³
- Natural England: Designated Sites View¹²⁴
- Natural England: Access to Evidence¹²⁵
- Ramsar Sites Information Service¹²⁶
- Multi-Agency Geographic Information Centre (MAGIC)¹²⁷
- Online aerial imagery¹²⁸.

8.5.4 The desk study was undertaken in accordance with the best practice methodologies current at the time of commissioning (Partnership for Biodiversity in Planning, 2019)¹²⁹.

Statutory Designated Sites

8.5.5 No international/European designated sites for nature conservation are present within the Sites or the CRC.

8.5.6 Internationally/European designated sites present within 10km of the Sites and/or the CRC are described in **Table 8.1** (below) and presented on **Figure 8.1: Statutory Designated Sites Within 10km of the Sites**.

Table 8.1: International/European Designated Sites within 10km of the Sites and CRC130

Designated Site Name	Distance & Direction from the Closest sub-Site	Distance & Direction from the Closest CRC	Qualifying features/Description
The Broads SAC	6.65km NE of sub-Site 10E	6.85km NE of CRC14	There are five parcels of land covered by the Broads SAC within 10km of the Site. The SAC is designated for notable habitats including eutrophic lakes, <i>molinia</i> meadows on calcareous, peat or clay-silt soil, transition mires and quaking bogs, calcareous and alkaline fens and alluvial woods. Notable species include Desmoulin's whorl snail, <i>Vertigo moulinsiana</i> , otter, <i>Lutra lutra</i> , fen orchid, <i>Liparis loeselii</i> , and little ram's-horn whirlpool snail, <i>Anisus vorticulus</i> .
Norfolk Valley Fens SAC	2.38km NW of sub-Site 4A	3.2km NW of CRC11	Norfolk Valley Fens is one of two sites in East Anglia where there is a main concentration of the Annex I habitat, Alkaline fens. The SAC comprises a series of valley-head spring-fed fens which are rare in the lowlands. Most of the vegetation is of the small sedge fen type but there are also areas of reed swamp and other fen and wet grassland types providing a range of variation. A rich flora is associated with these fens,

¹²³ 2km data purchased from the Norfolk Biodiversity Information Service, an updated biological data request will be purchased to inform the final ES Chapter. Additional information available here: Home | Norfolk Biodiversity Information Service (nbis.org.uk) (accessed September 2024)

¹²⁴ Available at: <https://designatedsites.naturalengland.org.uk/> (accessed June 2024)

¹²⁵ Available at: <https://publications.naturalengland.org.uk/> (accessed July 2024)

¹²⁶ Available at: <https://rsis.ramsar.org/> (accessed June 2024)

¹²⁷ Available at: www.magic.gov.uk/ (accessed June 2024)

¹²⁸ Assessed using freely available aerial imagery, available at <https://www.google.com/maps/> and <https://www.bing.com/maps/> (accessed June 2024)

¹²⁹ Desk study undertaken in adherence to the Biodiversity Data Search Guidance for Ecological Consultants guidance available at: <https://www.biodiversityinplanning.org/wp-content/uploads/2019/12/BDS-Guidance-final.pdf> (accessed June 2024)

¹³⁰ Due to the future CRC layout expected to be refined to a 50m working corridor, exact measurements are provided from the closest sub-Sites only and not from the outline CRC.

Designated Site Name	Distance & Direction from the Closest sub-Site	Distance & Direction from the Closest CRC	Qualifying features/Description
			including species such as grass-of-Parnassus, <i>Parnassia palustris</i> , common butterwort, marsh helleborine, <i>Epipactis palustris</i> , and narrow-leaved marsh orchid <i>Dactylorhiza traunsteineri</i> . Annex II species that are a primary reason for selection are the narrow-mouthed whorl snail, <i>Vertigo angustior</i> , and Desmoulin's whorl snail <i>Vertigo moulinsiana</i>
Broadland SPA	6.65km NE of sub-Site 10E ¹³¹	6.85km NE of CRC14	There are five parcels of land covered by the Broadland SPA within 10km of the Site. The SPA is designated for the following reasons: a) It is used regularly by 1% or more of the GB population of species listed on Annex I of the Birds Directive (79/409/EEC) in any season: bittern <i>Botaurus stellaris</i> , whooper swan, <i>Cygnus cygnus</i> , marsh harrier, <i>Circus aeruginosus</i> , hen harrier, <i>Circus cyaneus</i> , and ruff, <i>Philomachus pugnax</i> . b) It is used regularly by 1% or more of the biogeographic population of a regularly occurring migratory species (other than those listed on Annex I) in any season: wigeon, gadwall, and shoveler.
Broadland Ramsar	6.65km NE of sub-Site 10E ¹³²	6.85km NE of CRC14	There are five parcels of land covered by the Broadland Ramsar within 10km of the Site. The Broadland Ramsar is designated as a mosaic of wetland habitats which includes open water, reedbeds, carr woodland, grazing marsh, and fen meadow, with an extensive complex of flooded medieval peat diggings. Assemblages of rare plants and invertebrates occur at the site including nationally rare dragonflies, spiders, moths, and butterflies, and the area is a stronghold for swallowtail butterfly <i>Papilio machaon Brittanica</i> . A number of rare breeding birds are present here including bittern and marsh harrier as well as wintering bird species such as Bewick's swan, <i>Cygnus columbianus bewickii</i> .

8.5.7 No national or local statutory designated sites for nature conservation are present within the Sites or the CRC. Ten Sites of Special Scientific Interest (SSSI) and three Local Nature Reserves (LNR) are present within 5km of the Sites and/or the CRC¹³³, including Shotesham-Woodton Hornbeam Woods SSSI located adjacent to sub-Sites 7F, 7G, 7H and CRC8, and Pulham Market Big Wood SSSI located adjacent to CRC4.

8.5.8 Data regarding the closest national or local statutory designated sites for nature conservation, within 5km of the Sites and CRC, is provided in **Table 8.2** below and presented on **Figure 8.2** Statutory Designated Sites.

¹³¹ The Broadland SPA is located within 10km of the following Site sub-Sites: 7k (9.18km NE), 7l (9.33km NE), 8a (9.45km NE), 8b (9.04km NE), 9 (6.86km NE), 10a (8.08km NE), 10b (7.18km NE), 10c (7.80km NE), 10d (7.44km NE), 10e (6.65km NE).

¹³² The Broadland Ramsar site is located within 10km of the following Site sub-Sites: 7k (9.18km NE), 7l (9.33km NE), 8a (9.45km NE), 8b (9.04km NE), 9 (6.86km NE), 10a (8.08km NE), 10b (7.18km NE), 10c (7.80km NE), 10d (7.44km NE), 10e (6.65km NE).

¹³³ An additional SSSI: Broome Heath Pit is located approximately 4.73km to the south-east of sub-Site10B, however, this site is designated for geological features alone, with no qualifying ecological features listed within the site citation.

Table 8.2: National and Local Statutory Designated Sites within 5km of the Site and CRC¹³⁴

Designated Site Name	Distance & Direction from the Closest sub-Site	Distance & Direction from the Closest CRC	Qualifying features/Description
Shotesham-Woodton Hornbeam Woods SSSI	SSSI Unit 1: 0.14km W of sub-Site 8B SSSI Unit 2: adjacent to sub-Sites 7F & 7G SSSI Unit 3: adjacent to sub-Site 7H	SSSI Unit 1: 0.45km NW of CRC 10 SSSI Unit 2: 0.07km W of CRC 10 SSSI Unit 3: adjacent to CRC8	This site consists of a group of four ancient coppice-with-standards woodlands (Units 1 – 4: three of which are located in close proximity to the Sites) that were probably once part of a continuous cover of primary hornbeam <i>Carpinus betulus</i> forest. The hornbeam woods of south Norfolk and north-east Suffolk form a very distinctive group and Shotesham Little Wood, Saxlingham Grove, Hempnall Little Wood and Winter's Grove are some of the most representative examples of this type. The major stand-type is pedunculate oak <i>Quercus robur</i>-hornbeam woodland and both the heavy soil form and the nationally uncommon light soil variant are present. The standard trees are mostly pedunculate oak and ash <i>Fraxinus excelsior</i> and the main coppice species are hornbeam, maple <i>Acer campestre</i>, hazel <i>Corylus avellana</i> and ash.
Hedenham Wood SSSI	0.14km E of sub-Site 10B	0.5km S of CRC14	Hedenham Wood is an ancient woodland situated at the head of a shallow valley on the South Norfolk boulder clay. Much of the wood comprises oak standards over mixed hornbeam coppice but the valley bottom contains wet ash-maple wood with stands of elm. The ground flora is diverse and includes several uncommon species. Heavy calcareous clay on the valley sides supports hornbeam coppice with maple, ash and hazel under large standards of oak, ash and hornbeam. Other woody species include Goat Willow <i>Salix caprea</i>, Aspen <i>Populus tremula</i>, Spindle <i>Euonymus europaeus</i>, Guelder Rose <i>Viburnum opulus</i>, Dogwood <i>Cornus sanguinea</i> and Midland Hawthorn <i>Crataegus laevigata</i>. On lighter soils hornbeam and ash coppice is almost pure.
Fritton Common SSSI	0.60km S of sub-Site 5B	0.8km SE of CRC4	Fritton Common is one of only a few large grassy commons remaining in south Norfolk still under traditional management by light cattle grazing. The site forms an excellent example of the locally uncommon damp acidic grassland habitat developed over loess soils. Several natural ponds are present and these support well developed marginal and aquatic vegetation. Damp acidic grassland covers much of the site and is dominated by common bent-grass <i>Agrostis capillaris</i>, red fescue <i>Festuca rubra</i> and sweet vernal-grass <i>Anthoxanthum odoratum</i>. Other frequent species include mat-grass <i>Nardus stricta</i>, heath grass <i>Danthonia decumbens</i>, purple moor-grass <i>Molinia caerulea</i>, heath bedstraw <i>Galium saxatile</i> and tormentil <i>Potentilla erecta</i>. Wetter areas, on low-lying ground with impeded drainage, are characterised by abundant soft rush <i>Juncus effusus</i>, fleabane <i>Pulicaria dysenterica</i> and hairy sedge <i>Carex hirta</i>.
Pulham Market Big Wood SSSI	1.20km E of sub-Site 2C	Adjacent to CRC4	Pulham Market Big Wood is an ancient woodland site on heavy boulder clays, overlain in places by acidic sandy loams. The site is probably of primary origin and appears to be the sole remaining fragment of a once much larger area of woodland. The structure is coppice with standards, and

¹³⁴ Due to the future CRC layout expected to be refined to a 50m working corridor, exact measurements are provided from the closest sub-Sites only and not from the outline CRC.

Designated Site Name	Distance & Direction from the Closest sub-Site	Distance & Direction from the Closest CRC	Qualifying features/Description
			the wood is notable for the exceptional range of stand-types which reflect the underlying variations in soil acidity. A rare variant of plateau alderwood is present and there are also stands of lowland birch–pedunculate oak woodland and the uncommon birch–hazel variant of pedunculate oak–hornbeam woodland. The ground flora is fairly diverse and contains a few uncommon species.
Tindall Wood, Ditchingham SSSI	1.75km SE of sub-Site 10B	2.1km SE of CRC14	Tindall Wood is one of the largest hornbeam woods in the county and is considered representative of the type. It is an ancient woodland situated on poorly drained south Norfolk boulder clay which is overlain in places by sandy loam. The dominant stand-type is pedunculate Oak–Hornbeam woodland with a structure of coppice-with-standards. Standard trees are of oak, ash and hornbeam. The coppice layer is overgrown and is mainly hornbeam with scattered ash, field maple <i>Acer campestre</i> and hazel. Spindle, dogwood, guelder rose and midland hawthorn are frequent shrubs on the heaviest soils where there is also a rich ground flora. Dog's Mercury <i>Mercurialis perennis</i> is dominant with Enchanter's Nightshade <i>Circaea lutetiana</i> and Primrose <i>Primula vulgaris</i>.
Shotesham Common SSSI	1.81km NW of sub-Site 8B	2.3km NW of CRC13	Shotesham Common comprises two contiguous parcels of land. Shotesham Common is a valley site in the catchment of the River Tas. Extensive areas of unimproved grassland are now rare in Norfolk due to agricultural improvement but the majority of Shotesham Common has remained under a traditional management regime and a good variety of grassland types are present. The areas of marshy grassland are dominated by blunt-flowered rush, sharp-flowered rush <i>J. acutiflorus</i> and meadowsweet <i>Filipendula ulmaria</i> with frequent bogbean <i>Menyanthes trifoliata</i>, marsh marigold, ragged robin <i>Lychnis flos-cuculi</i> and southern marsh orchid. More uncommon species present include marsh lousewort <i>Pedicularis palustris</i>, marsh helleborine and common cotton-grass <i>Eriophorum angustifolium</i>.
Smockhill Common LNR	2.00km NW of sub-Site 7D	1.8km NW of CRC12	Smockmill Common has a variety of habitats including woodland, grassland and fen along the river. There is a rich diversity in the flora at Smockmill Common due to the different habitats.
Sexton Wood SSSI	2.20km S of sub-Site 10A	2.95km S of CRC9	Sexton Wood is one of the largest woods in south-east Norfolk and is almost entirely of ancient origins. The structure is largely coppice-with standards, with a few areas of high forest. The main stand-type is hornbeam-pedunculate oak on a boulder clay plateau, and the ground flora is characteristic of an ancient wood of this type. The standard trees are mostly of oak with some hornbeam and suckering elm. The coppice is chiefly hornbeam with ash, field maple and willow. Other shrub species present include midland hawthorn, spindle-tree and guelder rose.
Flordon Common SSSI	2.40km NW sub-Site 4A	3.22km NW of CRC11	Flordon Common is situated in the valley of the River Tas on shallow fenland peats. Springs emerge on the valley-side bearing base-rich waters from the underlying chalk and in these areas' species-rich calcareous fen has developed. The flushed areas on the wetter parts of the fen are dominated by Bog-rush <i>Schoenus nigricans</i> and blunt-

Designated Site Name	Distance & Direction from the Closest sub-Site	Distance & Direction from the Closest CRC	Qualifying features/Description
			flowered rush over a carpet of mosses. These species-rich areas contain a number of uncommon plants including butterwort <i>Pinguicula vulgaris</i> , bog pimpernel <i>anagallis tenella</i> , fragrant orchid <i>Gymnadenia conopsea</i> , marsh helleborine and the rare narrow-leaved marsh orchid. Conditions are locally acidic, and this has encouraged the recent growth of a few tussocks of Bog Moss <i>Sphagnum sp.</i> The very rare narrow-mouthed whorl snail has been recorded from the site.
Aslacton Parish Land SSSI	2.40km NW of sub-Site 1B	3.2km NW of CRC1	Alsacton Parish Land SSSI forms a characteristic example of a type of unimproved spring-line meadow which at one time was widely distributed in the valley of the River Tas. A range of inter-grading wet and dry grassland types are present and the flora which is rich, reflecting the variety of soil and habitat conditions, contains a number of uncommon and declining species. Wet marshy grassland has developed at the spring-line, ground seepage flushes and here the vegetation is dominated by blunt-flowered rush <i>Juncus subnodulosus</i> with southern marsh orchid <i>Dactylorhiza praetermissa</i> , marsh helleborine and marsh marigold <i>Caltha palustris</i> . A few pairs of Snipe <i>Gallinago gallinago</i> breed in most years.
Forncett Meadows SSSI	2.83km N of sub-Site 1B	3.5km W of CRC4	Forncett Meadows form one of only three examples of unimproved meadow now remaining in the valley of the River Tas. The upper parts of the valley slope support a short rabbit-grazed sward with frequent anthills. The chalky nature of the soil is reflected in the rich variety of species present which include common quaking grass <i>Briza media</i> , hairy sedge, bird's foot trefoil <i>Lotus corniculatus</i> , cowslip <i>Primula veris</i> , germander speedwell <i>Veronica chamaedrys</i> , crosswort <i>Cruciata laevipes</i> , lady's bedstraw <i>Galium verum</i> and the locally rare green-winged orchid <i>Orchis morio</i> . This community grades into damper grassland with crested dog's-tail <i>Cynosurus cristatus</i> and Sweet Vernal-grass as the dominant grasses. Associated species include common spotted orchid <i>Dactylorhiza fuchsii</i> , twayblade orchid <i>listera ovata</i> , yellow rattle <i>Rhinanthus minor</i> , cuckoo flower <i>Cardamine pratensis</i> and the locally rare adder's tongue fern <i>Ophioglossum vulgatum</i> .
Bath Hills LNR	3.72km SE of sub-Site 10A	4.3km S of CRC14	Bath Hills is a sheltered and south facing area of a steep valley side and forms a natural sun trap on higher ground where spring flowers bloom earlier than anywhere else in England.
Broome Heath LNR	4.72km SE of sub-Site 10B	5.1km SE of CRC14	Grazing land located on Broome Marshes in the Waveney Valley. Also designated as a SSSI for geological reasons.

8.5.9 There are numerous SSSI Impact Risk Zones (IRZ) overlapping the Sites including 13 with conditions regarding solar developments, which consequently require the competent authorities (Local Planning Authority/Planning Inspectorate) to consult with Natural England regarding potential impacts to these sites. NSIP applicants are also required to consult with Natural England to determine impacts and effects of the development on the zones of influence for international and national statutory designated sites.

Non-Statutory Designated Sites

- 8.5.10 Two non-statutory designated sites for wildlife conservation are present within the Sites/CRC. There are a further 42 non-statutory designated sites present within 2km of the Sites/CRC. Of these, 32 are County Wildlife Sites (CWS) and ten are Roadside Nature Reserves (RNR). Sixteen are located within 500m of the Sites/CRC.
- 8.5.11 Two CWS are present within the Sites or the CRC, these being: Spring Wood, Hempnall CWS which is partially located within Site 3 (a 9m x 63m narrow strip of land in the northern section of sub-Site 3A) and Fritton Grange Meadows CWS which is located within CRC7, four other CWS are located directly adjacent to the Sites and CRC.
- 8.5.12 Two RNR are also located directly adjacent to Sites/CRC, these being; Fyland's Road RNR adjacent to sub-Sites 7I and 7J and CRC8, and Market Lane RNR adjacent to sub-site 8A.
- 8.5.13 Data regarding the closest non-statutory designated sites for nature conservation, within 500m of the Sites and CRC, is provided in **Table 8.3** below and presented on **Figure 8.3** Non-statutory Designated Sites.

Table 8.3: Non-Statutory Designated Sites present within 0.5km of the Sites and CRC¹³⁵

Designated Site Name	Distance & Direction from the Closest sub-Site	Distance & Direction from the Closest CRC	Qualifying features/Description
Spring Wood, Hempnall CWS	Partially located within sub-Site 3A Adjacent to sub-Site 3B	0.3km E of CRC6	This is a large area of conifer plantation whose main interest lies in the rides found near to the centre. The rides constitute strips of grassland with an unusual mix of plants typical of acid, neutral and basic soils. The sward is dominated by cock's-foot <i>Dactylis glomerata</i> , with other neutral grasses together with wavy hairgrass <i>Deschampsia flexuosa</i> , which is typical of acid conditions and fescues <i>Festuca spp.</i> , more typical of basic conditions. To the west, separated by an old runway, is an area of replanted ancient woodland. The area to the north has a mixed canopy of hornbeam, downy birch, <i>Betula pubescens</i> , and ash. South of this area, partly separated from it by some old hardstanding, is an area of denser, wetter woodland, densely planted with conifers at the western end. Native species include ash and grey willow <i>Salix cinerea</i> , with a shrub layer of dogwood, and aspen.
Saxlingham Grove CWS	Adjacent to sub-Site 7F	0.2km W of CRC10	This is an ancient woodland situated on a boulder clay plateau surrounded by a broad wood bank and ditch. The majority of the wood is coppice with standards oak and hornbeam woodland. The coppice is mainly overgrown having been abandoned many years ago. In the ground layer dog's mercury is dominant over the whole wood with enchanter's nightshade co-dominant in places. The ground flora is sparse under dense hornbeam coppice but is generally very diverse with many uncommon species and

¹³⁵ Due to the future CRC layout expected to be refined to a 50m working corridor, exact measurements are provided from the closest sub-Sites only and not from the outline CRC.

Designated Site Name	Distance & Direction from the Closest sub-Site	Distance & Direction from the Closest CRC	Qualifying features/Description
			those indicative of ancient woodland. These include bugle <i>Ajuga reptans</i> , lords-and-ladies <i>Arum maculatum</i> , wild strawberry <i>Fragaria vesca</i> , and primrose.
Pope's Wood CWS	Adjacent to sub-Site 7C	Adjacent to CRC11	This is an excellent coppiced ancient woodland site on wet clay-loam soils with abundant hornbeam. There is a high diversity of species and wide grassy rides have a marshy grassland flora. Nearly the entire wood consists of coppiced stools with ash and hornbeam the two commonest species. The latter is often old and forms pure groves. Along the ride edges in deep shade dog's mercury is dominant with frequent enchanter's-nightshade and more rarely species such as yellow pimpernel <i>Lysimachia nemorum</i> , and barren strawberry <i>Potentilla sterilis</i> .
D'Oyly's Grove CWS	Adjacent to sub-Site 7C	0.25km S of CRC12	This is a wet woodland on boulder clay composed largely of oak and ash standards, with some c.10-year-old stools of coppiced hazel ash and hornbeam. Occasional individuals of elder <i>Sambucus nigra</i> , field maple and holly <i>Ilex aquifolium</i> also occur. Much of the coppice is being actively managed. Ash dieback is present in the woodland and has formed areas of open canopy.
Market Lane RNR	Adjacent to sub-Site 8A	0.17km E of CRC10	Designated road verge with notable botanical diversity.
Fylands Road RNR	Adjacent to sub-Sites 7I & 7J	Adjacent to CRC8	Designated road verge with notable botanical diversity.
Fritton Grange Meadows CWS	16m S of sub-Site 7B	Within CRC7	This site consists of a long series of fields, a mixture of tall rank grassland and tall fen vegetation in lower areas. The site also contains a number of ponds and an area of game crops. Springs feed into an extensive dyke system. Part of the area has recently been planted with conifers; another part is grazed but the whole site is generally used for shooting. The higher drier areas are dominated by reed <i>Phragmites australis</i> , reed canary-grass <i>Phalaris arundinacea</i> , and false oatgrass <i>Arrhenatherum elatius</i> , which combine to give a very tall sward.
Woodton Road RNR (1)	25m N of sub-Site 7K	0.62km N of CRC8	Designated road verge with notable botanical diversity.
Brooke Wood CWS	0.14km W of sub-Site 9	0.12km N of CRC13	Brooke Wood is a semi-natural, replanted ancient woodland site surrounded by a ditch and arable fields. The site contains both broadleaved and conifer plantation, both in separate and mixed blocks. The woodland sits on sandy soils which become wetter towards the north and is managed by its owner. The canopy species vary throughout the wood owing to the frequent blocks of conifer plantation which break up what would have been continuous broadleaved woodland. The areas of plantation contain mostly Scot's pine, <i>Pinus sylvestris</i> , and cedar sp. <i>Cedrus sp.</i> ; these areas can be found throughout the entire woodland. The main broadleaved species within the canopy comprise frequent oak, ash, and hornbeam.
Pye's overt & Privett Plantation CWS	0.18km E of sub-Site 8B	0.2km N of CRC13	This is a small, semi-natural ancient woodland site sitting on sandy soils, containing a mixture of broadleaved and conifer plantation. Overall, the woodland is predominantly oak, ash, and field maple. However, there are two distinct areas. The

Designated Site Name	Distance & Direction from the Closest sub-Site	Distance & Direction from the Closest CRC	Qualifying features/Description
			eastern (Pye's Covert) area displays a rather dense canopy of abundant oak, frequent ash and field maple, over a shrub layer of abundant wild privet <i>Ligustrum vulgare</i> . The western area (Privett Plantation) can be divided further in two. This area is separated by a small ditch running from west to east across the centre of the wood. The northern half of this ditch is predominantly oak and ash, with locally frequent beech <i>Fagus sylvatica</i> , and sycamore <i>Acer pseudoplatymus</i> . The eastern area south of the ditch contains a forest school; this area comprises ash, oak, beech and occasional pine sp.
The Krons Meadows CWS	0.24km SE of sub-Site 7B	70m NE from CRC7	A series of species-rich wet and dry meadows with mature hedges, lying south of the Hempnall Beck. The beck is shallow and there is little, or no flora associated with it here, although mature trees overhang it. The meadows are parish charity land, and those easts of the lane have permissive public access. The meadows are part of a chain of wet pasture and meadow that runs west of Hempnall and south, along the Shelton Beck. Species associated with the pond include frequent lesser pond sedge <i>Carex acutiformis</i> , abundant water mint <i>Mentha aquatica</i> , plus occasional water forget-me-not <i>Myosotis scorpioides</i> and abundant brooklime <i>Veronica beccabunga</i> .
Tasburgh Red Poll Meadow CWS	0.33km N of sub-Site 4A	1.4km W of CRC11	Tasburgh redpoll meadow is a small piece of high-quality wet grassland over peaty soils. Surrounded by ditches and a tributary of the River Tas in the north, the meadow supports a rich vegetation community. It is grazed by redpoll cattle in late summer. Alder <i>Alnus glutinosa</i> scrub is found infrequently across the meadow whilst tall trees line the northern and southern borders. The eastern boundary is a ditch with areas of bare ground adjacent where vehicle movements have poached the ground. The ditch is wide with bog stitchwort <i>Stellaria alsine</i> , large bitter cress <i>Cardamine amara</i> , and rare greater chickweed <i>Stellaria neglecta</i> found on the banks.
Park Plantation CWS	0.35km E of sub-Site 9	1.16km E of CRC13	A large plantation on heavy clay soils with a variety of canopy and shrub species, a mixed tree structure, areas of open and dense canopy and shrub, and a fair amount of natural regeneration. The ground flora is relatively poor, however, dominated by dog's mercury in the shaded areas, bramble <i>Rubus fruticosus</i> in the open areas with few other species occurring with any frequency. The main body of the wood is dominated by ash, with oak, hornbeam and field maple frequent.
Woodton Road RNR (2)	0.38km N of sub-Site 7K	0.83km S of CRC13	Designated road verge with notable botanical diversity.
Nunn's Grove CWS	0.47km SW of sub-Site 9	Adjacent to CRC13	This wood consists mainly of oak as mature trees of a similar age. Hornbeam is dominant as derelict coppice and some standards in part of the wood. The ground flora is predominately bramble, with dog's mercury locally common. It does not appear diverse. The wood is shot and has pheasant release pens. The understory is not well developed, and the ground flora is not diverse.
Brooke Road RNR	0.49km NW of sub-Site 8B	0.82km NW of CRC13	Designated road verge with notable botanical diversity.

Priority Habitats

- 8.5.14 A number of Habitats of Principal Importance (HPI) listed under Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act 2006 were identified during the desk study within a 2km radius of the Sites and CRC. In addition, these HPI are also listed within the Norfolk Biodiversity Action Plan (NBAP)¹³⁶. Collectively these HPI and NBAP habitats are referred to as 'Priority Habitats'.
- 8.5.15 Habitat surveys undertaken within the Sites have confirmed the presence of native hedgerow, ponds and arable field margin priority habitats present within the Site parcels. The desk study process has also confirmed the presence of small parcels of lowland deciduous woodland, floodplain grazing marsh within the Sites.
- 8.5.16 There are 29 areas of woodland (totalling 53 individual parcels) listed as ancient woodland within the Ancient Woodland Inventory (AWI)¹³⁷ located within 2km of the Sites. Whilst being included within the lowland mixed deciduous woodland HPI definition, ancient woodland receives additional protection via the NPPF, in which it is listed as an 'irreplaceable habitat'. Six of these ancient woodland parcels are located directly adjacent to the Sites.
- 8.5.17 Desk study analysis indicates that like the Sites, the CRC is dominated by arable field parcels, which include priority hedgerow habitat field boundaries, aerial mapping also suggests that multiple ponds are present within and surrounding the CRC. Occasional blocks of lowland deciduous woodland are present within and surrounding the CRC, notably, lowland fen (classified as irreplaceable habitat within the NPPF) and floodplain grazing marsh are located within CRC7 (Fritton Grange Meadows CWS).
- 8.5.18 Further information is provided in **Table 8.4** below:

Table 8.4: Priority Habitats Present within 2km of the Sites¹³⁸

Habitat	Designation	Information
Native Hedgerows	S41 NERC Act 2006 & NBAP	Present throughout the Sites.
Ponds ¹³⁹	S41 NERC Act 2006 & NBAP	Numerous ponds present throughout the Sites.
Lowland Deciduous Woodland	S41 NERC Act 2006 & NBAP	There are 376 parcels of deciduous woodland HPI within 2km of the Sites. Only one of these is included within the Sites at sub-Site 4B with numerous others adjacent to the Site boundaries.

¹³⁶ Available at: <https://www.norfolkdiversity.org/habitats-and-species/> (accessed October 2024)

¹³⁷ Available at: https://naturalengland-defra.opendata.arcgis.com/datasets/a14064ca50e242c4a92d020764a6d9df_0/explore?location=52.830611%2C-2.004678%2C7.54 (accessed October 2024)

¹³⁸ Due to the future CRC layout expected to be refined to a 50m working corridor, exact measurements are provided from the closest sub-Sites only and not from the outline CRC.

¹³⁹ numerous ponds are located within and surrounding the Scheme; however, detailed pond surveys would be required to determine priority habitat status of these.

Habitat	Designation	Information
Floodplain Grazing Marsh	S41 NERC Act 2006 & NBAP	There are 16 parcels within 2km of the Sites, a section of one area of mapped habitat is located within the eastern section of sub-Site 7B.
Ancient Woodland	AWI	Pope's Wood adjacent to sub-Site 7C, Doyly's Grove to sub-Site 7C, Saxlingham Grove to sub-Sites 7F & 7G, Little wood to sub-Site 7H, Ringers Grove to 8A, and Spring Wood to sub-Site 3A & 3B.
Lowland Fens	S41 NERC Act 2006 & NBAP	There are 13 parcels of lowland fen habitat within 2km of the Sites. The closest of these lies adjacent to the southern boundary of sub-Site 7B.
Traditional Orchard	S41 NERC Act 2006 & NBAP	There are no areas of traditional orchard within the Sites. There are 20 parcels within 2km of the Sites. The closest of these is 0.19km to the east of Site 6.
Open Mosaic Habitat	S41 NERC Act 2006 & NBAP	Two parcels mapped, the closest being located approximately 0.26km NW of sub-Site 5A.
Lowland Meadows	S41 NERC Act 2006 & NBAP	Three parcels mapped, the closest being located approximately 1.59km SE of sub-Site 10A.
Wood-pasture and Parkland	S41 NERC Act 2006 & NBAP	Three parcels mapped, the closest being located approximately 1.59km NW of sub-Site 3B.
Lowland Dry Acidic Grassland	S41 NERC Act 2006 & NBAP	One parcel mapped appropriately 1.61km NW of sub-Site 3B.

Habitat Surveys

Methodology

- 8.5.19 The habitat survey of the Sites was carried out over a five-month period between the 30 April 2024 and 19 September 2024. The surveys were carried out in suitable conditions and covered the National Grid Substation Site, BESS Site, Site 1 and Sites 3 to 10 (including boundary features). Site 2 and the CRC (which are currently being refined) will be surveyed in 2025 and their results included to inform the ES Chapter.
- 8.5.20 Habitats were described and mapped following standard UK Habitats survey methodology (UKHab Ltd, 2023¹⁴⁰) and mapped digitally using ESRI ArcGIS software on a Samsung Galaxy Tab SE Lite tablet. Habitats were also assessed against descriptions of Habitat of Principal Importance¹⁴¹ as set out by the Joint Nature Conservation Council (JNCC) where appropriate.
- 8.5.21 The habitats on Site are described in the paragraphs below. They are discussed in order of occurrence in the landscape from south-west to north-east and referenced from the National Grid Substation Site, BESS Site, and Site 1 and Sites 3 to 10. Habitat maps are provided per sub-Site in order of occurrence from **Figures 8.4 to 8.35**.

¹⁴⁰ Available at: <https://ukhab.org/> (accessed October 2024)

¹⁴¹ Available at: <https://jncc.gov.uk/our-work/uk-bap-priority-habitats/> (accessed October 2024)

Habitat Survey Results

8.5.22 **Table 8.5** below provides a summary of the habitat survey results for all Sites and sub-Sites currently surveyed within the Scheme and includes reference to Target Notes (TNs) which are provided within the corresponding figures, found in **Volume II** (figure references provided within the Table).

Table 8.5: Summary of Habitat Survey Results

Site ref.	Sub-Site ref.	Habitat Survey Summary	Figure Ref.
BESS Site	-	Predominantly arable bounded by 7m wide modified grassland margins (tall sward height). There are two short sections of species-poor native hedgerows. Immediately north of the BESS Site there is a narrow woodland belt. The woodland contains standing deadwood and trees with cavities and woodpecker holes which are potential roost features (PRF's) for bats. Immediately to the south-west of the BESS Site there is a broadleaved mixed and yew woodland belt. There are multiple PRF's observed in the woodland.	8.4 - sheet 32
National Grid Substation Site	-	Arable parcel with sections of modified grassland field margins. An infield pylon in the north of the National Grid Substation Site has a square patch of modified grassland beneath its footings. There are no hedgerows or trees present.	8.4 - sheet 33
Site 1	1A	Arable land bounded on all sides by 2-3m wide modified grassland field margins. The parcel's boundaries are delineated by native species-rich hedgerows with trees. Mature oak trees with veteran features are located on the western boundaries. Along the south-west boundary of the sub-Site there are no hedgerows but instead it is delineated by a dry ditch; at the eastern end of the ditch there is a small pond. Within sub-Site 1A, notable features included a veteran oak in the north-west hedgerow (TN1), two fallen dead trees in the north-west corner (TN2), a brash pile in the south (TN3) and a mature oak in the western section of modified grassland (TN4).	8.4 - sheet 1
	1B	Four arable plots, bounded and bisected by species-rich native hedgerows associated with ditches. Modified grassland field margins, 1-3m wide, are present. Three small stretches of the boundary where hedgerows are absent give way to lines of mature trees. A suitable amphibian/reptile hibernaculum is present in the west boundary of the sub-Site (TN5) and a brash pile identified along the south border (TN3).	8.4 - sheet 2
Site 3	3A	The arable field is bisected by a species-rich native hedgerow. The crop and central hedgerow are bounded by floristically diverse other neutral grassland field margins approximately 3-4m wide. In the north-east corner of the sub-Site is a small pond surrounded by other neutral grassland and willow scrub. The western boundary of the sub-Site contains a belt of mature native mixed scrub. Three patches of invasive non-native species (INNS) (TN6) Japanese knotweed were recorded, one patch in the northern corner of the sub-Site, and another along the northern boundary of the sub-Site. Another patch was recorded outside of the sub-Site approximately 40m along the access track through the adjacent woodland (Spring Wood).	8.4 - sheet 6

Site ref.	Sub-Site ref.	Habitat Survey Summary	Figure Ref.
	3B	Consists of five arable fields bounded by modified grassland field margins of 1-5m in width. In the south-west of the sub-Site the largest arable plot contained five mature in-field oak <i>Quercus sp.</i> , and willow <i>Salix sp.</i> trees. Also in the vicinity is a pond with a mature willow tree, surrounded by modified grassland and a species-rich native hedgerow with trees. Forming the boundaries of the entire sub-Site are species-rich native hedgerows, some with trees and some without. The individual arable plots are separated by narrow (1-2m) field margins.	8.4 - sheet 7
Site 4	4A	The cropland is typically surrounded on all sides by 1-2m wide modified grassland-field margins. The sub-Site's boundaries are delineated by species-rich native hedgerows with trees. Many of the hedgerows also have associated dry ditches. Two ponds are present in the middle of the sub-Site, both surrounded by other broadleaved woodland, with good connectivity to each other and the surrounding hedgerows and woodland just off-Site. Three blocks of mature broadleaved woodland are situated within the sub-Site boundary, connecting to the wider hedgerow mosaic. The two southern blocks of woodland are connected to and surrounding the abovementioned ponds. There are several trees with specific veteran features. Two veteran trees with ivy <i>Hedera helix</i> were identified, one on the northernmost field boundary and one on the western boundary. Additionally, a mature/veteran oak was present in the field margin bisecting the centre of the sub-Site, along with another veteran oak (all four labelled as TN1).	8.4 - sheet 8
	4B	The dominant arable cropland parcels are surrounded by 4m wide modified grassland-field margins. The sub-Site's boundaries are delineated by species-rich native hedgerows with trees, including mature oak trees with veteran features, and associated ditches. All hedgerows also have associated ditches (dry during the time of survey). A pond is present on the southern boundary of the sub-Site, this is surrounded by a narrow belt of trees. A planted triangular shaped other broadleaved woodland is situated in middle of the sub-Site, it contains one veteran tree along its south-eastern boundary. A triangle of other broadleaved woodland is present along the western boundary.	8.4 - sheet 9
Site 5	5A	The arable cropland is typically surrounded on all sides by 1-4m wide modified grassland-field margins. The sub-Site's boundaries are defined by mostly continuous, un-managed species-rich native hedgerows with trees, including mature trees, and associated ditches. A flowing wet ditch runs parallel to the eastern boundary, with a grassy bank, gravel bottom, and brick culvert at its end. A pond is present in the north of the sub-Site. It is immediately surrounded by mature trees, outside of this it is isolated by cereal crops. Two blocks of other mixed broadleaved woodland are situated on the western boundary. Both blocks contained mature trees with multiple PRFs (TN4).	8.4 - sheet 10

Site ref.	Sub-Site ref.	Habitat Survey Summary	Figure Ref.
		The central ditch and woodland on-Site contained significant areas of the INNS Giant Hogweed <i>Aesculus hippocastanum</i> (TN8).	
	5B	The arable cropland is typically surrounded on all sides by 1.5-4m wide modified grassland-field margins. The sub-Site's boundaries are defined by defunct native hedgerows in the north and good quality species-rich native hedgerows with trees and associated ditches in the south. No hedgerows or field margins are present within the northern field. Many of the hedgerows also had associated ditches. A small block of lowland mixed deciduous woodland is present between two arable fields in the north of the sub-Site. A single mature oak tree was noted within the middle of an arable field in the centre of the sub-Site.	8.4 - sheet 10
Site 6	-	A single arable field bounded on all sides by modified grassland field margins, these vary in width from 0.5-5m. The parcel's boundaries are delineated by species-rich native hedgerows and other native hedgerows.	8.4 - sheet 11
Site 7	7A	A single arable field bounded on all sides by modified grassland field margins, these vary in width from 1-5m. The sub-Site's boundaries are delineated by species-rich native hedgerows and mixed scrub, the hedgerow on the northern boundary showed signs of damage from human activities. A large mature oak is located along the sub-Sites (TN9) northern boundary.	8.4 - sheet 12
	7B	Most of the sub-Site consists of arable cereal crops bordered by 2-4-m-wide margins of other neutral grassland. The eastern end of the sub-Site also features a field of other neutral grassland (classified as floodplain grazing marsh HPI within the MAGIC website). At the far western end of the sub-Site and along the central southern boundary is a band of sparsely vegetated land. The northern boundary of the Site was delineated by a native hedgerow with trees along the road, whilst the southern boundary is connected to semi-natural wetland habitats (classified as lowland fen HPI the MAGIC website located within the Fritton Grange Meadows CWS), with a small patch of reedbed (part of the lowland fen HPI) present in the south-eastern corner of the sub-Site. Lowland fen receives protection via the NPPF, in which it is listed as an 'irreplaceable habitat'.	8.4 - sheet 13
	7C	The four arable fields are bounded by substantial modified and other neutral grassland margins of widths between 4-6m. The field boundaries are delineated by species-rich native hedgerows with trees and other native hedgerows. The native hedgerows bordering the southern field are overmanaged and defunct, with some areas being extremely thin and flailed. Three ponds are present along field boundaries within the sub-Site, one in the west of the Site, one along the northern boundary and one in the south of the sub-Site. The pond located in the west is surrounded by mixed scrub. The pond located along the northern boundary is colonised by dense vegetation and enclosed by willow and mature trees. The field pond in the south of the sub-Site is shaded by dense tree cover. Other features of note include five large mature oak	8.4 - sheet 14

Site ref.	Sub-Site ref.	Habitat Survey Summary	Figure Ref.
		trees located along the field boundaries in the centre, and along the northern and southern boundaries (TN10 and TN4).	
	7D – 7H	Sub-Sites 7D to 7H are adjoining fields forming the central band of Site 7. The majority of the sub-Sites (7D, 7E, 7G, 7H) are arable land sown with cereal crops, with one sub-Site of grazing pasture (7F). Cereal crop land, sub-Sites 7D and 7E are bounded by modified and other neutral grassland field margins. Both 7D and 7E hold features associated with game hunting, such as small native woodlands (broadleaved, mixed and yew woodland in 7D, and lowland mixed deciduous woodland in 7E) used for pheasant rearing. These areas also include associated field margins with wild bird mix and mixed scrub for game cover. Large oaks with cavities (PRF's) are present along the inner field boundaries of sub-Site 7D and a large oak with similar cavities located along sub-Site 7G's northern boundary. Modified grassland grazing pasture is present within sub-Site 7F; where five fields are used for grazing cattle and sheep. Species-rich native hedgerows, along with native hedgerows associated with ditches, form the boundaries of the five fields and sub-Site 7F as a whole. Two small parcels of other broadleaved woodland are present along the southern boundaries of the sub-Site within the red line boundary; the western woodland parcel surrounding a pond, and the eastern parcel surrounding a wet ditch. Several mature oak trees (TN1) are present within the southern boundary hedgerows, and a dead ash tree on the eastern boundary (TN2), were noted to contain cavities and woodpecker holes.	8.4 - sheets 15-19
	7I – 7L	Sub-Sites 7I, 7J, 7K, and 7L form the eastern end of Site 7. These comprise adjoining arable plots, bordered largely by modified grassland margins, with other neutral grassland margins present on sub-Site 7K. The boundaries of the sub-Sites and their internal fields are delineated by species-rich native hedgerows often associated with ditches. Individual mature trees with features such as cavities and woodpecker holes (TN4) are present along the field boundaries of sub-Site 7K. Ponds are located along the field boundaries of 7K (x3), 7L (x1), and 7I (x1); the pond within sub-Site 7L is bounded by wet other neutral grassland and has good connectivity to the surrounding ditch and species-rich hedgerow. An area of other broadleaved woodland is present in the south-western corner of 7L. A woodpile (TN11) is present next to the pond in sub-Site 7L.	8.4 - sheets 20-23
Site 8	8A	An area of adjoining arable plots. The western end of the sub-Site surrounds an off-site area of ancient woodland. The cropland is typically surrounded on all sides by 1-2m wide modified grassland-field margins. Along the edge of the south-eastern boundary, there are broad strips of tussocky other neutral grassland. The sub-Site's boundaries are delineated by well-managed species-rich native hedgerows with trees, including some mature trees with veteran features (TN4), except for the hedgerows on the northern and eastern border which are dilapidated and gappy. Many of the hedgerows also have associated dry ditches.	8.4 - sheet 24

Site ref.	Sub-Site ref.	Habitat Survey Summary	Figure Ref.
		A pond is present on the immediate southern boundary of the sub-Site, this is surrounded by other woodland; mixed; mainly broadleaved woodland that extends off-Site.	
	8B	An area of adjoining arable plots typically surrounded on all sides by 1-3m wide modified grassland-field margins. Along the edge of the eastern boundary of the sub-Site, the field margins are other neutral grassland habitat. The parcel's boundaries are delineated by species-rich native hedgerows with trees, including some mature oaks with veteran/PRF features, and associated dry ditches. Some field boundaries within the sub-Site have dry ditches with remnants of old hedgerows. Two ponds are present within the sub-Site. One, on the north-eastern boundary, the second adjoins a hedgerow in the middle of the sub-Site. The northern pond is surrounded by a species rich hedgerow and other neutral grassland. The southern pond is surrounded by modified grassland on the southern side and species rich native hedgerow with large mature oak standards to the north.	8.4 - sheet 25
Site 9	-	A rectangular block of adjoining mainly arable plots separated either by hedgerows associated with a ditch or by standalone ditches. A small section on the north side of the parcel, along with the entire north-eastern field, featured modified grassland. The hedgerows vary from native hedgerow with trees - associated with bank or ditch, to species-rich native hedgerow with trees - associated with bank or ditch. Both classifications of hedgerows have semi-mature and mature trees dispersed throughout. A mature hedgerow bisecting the parcel has been recently felled and cleared. Modified grassland field margins, ranging from 1-3m wide, are present on either side of the hedgerows and ditches. A central field margin within the parcel contains other neutral grassland habitat. There are two spoil heap piles present within the parcel, one consisting of metal debris (TN13) situated in the ditch of the hedgerow bisecting the western-most field and another being a brash pile (TN13) located in the south-western field margins. An ash tree (TN4) with cavities was noted within the eastern boundary woodland. Additionally, the hedgerow bisecting the western-most field features a semi-mature ash tree, black walnut saplings <i>Juglans nigra</i>, and a mature oak with cavities (TN4). A pond is located in the centre of the parcel adjacent to a dry ditch, with minimal water observed during the Site visit. All ditches within the parcel were dry during the surveys and many overgrown with vegetation.	8.4 - sheet 26
Site 10	10A	The sub-Site is primarily composed of temporary grass and clover leys. The sub-Site is bordered on all but three sides by a species-rich hedgerows, which include sections with and without trees. The southern border of the sub-Site consists of a dry ditch with a steep bank. The field parcel is bordered on three sides by 2m wide field margins, primarily composed of modified grassland. The southern edge of the sub-Site and the area immediately north of triangular section of off-site	8.4 - sheet 27

Site ref.	Sub-Site ref.	Habitat Survey Summary	Figure Ref.
		woodland are classified as other neutral grassland. The western border lacks a boundary feature as the field extends off-site. Notably, two large oaks are present, one on the south-western border and another in the southern section of the field.	
	10B	Four areas of temporary grass and clover leys, bisected by a species-rich native hedgerow with associated trees and ditches. Modified grassland field margins, ranging from 1-20m wide surround the sub-Site field boundaries, with a small area of modified grassland located in the western section of the sub-Site. Additionally, there is a field margin of other neutral grassland that runs parallel with the hedgerow that bisects the middle of the sub-Site. The eastern boundary features a species-rich hedgerow and a line of trees.	8.4 - sheet 28
	10C	This sub-Site is comprised of four adjoining arable fields, bordered on all sides by field margins of other neutral grassland, ranging from 1-3m in width. All boundaries, except along the south-western border and the adjacent field edge are defined by species-rich hedgerows with trees. The south-western boundary is bordered by a ditch and associated treeline, with additional ditches running along the hedgerows, bisecting the sub-Site. The hedgerows throughout the sub-Site are well-managed and continuous. There is also a 3m section of game cover present along the south-western field boundary. Along the sub-Sites western boundary, there is a broadleaved woodland parcel. Two wooded agricultural ponds are also located within the woodland block. Within the centre of the fields there are two other wooded agricultural ponds. The south-western sub-Site boundary includes an area of scrub.	8.4 - sheet 29
	10D	The sub-Site is dominated by other neutral grassland habitat interspersed with patches of bramble and mixed scrub, along with areas of modified grassland on the eastern side of the sub-Site. An unmanaged native hedgerow with trees runs alongside the southern and western edge of the sub-Site.	8.4 - sheet 30
	10E	The sub-Site is primarily comprised of temporary grass and clover leys, with a section of modified grassland along the eastern boundary. Species-rich hedgerows, interspersed with ditches and trees, border all but two sides of the sub-Site, where hedgerows are absent, ditches alone mark the boundaries. The field extends northward on the western side, encompassing a pond surrounded by a narrow woodland belt. Along this field boundary, notable features include a dead tree (TN2), a mature oak (TN9), and a mature ash (TN4). This northern extension of the field contains cereal crops, with bramble and willow scrub present along the western boundary. The surrounding field margins consist of other neutral grassland.	8.4 - sheet 31

Protected and Priority Species

8.5.23 Certain species surveys are currently being undertaken (see below). Further species-specific surveys will be undertaken to ensure legislative compliance and to

inform the assessment of likely significant effects from the Scheme, as well as any embedded mitigation within its design. Full details of survey methodologies and results will be provided within the ES. These surveys will consist of the following:

Invertebrate Scoping Assessment

- 8.5.24 Invertebrate sampling surveys will be undertaken in locations throughout the Sites, the results of these will be entered into Pantheon software¹⁴², which will analyse the results, attaching associated habitats and resources, assemblage types, conservation status, habitat fidelity scores and other information against them. This information will then be used to determine site importance/quality for invertebrate assemblages. This will then be used to inform targeted habitat creation/enhancement opportunities.
- 8.5.25 Invertebrate sampling may include (but not limited to) the following methods: sweep netting, suction sampling, visual searching, tray beating.

Reptiles

- 8.5.26 The arable fields (and grazed pastoral fields) which dominate the Scheme are considered to be of sub-optimal value to reptiles. The boundary hedgerows, ditches, and field boundaries are considered to offer more suitable habitat for widespread reptile species, providing breeding, foraging, refuge and commuting opportunities.
- 8.5.27 The final proposals will include habitat retention and enhancement measures which will benefit widespread reptile species, therefore, with the adoption of protection measures within the Construction Environmental Management Plan (CEMP), Operational Environmental Management Plan (OEMP) and Decommissioning Environmental Management Plan (DEMP), no further surveys are being considered to inform the EIA process.

Amphibians

- 8.5.28 The arable fields (and grazed pastoral fields) which dominate the Scheme are considered to be of sub-optimal value to amphibians. The boundary hedgerows, ditches, ponds and woodlands are considered to offer more suitable habitat for amphibians, providing breeding, foraging, refuge and commuting opportunities.
- 8.5.29 Ponds within 250m of the Scheme (where access allows) will be assessed for their suitability to support great crested newt following the Habitat Suitability Index (HSI) assessment methodology. The HSI assessment follows the Amphibian and Reptile Groups of the United Kingdom (ARG UK) methodology¹⁴³, which is a refined version of the Oldham et al. 2000¹⁴⁴ method. The assessment calculates a habitat suitability score for each pond based on a series of indices generated from variables including

¹⁴² Available at: <https://pantheon.brc.ac.uk/about/pantheon> (accessed October 2024)

¹⁴³ ARG UK. (2010). ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index. Available at: <https://www.arguk.org/info-advice/advice-notes/9-great-crested-newt-habitat-suitability-index-arg-advice-note-5/file> (accessed October 2024)

¹⁴⁴ Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). *Evaluating the suitability of habitat for the Great Crested Newt (Triturus cristatus)*. Herpetological Journal 10(4), 1

pond size and the presence/absence of wildfowl. Final scores relate to suitability and range from 'poor' to 'excellent' suitability. The results of the HSI assessment can be used to provide a useful indication of great crested newt presence and help assess any likely impacts of a development, but do not represent a substitute for surveys.

- 8.5.30 Following from the HSI assessment, all suitable ponds will be tested for great crested newt Environmental DNA (eDNA). The technique for determining presence/absence of great crested newt uses Polymerase Chain Reaction (PCR) laboratory techniques to detect the species eDNA within water samples, which will be collected by late-June 2025. Samples will be collected by suitably experienced great crested newt surveyors. The protocol for sampling followed that outlined within *Biggs et al, 2014*¹⁴⁵, which requires the collection of 20 x 30ml subsamples from each pond, spaced as evenly as possible around the pond margin.

Breeding Birds

- 8.5.31 Breeding bird surveys are being undertaken within the Sites and will be completed by July 2025. Surveys will be carried out by teams of experienced ornithologists applying methods based on the standard breeding bird survey and common bird census methods developed by the British Trust for Ornithology (BTO) (Gilbert *et al.* 1998), and updated Bird Survey Guidelines methodology¹⁴⁶. All bird registrations will be recorded on suitably scaled field maps using standard BTO species codes and behaviour notations.
- 8.5.32 The approximate locations of bird territories within the Sites will be determined using standard territory mapping techniques to identify and isolate areas within which birds consistently displayed breeding behaviours. The territory mapping method is based on the observation that many species during the breeding season are territorial. This is most marked in passerines where territories are often determined by conspicuous song, display and territorial disputes with neighbouring conspecifics. The expected outcome of this technique is that mapped registrations fall into clusters, approximately coinciding with individual territories, allowing for an informed assessment of territory numbers and distribution.
- 8.5.33 It is considered that the breeding bird assemblage recorded within the Scheme will be representative of the farmland habitats within the South Norfolk region. Of this assemblage there will likely be a variety of notable 'red-listed' species¹⁴⁷ potentially including (but not limited to) corn bunting *Emberiza calandra*, linnet *Linaria cannabina*, skylark *Alauda arvensis*, starling *Sturnus vulgaris*, yellowhammer *Emberiza citrinella*, turtle dove *Streptopelia turtur* and yellow wagtail *Motacilla flava*.
- 8.5.34 Due to the Scheme being dominated by intensively-managed agricultural land, notable species breeding assemblage will likely be associated with vegetation

¹⁴⁵ Biggs J, et.al. (2014). *Analytical and methodological development for improved surveillance of the Great Crested Newt. Technical Appendix 4. Technical advice note for field and laboratory sampling of great crested newt (Triturus cristatus) environmental DNA.* Freshwater Habitats Trust, Oxford.

¹⁴⁶ Available at: <https://birdsurveyguidelines.org/methods/survey-method/> (accessed September 2024)

¹⁴⁷ Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. (2021). *The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain.* British Birds 114: p.723-747.

along field boundaries, principally hedgerows, scrub, ditches, tree lines, woodland habitats. However, some species, most notably, skylark will utilise open cropland within the Scheme for nesting purposes.

Bats

- 8.5.35 The hedgerows, lines of trees, woodlands and ditches all provide suitable habitat for foraging and/or commuting bats. Using the habitat evaluation criteria from Bat Surveys for Professional Ecologists (Collins *et al.*, 2023)¹⁴⁸, the majority of the Scheme can be categorised as Moderate suitability due to the open arable landscape interspersed with higher value habitat such as hedgerows and trees. Areas supporting higher bat activity may include sub-Sites located closer to the riverine habitats of the Tas tributary (Sub-Sites 7A, 7B and 7C) and the grazing pasture of Sub-Site 7F where this habitat borders four parcels of off-Site woodland.
- 8.5.36 Static detection and transect surveys are currently being undertaken (to be completed in Autumn 2025) in adherence to the guidance provided within Collins *et al.* (2023) to provide information on commuting and foraging bats to inform the final Scheme design.
- 8.5.37 Initial dialogue with statutory and non-statutory consultees (see **Section 8.10**) have included discussions regarding the presence of Barbastelle bat *Barbastella barbastellus* roosts (including maternity roosts) present within the wider landscape; most notably within woodland habitats in close proximity to sub-Sites 7F, 7G, 3A and 3B, and Tyrells Wood (located adjacent to CRC4). Static detection and transect surveys will monitor the potential use of the Sites by this species (amongst other bat species) and specific avoidance measures/enhancement measures adopted if necessary (based on the baseline survey results).
- 8.5.38 Suitable roosting habitat is present in the form of trees with bat roost suitability. During the Preliminary Ecological Appraisal (PEA) survey, several trees were identified as having PRFs and will be subject to ground level tree assessments during the winter of 2024-2025 in adherence to the guidance provided within Collins *et al.* (2023). If any suitability is recorded on these features, further surveys, such as emergence surveys or climbed inspections, may be necessary in the unlikely event that impacts upon the tree cannot be avoided.

Badger

- 8.5.39 The arable fields (and grazed pastoral fields) which dominate the Sites and CRC are considered to be of sub-optimal value to badgers, however, boundary hedgerows, ditches, field boundaries, and woodlands are considered to offer suitable opportunities for breeding, foraging, and commuting opportunities.
- 8.5.40 Badger surveys will be undertaken during the winter of 2024-2025. As recommended by Natural England (2002)¹⁴⁹ and Andrews R. (2014)¹⁵⁰, the survey

¹⁴⁸ Available at: <https://cdn.bats.org.uk/uploads/pdf/Resources/For-professionals/Bat-Survey-Guidelines-4th-edition-AMENDED-27.03.24.pdf?v=1711530492> (accessed September 2024)

¹⁴⁹ Natural England (2011). *Badgers and Development. A Guide to Best Practice and Licensing*

¹⁵⁰ Andrews, R. (2014). *The Classification of badger setts in the UK: A Review and Guidance for Surveyors*. In Practice 82: p.27 – 31.

will include the Sites and CRC boundaries. Where possible a minimum 30m buffer of suitable badger habitat will be included to identify any evidence of badger activity.

Water Vole and Otter

- 8.5.41 There is also some limited habitat suitability for water vole *Arvicola amphibius* and otter *Lutra lutra* along ditch networks within and surrounding the Scheme. The requirement for specific targeted surveys will be reviewed if impacts within and immediately surrounding watercourses/ditches cannot be avoided¹⁵¹. If required, surveys will be undertaken between May – June 2025 (first survey) and July – September 2025 (second survey), following the best practice guidelines for otter¹⁵² and water vole¹⁵³.

Other Priority Mammals

- 8.5.42 In addition, it is considered that some habitats within the Scheme have suitability to support the following priority species:
- Brown hare *Lepus europaeus*;
 - European hedgehog *Erinaceus europaeus*; and,
 - Harvest mouse *Micromys minutus*.
- 8.5.43 The final proposals will include habitat retention and enhancement measures which will benefit these species, therefore, with the adoption of protection measures within the CEMP/OEMP/DEMP, no further surveys are being considered to inform the EIA process.

8.6 Project Basis for Scoping Assessment

- 8.6.1 The Scheme's design evolution will seek to avoid areas of biodiversity value, such as field boundary hedgerows, ditch networks, watercourses, and adjacent woodland. Habitat enhancement measures and ongoing management practices will be proposed in line with the BRE Biodiversity Guidance for Solar Developments, that process will safeguard key habitats for the benefit of wildlife and enhance the ecological value of land currently under agricultural use.

- 8.6.2 The BRE Guidance states that:

'With appropriate land management, solar farms have the potential to support wildlife and contribute to national biodiversity targets. Indeed, solar farms may have several additional advantages in that they are secure sites with little disturbance from humans and machinery once construction is

¹⁵¹ If construction/habitat clearance/access activities within 10m of a ditch/watercourse banks cannot be avoided, all adjoining watercourses/ditches within 100m will be subject to targeted surveys. If found to be present, species and site specific avoidance measures will be implemented, and if required, works will proceed in adherence to appropriate derogation licences issued by Natural England, thereby ensuring that the species favourable conservation status will be maintained and that the Schemes works will be legislatively compliant.

¹⁵² Chanin, P. (2003). *Monitoring the European Otter Lutra lutra*. *Conserving Natura 2000 River Monitoring Series No.10*. English Nature, Peterborough

¹⁵³ Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016). *The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series)*. Eds Fiona Mathews and Paul Chanin. The Mammal Society, London.

complete. Recent research suggests biodiversity gains on solar farms can be significant’.

- 8.6.3 The biodiversity approach adopted within the ES will be to provide commitments for long-term management of the land to conserve and improve landscape habitat connectivity with the wider landscape for wildlife through protecting and enhancing potentially important wildlife corridors and habitats. This will contribute to the establishment of coherent ecological networks, supporting the biodiversity net gain (BNG) targets of the Environment Act 2021 and the current Overarching NPS for Energy (EN-1).
- 8.6.4 Compliance with the NPS for Energy (EN-1) requires that development applications consider and engage a mitigation hierarchy, requiring the highest level to be applied where possible. The mitigation hierarchy is also fundamental to BNG. It comprises four sequential steps that will be adopted throughout the design stages of the Scheme where there is potential for impacts on relevant ecological receptors:
- **Avoidance:** Measures taken to avoid creating impacts from the outset, such as careful spatial or temporal placement of elements of infrastructure, in order to avoid impacts on certain components of biodiversity.
 - **Minimisation:** Measures taken to reduce the duration, intensity and/or extent of impacts (including direct, indirect and cumulative impacts, as appropriate) that cannot be completely avoided, as far as is practically feasible.
 - **Rehabilitation/restoration/mitigation:** Measures taken to rehabilitate degraded ecosystems or restore cleared ecosystems following exposure to impacts that cannot be completely avoided and/or minimised.
 - **Compensation:** Measures taken to compensate for any residual significant, adverse impacts that cannot be avoided, minimised and/or rehabilitated or restored. Compensation can take the form of positive management interventions such as restoration of degraded habitat, arrested degradation or averted risk, protecting areas where there is imminent or projected loss of biodiversity.

8.7 Embedded Mitigation

- 8.7.1 In adherence to the mitigation hierarchy, the Scheme is being developed to avoid adverse impacts in the first instance through an iterative approach to design. For the purposes of this scoping assessment the following measures have been assumed to be implemented for the Scheme:
- The design of the Scheme will be informed by the Building Research Establishment's Biodiversity Guidance for Solar Developments (2014) and NPS for Energy (EN-1);
 - Impacts to adjacent statutory and non-statutory designated sites during the construction, operational and decommissioning phases will be avoided (where possible);
 - Infrastructure development on habitats of ecological value within the Sites, including woodlands, hedgerows, and watercourses, will be avoided or minimised, with infrastructure development focused on existing agricultural land;

- The design will include appropriate buffers between infrastructure development and sensitive habitats, such as watercourses and woodland, with the extent of buffers determined by the sensitivity of the feature, the proposals in that area, industry best-practice standards, and prevailing guidance; and
- The long-term management of the Sites for biodiversity purposes will be detailed within a Landscape Ecological Management Plan (LEMP) and management activities subject to long-term ecological monitoring commitments.

8.7.2 A hierarchical approach to mitigation will be adopted through the iterative design process which seeks to avoid adverse impacts in the first instance, for example, informing layout to avoid sensitive receptors, where possible. The following are measures which will be informed by ongoing survey and assessment work, and subsequently considered as embedded mitigation incorporated into the design of the Scheme to protect ecological features:

- SSSIs: The Scheme's design will include appropriate buffers between infrastructure development and adjacent SSSIs, and final designs will also seek to improve connectivity to these SSSI features.
- Non-statutory designated sites: These sites will be retained and appropriately buffered as part of the final design process.
- The most ecologically valuable habitats (such as watercourses, ditches, hedgerows, mature trees, ponds and woodland) will be avoided, where practicable, with Scheme designs also incorporating appropriate buffers between infrastructure development and sensitive habitats.
- A minimum buffer of 15m will be adopted surrounding parcels of ancient woodland.
- New watercourse or ditch crossings will be avoided or minimised and sensitively designed to allow the continued movement of wildlife along the watercourses/ditches.
- There will be no permanent lighting associated with the Scheme.
- Species-specific buffer zones will be adopted, where required, with further detailed information provided within the ES.

8.7.3 Full details of mitigation embedded within the design, or essential mitigation measures needed to address potentially significant effects or to ensure legal compliance, will be provided within the ES. These will be informed by:

- The provision of an ecologically-informed outline LEMP will include details regarding the creation and management of habitats of ecological value which are appropriate to the local area. This will be with the aim of delivering a net gain for biodiversity and improving habitat connectivity with the wider landscape, in-line with the South Norfolk Claylands Wilder Connections objectives¹⁵⁴, and
- The implementation of a CEMP, OEMP, and DEMP to capture all committed mitigation and to ensure legal compliance during construction, operational and decommissioning periods.

¹⁵⁴ Available at: <https://www.norfolkwildlifetrust.org.uk/claylands-wilder-connections> (accessed October 2024)

8.8 Likely Significant Effects

- 8.8.1 The CIEEM Guidelines (2018) define a 'significant effect' as an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general (i.e. the feature could be positively or negatively significantly affected).
- 8.8.2 In regard to ecological impact assessment, the CIEEM Guidelines note that:
- 'A significant effect does not necessarily equate to an effect so severe that consent for the project should be refused planning permission. For example, many projects with significant negative ecological effects can be lawfully permitted following EIA procedures as long as the mitigation hierarchy has been applied effectively as part of the decision-making process.'*
- 8.8.3 Any potentially significant effects identified will be expressed with reference to an appropriate geographic scale. For example, a significant effect on a nationally designated site is likely to be of national significance; however, the scale of significance does not necessarily always relate to the importance of an ecological feature. For example, an effect on a species which is considered of national importance may not have a significant effect upon its national population.
- 8.8.4 In line with the principles of proportionate EIA, embedded mitigation, including avoidance through the design process and application of industry standard good practice (secured via a CEMP), will be considered at the outset of the assessment. Additional mitigation, including important ecological feature status will only be assigned where there is still considered to be the potential for significant effects on the identified feature arising from the Scheme after the application of embedded mitigation measures.
- 8.8.5 The detailed approach required for the management, mitigation, compensation, enhancement and/or monitoring of likely significant ecological effects will be determined following the establishment of the full ecological baseline and having regard to planning policy requirements and/or the legislative protection afforded to the ecological feature. Where it is not possible to robustly justify a conclusion of no significant effect, a significant effect will be assumed as a precautionary approach to ensure that a realistic 'worst case' scenario has been assessed. Where uncertainty exists, this will be acknowledged.
- 8.8.6 Where the Scheme application proposes measures to mitigate potentially significant adverse effects on ecological features, an assessment of residual ecological effects, taking into account any ecological mitigation recommended, will be undertaken.
- 8.8.7 Having regard to the characteristics of the Site and the surrounding area, in the absence of mitigation and enhancement measures, the construction, operation and decommissioning of the Scheme has the potential to result in the following likely significant effects:

- Habitat loss, disturbance or fragmentation (during construction and decommissioning);
- Disturbance, displacement, or mortality of wildlife (during construction, operation, and decommissioning);
- Disturbance, damage or loss of protected species breeding sites, hibernation sites or resting places (during construction, operation (panel replacement), and decommissioning);
- Noise and/or visual disturbance to species using the Sites (during construction, operation (panel replacement), and decommissioning);
- Impacts to designated sites or habitats through generation of dust or other pollutants (during construction, operation (panel replacement), and decommissioning); and
- Disturbance and pollution (indirect effects such as noise and vibration, dust, pollution, surface water run-off during construction, operation (panel replacement), and decommissioning); and
- Plant and vehicles movements and site workers' activities (during construction, operation (panel replacement), and decommissioning).

8.8.8 Operational phase effects are defined as effects following the construction of the Scheme. These generally relate to disturbance of habitats or species, on either a temporary or permanent basis; most notably during panel replacement phases. Some effects may reduce with habituation or remain for the lifetime of the Scheme. There are no additional operational effects relating to land take or habitat loss other than those already addressed in the construction phase.

8.8.9 Decommissioning effects are defined as effects following the end of the operational period of the Scheme (including the removal of panels/structures and BESS plant - notably the CRC cabling is anticipated to be left in-situ beneath the ground post-decommissioning¹⁵⁵ and the National Grid Substation will not be decommissioned). Decommissioning effects relate to disturbance of habitats or species, on a temporary basis and disturbance and pollution (indirect effects such as noise and vibration, dust, pollution from surface water run-off) resulting from site decommissioning activities, plant and vehicles movements.

8.9 Impacts Scoped Out of the Assessment

8.9.1 Having regard to the ecological characteristics of the Sites and the surrounding area, and with consideration of the *Nationally Significant Infrastructure Projects: Technical Advice Page for Scoping Solar Development*, the following impacts are considered unlikely to result in significant effects and are therefore proposed to be scoped out of the assessment. Although these ecological features are proposed to be scoped out, consideration will, however, be afforded to the provision of standard mitigation to be included in the CEMP, OEMP and DEMP for the Scheme.

¹⁵⁵ The underground ducting along the CRC will also be decommissioned in accordance with the latest regulations and good practice prevailing at that time but are anticipated to be left in-situ to minimise adverse environmental effects, see Chapter 3 for further details.

Statutory Designated Sites

- 8.9.2 It is proposed that the potential for indirect effects upon statutorily-designated sites (without mobile qualifying criteria)¹⁵⁶ located greater than 2km from the Scheme is scoped out of the assessment. Due to the static nature of the Sites' qualifying habitats interests, spatial separation and/or absence of hydrological pathways of connectivity¹⁵⁷, embedded mitigation and good practice will be sufficient to prevent any impacts from occurring.
- 8.9.3 Statutory designated sites located beyond 5km of the Site with associated qualifying bird assemblages will be scoped out of the assessment, unless available desk study biological records and habitat survey results dictate that regular use by pertinent species is likely within or surrounding the Site.
- 8.9.4 Qualifying wetland bird species associated with the Broads SPA/Ramsar site (located approximately 6.65km north-east of sub-Site 10E at its closest point) are predominantly associated with open wetland, floodplain, reedbed and fen habitats. Dominant agricultural habitats within and immediately surrounding the Site are considered unsuitable to provide an important role in maintaining or restoring the population of qualifying species of the Broads SPA¹⁵⁸/Ramsar¹⁵⁹ site at favourable conservation status.
- 8.9.5 In addition, due to the separation distance involved (approximately 80% of the Scheme is located beyond 10km from the SPA/Ramsar site) and also due to the undulating topography of the Site and enclosed nature of many of the field compartments, it is considered unlikely that the more mobile qualifying species associated with the SPA/Ramsar (namely whooper swan *Cygnus cygnus* and Bewick's swan *Cygnus columbianus bewickii*) would regularly utilise habitats within and surrounding the Site for foraging purposes. This assessment is made in the context of the availability of expansive areas of low-lying floodplains associated with the Yare and Chet catchments within and immediately surrounding the SPA/Ramsar site.

Common and Widespread Habitats

- 8.9.6 Impacts to existing common and widespread habitats of low sensitivity and/or conservation interest, such as arable fields and modified grassland (intensive grazing pasture) are proposed to be scoped out of the assessment. Although these habitats are proposed to be scoped out of the assessment, consideration will, however, be afforded to the provision of biodiversity enhancements (BNG delivery) and associated LEMP for the Scheme.

¹⁵⁶ Qualifying species (or species assemblages) associated with a designated site that may regularly rely upon habitats located outside of the designated site boundary to sustain their population (such as waterbirds which regularly utilise farmland for foraging/roosting purposes), such supporting habitats are referred to as functionally linked land.

¹⁵⁷ In the unlikely event that the Scheme is considered to have hydrological connectivity to a statutory designated site located beyond 2km, this will be considered within the final ES Chapter.

¹⁵⁸ The Broads SPA conservation objectives available here: <https://publications.naturalengland.org.uk/publication/5310905998901248> (accessed September 2024)

¹⁵⁹ The Broads Ramsar site information sheet available here: <https://rsis.ramsar.org/ris/68#:~:text=A%20low-lying%20wetland%20complex%20composed%20of> (accessed September 2024)

Invertebrates

- 8.9.7 Due to the presence of a largely arable and pastoral intensive farmland habitat within the Sites, it is not considered that the land parcels within the Scheme provide suitable habitat mosaics to support locally- or regionally-important invertebrate assemblages. Habitat retention, buffering and creation associated with the Scheme, the commitment to BNG delivery, and the cessation of insecticide use within the Scheme boundaries will result in likely significant gains for invertebrate assemblages. For these reasons impacts on invertebrate assemblages are proposed to be scoped out of the assessment. Specific enhancement measures for invertebrate species will be provided within the LEMP.

Reptiles and Widespread Amphibians

- 8.9.8 It is considered likely that common species of reptiles, (such as grass snake *Natrix helvetica* and common lizard *Zootoca vivipara*) and widespread amphibians (such as common toad *Bufo bufo*) are likely to be present on the Sites in low numbers. Whilst the intensively managed agricultural fields have limited suitability, areas of rough grassland, scrub, ponds, woodlands, ditches and hedgerows in marginal areas offer potential for these species' groups to prosper. No detailed surveys for reptiles or widespread amphibians are proposed. However, the presence of these species will be assumed within all suitable habitats, and mitigation provided accordingly within the CEMP, OEMP and DEMP.

Wintering/passage Birds

- 8.9.9 It is considered unlikely that the more mobile qualifying species associated with the SPA/Ramsar (namely whooper swan and Bewick's swan) would regularly utilise habitats within and surrounding the Site for foraging purposes. Qualifying wetland bird species are associated with the Broads SPA/Ramsar site (located approximately 6.65km north-east of sub-Site 10E at its closest point). See paragraphs 8.9.3 – 8.9.5 above for further information.
- 8.9.10 Management of the habitats during the operational phase within the Sites will also enhance opportunities for wintering farmland passerine species, providing improved foraging and shelter for species groups such as buntings, larks, finches, and partridge.
- 8.9.11 Consequently, likely significant effects from the Scheme on wintering bird assemblages are not anticipated and it is proposed to scope out an assessment of effects on this species group from the ES.

Dormice

- 8.9.12 Whilst hedgerows and woodland within and adjacent to the Sites are potentially suitable for dormice, the Sites are located outside the current range¹⁶⁰ of this

¹⁶⁰ Available here: <https://ptes.org/campaigns/dormice/about-hazel-dormice/hazel-dormice-range-and-distribution-in-the-uk/#:~:text=Hazel%20dormice%20used%20to%20be%20widespread> (accessed October 2024)

species in the UK, and their potential presence is considered unlikely, which is further supported by a lack of dormice records within biological data supplied by Norfolk Biodiversity Information Service. The design of the Scheme will retain suitable dormice habitat (woodland, scrub and hedgerows) within the Sites where practicable, and the design will provide additional habitats considered beneficial for this species in the unlikely event that they are present.

- 8.9.13 Operational phase management of the habitats within the Sites may also improve existing suitable habitats. Therefore, likely significant effects from the Scheme on dormice are not anticipated and it is proposed to scope out an assessment of effects on this species from the ES.

Air Quality Impacts

- 8.9.14 For reasons outlined in **Chapter 5 Section 5.2** air quality impacts are scoped out.

Lighting Impacts

- 8.9.15 Construction, operational maintenance and replacement activities, and decommissioning work will be undertaken during daylight hours. Temporary lighting however would be required in periods of darkness or emergencies within the agreed working hours. In this instance, lighting will be temporary and/or low impact. Lighting will be directed away from trees, hedgerows and other surrounding ecologically sensitive sites and habitats.
- 8.9.16 No permanent (nightly) operational phase lighting will be required. Motion-sensor activated security lighting will however be provided within the Substations and within the BESS Compounds. The lighting would be shielded and low intensity down-lighting provided. No lighting (permanent or temporary) lighting will be attached to the perimeter fencing.
- 8.9.17 Any potential impacts will be readily avoided where practicable because of the avoidance of night-time working, and adherence to work within the agreed working hours. Also, sensitive design of construction phase lighting can be specified within a CEMP, OEMP and DEMP and secured through planning requirement attached to the DCO.
- 8.9.18 On the basis that lighting is designed in a sensitive manner, no discernible effects are anticipated on biodiversity during the construction, operational and decommissioning phases of the Scheme. Consequently, an assessment of lighting effects is proposed to be scoped out of the ES chapter (see **Chapter 5 Section 5.8** for more information). As also detailed in **Section 5.8** a Lighting Strategy will be developed to secure measures necessary to avoid and mitigation lighting effects.

8.10 Proposed Approach to the ES

Establishing Baseline

- 8.10.1 The following field surveys, which are typically required by statutory organisations and Local Planning Authorities to inform similar renewable energy developments within lowland England, have commenced to establish the baseline ecological features within the Site, and surrounding area:
- Invertebrate scoping survey (August – September 2024);
 - Great crested newt eDNA survey (commenced in June 2024 to be completed in Spring 2025);
 - Breeding bird survey (commenced in Summer 2024 to be completed in Summer 2025); and
 - Bat activity surveys (commenced Autumn 2024 to be completed in Autumn 2025).
- 8.10.2 Additional targeted ecological surveys will be undertaken in the appropriate survey season. These include:
- Badger survey (Winter 2024-2025);
 - Water vole/Otter survey (Spring – Autumn 2025); and
 - Roosting Bats (ground level tree assessment) (Winter 2024-2025).
- 8.10.3 All surveys will be undertaken by suitably competent and qualified ecologists in accordance with industry standard guidance. Full details of survey methodologies will be presented within the ES.
- 8.10.4 The species above (if present) could potentially be affected by the Scheme and/or require specific consideration during construction and decommissioning and/ or incorporated within the Scheme's design. The Study Area over which any likely significant effects could occur is variable, dependent on the sensitivity of the ecological feature and the effects being considered.

Consultation

- 8.10.5 Consultation with statutory and non-statutory consultees will be undertaken throughout the EIA process as appropriate. Initial approaches have been made to the following consultees and is ongoing:
- Natural England: Initial consultation meeting on the 31st October 2024;
 - Norfolk Wildlife Trust: *East Pye Solar Farm Preliminary Consultation NWT Response* document received on the 12th November 2024, followed by an initial consultation meeting on the 14th November 2024;
 - South Norfolk District Council (Biodiversity): Initial consultation meeting on the 26th November 2024, followed by an email response entitled '*East Pye Solar NSIP: Pre-app engagement with SNC*' received on the 5th December 2024;
 - Norfolk County Council (Biodiversity): *Non-statutory Consultation on the East Pye Solar Project* document received on 8th December 2024;

- Following on from discussions with these consultees, additional non-statutory consultees have been recommended, including Norfolk Barbastelle Study Group. Further consultees may also be recommended as the consultation phases proceed.

8.10.6 Consultation will focus on the approach to baseline data collection, the approach to ecological assessment, and appropriate ecological management/mitigation and enhancement measures including BNG requirements.

Assessment

8.10.7 The Ecological Impact Assessment (EclA) will be set out in the Ecology and Biodiversity chapter of the ES. It will be guided by best practice set out in the CIEEM Guidelines.

8.10.8 The CIEEM Guidelines state that EclA 'is a process of identifying, quantifying and evaluating the potential effects of development-related or other proposed actions on habitats, species and ecosystems. It requires an assessment of likely significant effects on important ecological features, and as such, does not require consideration of effects on every species or habitat that may be present.

8.10.9 In order to determine the likelihood of a significant ecological effect it will be necessary to identify whether an ecological feature is sufficiently important for a significant effect upon it to be material in decision-making. This assessment will follow the CIEEM Guidelines and will value the importance of ecological features with reference to a geographical framework (i.e. a feature may be of, 'Site', 'Local', 'County', 'National', or 'International' importance). This will be informed by the results of the targeted ecological surveys, and with reference to published data on conservation status.

8.10.10 Ecological features of 'Local' level importance or above will be classified as being an 'Important Ecological Feature'. Identified 'Important Ecological Features' will be considered in full in the ES, ensuring that the assessment focuses only on those impacts which are potentially environmentally significant.

8.10.11 Ecological features of 'Site' importance or below may still warrant consideration within the design of the Scheme or mitigation measures to be implemented for them, due to the requirements of legislative protection or planning policies. This will be considered in the ES as appropriate.

8.10.12 The assessment of likely significant effects within the Ecology and Biodiversity chapter of the ES will consider whether Important Ecological Features will be subject to impacts (positive or negative), the characterisation of these impacts (extent, magnitude, duration, reversibility, timing and frequency) and their effects.

8.10.13 As set out above, the CIEEM Guidelines state that: 'a sequential process should be adopted to avoid, mitigate and compensate negative ecological impacts and effects. This is often referred to as the 'Mitigation Hierarchy'. The assessment will take into account the ecological mitigation and enhancement measures to avoid or otherwise reduce ecological effects which have been embedded within the

Scheme's design and/or will be set out in plans/strategies that will accompany the DCO Application. Details of additional mitigation measures will be provided where necessary, and the significance of any residual effects will be assessed i.e. those that remain after implementation of avoidance and mitigation measures.

- 8.10.14 A separate 'shadow' Habitats Regulations Assessment (HRA) screening assessment will be undertaken to assess any likely significant effects to internationally designated sites as required. The shadow HRA will be undertaken in line with Government guidance for NSIP projects¹⁶¹.
- 8.10.15 The ES will also summarise the results of a BNG assessment with a full BNG calculation appended. This will assess the predicted habitat losses and gains associated with the Scheme, with the aim of maximising biodiversity outputs in accordance with national policy. The latest version, at the time of writing, of Defra's Biodiversity Metric¹⁶² will be used for this process.

8.11 Summary

- 8.11.1 **Table 8.6** (below) provides a full summary of ecological receptors to be scoped-in and scoped-out of the ES Chapter.

¹⁶¹ Available at: <https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-advice-on-habitats-regulations-assessments> (accessed October 2024)

¹⁶² The most recent statutory biodiversity metric is available here: <https://www.gov.uk/government/publications/statutory-biodiversity-metric-tools-and-guides> (accessed October 2024).

Table 8.6: Summary of Ecological Receptors Scoped-in and Scoped-out of the Environmental Statement

Ecological Receptor	Construction Phase	Operational Phase	Decommissioning Phase	Information
Statutory Designated Sites Within 2km of the Sites and CRC, or up to 5km if designated for mobile qualifying criteria.	Scoped In	Scoped In	Scoped In	Scoped-in based on the potential for indirect impacts, e.g. through increased pollutants, or impacts/disturbance on species' population or habitats.
Statutory Designated Sites (with qualifying bird species) Greater than 5km from the Sites and CRC.	Scoped Out	Scoped Out	Scoped Out	Scoped-out on the basis that qualifying mobile species populations are considered highly unlikely to regularly utilise habitats within and surrounding the Sites, unsuitable topography, and separation distance. Dominant agricultural habitats within and immediately surrounding the Sites are considered unsuitable to provide an important role in maintaining or restoring the population of qualifying species of the Broads SPA/Ramsar site. In addition, due to the separation distances involved, and the undulating topography of the Sites and enclosed nature of many of the field compartments, it is considered highly unlikely that the more mobile qualifying species associated with the SPA/Ramsar (namely whooper swan and Bewick's swan) would regularly utilise habitats within and surrounding the Sites for foraging purposes when considering the availability of expansive areas of low-lying floodplains associated with the Yare and Chet catchments within and immediately surrounding the SPA/Ramsar site.
Statutory Designated Sites (without mobile qualifying criteria) greater than 2km from the Sites and CRC.	Scoped Out	Scoped Out	Scoped Out	Scoped-out due to lack of clear pathways for effects due to separation distances between Site and designation boundary and lack of hydrological connectivity.
Non-Statutory Designated Sites within 1km of the Sites and CRC.	Scoped In	Scoped In	Scoped In	Scoped-in based on the potential for indirect impacts, e.g. through possible increased pollutants, or impacts/disturbance on species' population or habitats.
Non-Statutory Designated Sites greater than 1km from the Sites and CRC.	Scoped Out	Scoped Out	Scoped Out	Scoped-out due to lack of clear pathway for effects due to separation distance between the Sites and CRC and designation boundary and lack of hydrological connectivity.
Ancient Woodland sites within 1km of the Sites and CRC.	Scoped In	Scoped In	Scoped In	Scoped-in based on the potential for indirect impacts, e.g. through possible increased pollutants, or impacts/disturbance on species' population or habitats.

Ecological Receptor	Construction Phase	Operational Phase	Decommissioning Phase	Information
Ancient Woodland sites greater than 1km from the Sites and CRC.	Scoped Out	Scoped Out	Scoped Out	Scoped-out due to lack of clear pathway for effects due to separation distances between the Sites and CRC and designation boundary and lack of hydrological connectivity.
Impacts to Priority Habitats (or other habitats of biodiversity importance) within 250m of the Sites and CRC boundaries.	Scoped In	Scoped In	Scoped In	Scoped-in as construction/decommissioning may lead to detrimental impacts on habitats through loss or damage during construction process. Operational impacts on habitats are considered less likely to occur as activity will be limited to maintenance visits only. However more prolonged activities such as panel updates/replacement may potentially result in limited short-term impacts.
Impacts to Priority Habitats (or other habitats of biodiversity importance) greater than 250m of the Sites and CRC boundaries.	Scoped Out	Scoped Out	Scoped Out	Scoped-out due to lack of clear pathway for effects due to separation distances between the Sites and CRC and habitats.
Common and widespread habitats of low sensitivity and/or conservation interest Within the Sites and CRC.	Scoped Out	Scoped Out	Scoped Out	Scoped-out due to low sensitivity of these predominantly farmland habitats (arable and modified grassland pasture), which are abundant in the wider area and across the County and support limited biodiversity. Embedded design will protect existing habitats through implementation of habitat buffers. Existing wildlife corridors will be maintained and enhanced through embedded design and the application includes a commitment to BNG, which will result in quantifiable biodiversity gains.
Invertebrates Within the Sites and CRC.	Scoped In	Scoped Out	Scoped In	The Sites are dominated by intensively managed agricultural cropland/grazing pasture, considered to be of negligible value for invertebrate assemblages. Scoped-in for targeted areas suitable more diverse assemblages only such as field margins, hedgerows, trees, ditch banks etc. These areas of higher habitat suitability for terrestrial invertebrates will be avoided through embedded buffer zones incorporated within the project design. The provision of BNG and cessation of the use of agricultural insecticides/pesticides will lead to a clear benefit for invertebrate populations across the majority of the Site. The Scheme's operational phase is scoped out, and considered likely to benefit wider invertebrate assemblages, through habitat improvements created for wider BNG purposes and with the provision of precautionary avoidance measures provided within the OEMP.

Ecological Receptor	Construction Phase	Operational Phase	Decommissioning Phase	Information
Great Crested Newt Within the Sites and CRC and surrounding 250m.	Scoped In	Scoped Out	Scoped In	Evidence of great crested newt presence confirmed during 2024 eDNA surveys. further information regarding of the species distribution within/ surrounding the Sites will be gathered during 2025 surveys. The Scheme will be subject to appropriate mitigation, including the option to register with the Norfolk District Level Licencing (DLL) scheme, ensuring that the favourable conservation status of the species will be maintained. The Scheme's operational phase is scoped out, and considered likely to benefit the species, through habitat improvements created for wider BNG purposes and with the provision of precautionary avoidance measures provided within the OEMP.
Widespread Amphibians Within the Sites and CRC.	Scoped Out	Scoped Out	Scoped Out	The Sites are dominated by intensively managed agricultural cropland/grazing pasture, considered to be of negligible value for widespread amphibians. Therefore, widespread amphibians are scoped out, with the provision of precautionary avoidance measures provided within the CEMP, OEMP and DEMP.
Reptiles Within the Sites and CRC.	Scoped Out	Scoped Out	Scoped Out	The Sites are dominated by intensively managed agricultural cropland/grazing pasture, considered to be of negligible value for widespread reptiles. Therefore, widespread amphibians are scoped out, with the provision of precautionary avoidance measures provided within the CEMP, OEMP and DEMP.
Breeding Birds Within the Sites only.	Scoped In	Scoped Out	Scoped In	Scoped-in for construction and decommissioning within the Site parcels, as these may lead to adverse impacts on species' populations through habitat loss or destruction of individual nesting sites. Embedded design (retention of hedgerows, woodland, ponds and ditches, which will also be buffered) will avoid and minimise impacts. Some species of breeding birds are likely to benefit from habitat improvements under BNG and removal of intensive farming from Site environment (i.e. increased invertebrate prey abundance as a result of the cessation of the regular use of pesticides). Any significant potential for operational impacts is limited to the replacement of panels/frames, impacts from periodic disturbance through maintenance visits, is considered to have a minor impact; the provision of precautionary avoidance measures will be provided within the OEMP.
Breeding Birds Within the CRC	Scoped Out	Scoped Out	Scoped Out	Impacts to breeding birds associated with the CRC construction period are considered to be non-significant particularly with the provision of precautionary avoidance measures provided within the CEMP.

Ecological Receptor	Construction Phase	Operational Phase	Decommissioning Phase	Information
				Impacts upon breeding birds associated with the decommissioning period within the CRC are scoped out, as underground services will be left in-situ without significant excavation required. The provision of precautionary avoidance measures will be provided within the DEMP.
Wintering/Passage Birds Within the Sites and CRC.	Scoped Out	Scoped Out	Scoped Out	Habitat retention and enhancement will result in overall gains for wintering bird assemblages, increasing opportunities for winter foraging for a diverse range of passerine species for example. Wintering/passage birds are therefore scoped out at the construction, operational and decommissioning phases.
Bats (roosting) Within the Sites and CRC.	Scoped In	Scoped Out	Scoped In	Scoped-in on a precautionary basis as Scheme design evolves. This will be reviewed on design completion and will be scoped-out (in agreement with statutory consultees) if no potential bat roost features, such as buildings and trees affording potential bat roosting habitat, will be directly impacted during construction.
Bats (foraging and commuting) Within the Sites and CRC.	Scoped In	Scoped Out	Scoped In	Scoped-in on a precautionary basis as Scheme design evolves. This will be reviewed on design completion. Embedded design (retention of hedgerows and ditches, which will also be buffered) will be implemented to minimise impacts across most of the Sites. Bats are likely to benefit from habitat improvements under BNG and removal of agricultural chemicals from Site environment, resulting in increased invertebrate prey abundance. Operational impacts avoided through embedded design (including lighting proposals) and are therefore scoped-out.
Dormouse Within the Sites and CRC.	Scoped Out	Scoped Out	Scoped Out	The Scheme is located outside the species' current range. Habitat enhancements undertaken under BNG commitments will enhance opportunities for the species in the unlikely event of future colonisation of this region of South Norfolk.
Water vole and otter Within the Sites and CRC.	Scoped Out	Scoped Out	Scoped Out	Scoped-out as impacts will be avoided through embedded design (water course and ditch buffers). This will be reviewed on design completion and will be scoped-in if infrastructure and construction areas (or associated habitat clearance activities) are located within 10m from ditches/waterbody banks.

Ecological Receptor	Construction Phase	Operational Phase	Decommissioning Phase	Information
				Both species are likely to benefit from habitat improvements under BNG and removal of agricultural chemicals from Site environment (improved water quality). Operational impacts are therefore scoped-out.
Badger Within the Sites and CRC	Scoped In	Scoped In	Scoped In	Scoped-in as construction or decommissioning may lead to damage to or harm of a badger sett, if present within 30m of the works. This will be reviewed as Scheme design evolves, with species to be considered on a precautionary mitigation basis (to be determined through pre-construction surveys). The potential for operational impacts is limited to disturbance through maintenance visits (which is considered likely to be no more than existing farming land) and periods of panel replacements.
Other mammals Within the Sites and CRC.	Scoped Out	Scoped Out	Scoped Out	Scoped-out with the provision of precautionary avoidance measures included in the CEMP, OEMP and DEMP and enhancement measures detailed within the LEMP.
Invasive Species Within the Sites and CRC.	Scoped Out	Scoped Out	Scoped Out	Japanese knotweed (Sub-Site 3A) and giant hogweed (Sub-Site 5A) were recorded in low densities within the Site boundaries. The presence of these species is not considered to be a significant ecological constraint, and legislative compliance will be adhered to as standard. The avoidance, management and/or eradication of these species will be detailed within the LEMP, CEMP, OEMP and DEMP.
Air Quality Impacts upon sensitive ecological receptors (statutory and non-statutory designated sites, ancient woodland sites, and priority habitats)	Scoped Out	Scoped Out	Scoped Out	For reasons outlined in Chapter 5 Section 5.2 air quality impacts are scoped out.
Lighting Impacts upon sensitive ecological receptors (statutory and non-statutory designated sites, ancient woodland sites, priority habitats, roosting and foraging bats)	Scoped Out	Scoped Out	Scoped Out	Potential impacts can be readily avoided through the avoidance of night-time working, and sensitive design of construction phase lighting which can be captured within a CEMP and secured through planning requirement attached to the DCO. On the basis that lighting is designed in a sensitive manner, no discernible effects are anticipated on biodiversity during the construction, operational and decommissioning phases of the Scheme and therefore an assessment of lighting effects is proposed to be scoped out of the ES chapter.

9 Cultural Heritage

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 Cultural Heritage (comprising built heritage, archaeology and the historic landscape) during the Construction, Operation and Decommissioning Phases.
- 9.1.2 The purpose of the assessment is to identify and characterise heritage assets, both designated and non-designated, and to consider the nature and scale of potential for likely significant effects. It will also address how these will be put forward within the Cultural Heritage chapter of the ES.

9.2 Study Area

- 9.2.1 Good practice guidance does not suggest a specific radius for assessing the effects resulting from a development on the historic environment, and therefore the judgement of a qualified heritage professional 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 larger Study Area is proposed in order to ensure a rigorous approach, with a wider area for higher grade assets, which have a higher sensitivity.
- 9.2.2 A flexible approach will be adopted for heritage assets located beyond the Study Areas where relevant, in consideration of their physical and historical relationships with other monuments and the wider landscape.
- 9.2.3 The Cultural Heritage Study Area will extend to 5km from the solar PV array, Battery Energy Storage System (BESS) Site and National Grid Substation Site boundaries for higher grade heritage assets (i.e. World Heritage Sites, Scheduled Monuments, Grade I and Grade II* listed buildings). This is reduced to 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.
- 9.2.4 For The Cable Route Corridor (CRC) the Study Area will extend to 500m for all heritage assets. This size of the Study Area for the CRC is considered proportionate, as the CRC currently identifies whole fields through which the narrow cable trench will pass. Furthermore, as the cable will be buried potential impacts will be confined to the construction phase, which will be of short duration and sequential.

9.3 Overview of Legislation, Policy and Guidance

- 9.3.1 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.

National Planning Policy

9.3.2 The Overarching National Policy Statement (NPS) for Energy (EN-1) (2023)¹⁶³ 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.

9.3.3 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). The relevant technology-specific NPS for the Scheme comprises the National Policy Statement for Renewable Energy Infrastructure (EN-3)¹⁶⁴. 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.”

¹⁶³ Department for Energy Security and Net Zero (2024). The National Policy Statement (NPS) for Energy (EN-1).

¹⁶⁴ Department for Energy Security and Net Zero (2024). The National Policy Statement (NPS) for Renewable Energy Infrastructure (EN-3).

- 9.3.4 NPS for Electricity Networks Infrastructure (EN-5)¹⁶⁵ 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).
- 9.3.5 The National Planning Policy Framework (NPPF)¹⁶⁶ 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 202 and 203 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 207 to 211 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

- 9.3.6 The Planning Practice Guidance¹⁶⁷ 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

- 9.3.7 The Greater Norwich Local Plan (adopted March 2024) comprises policies to support development in Broadland, Norwich and South Norfolk district councils working in partnership with Norfolk County Council and the Broads Authority. It contains one policy relevant the Scope of this assessment:
- Policy 3 Environmental Protection and Enhancement
- 9.3.8 South Norfolk Council's (SNC) Development Management Policies Document (DMPD) (adopted October 2015) continues to form part of the South Norfolk Local Plan. The DMPD contains two policies relating to the historic environment:
- Policy DM 1.4 Environmental quality and local distinctiveness
 - Policy DM 4.10 Heritage Assets
- 9.3.9 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:

¹⁶⁵ Department for Energy Security and Net Zero (2024). The National Policy Statement (NPS) for Electricity Networks Infrastructure (EN-5).

¹⁶⁶ Department for Levelling-Up, Housing and Communities 2023 National Planning Policy Framework

¹⁶⁷ Ministry of Housing, Communities and Local Government and Department for Levelling-Up, Housing and Communities 2021 Planning Practice Guidance

- 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 which adversely affect the significance of a heritage asset will only exceptionally be permitted where clear and convincing justification is provided.

9.4 Baseline Environment

Designated Heritage Assets

- 9.4.1 There are no designated heritage assets within the Scheme boundary.
- 9.4.2 A full list of all designated heritage assets within the 2km Study Area and high grade (I or II*) designated heritage assets within the 5km Study Area are listed in a gazetteer in **Appendix 9.1 Heritage Gazetteer (Volume III)** with locations illustrated on **Figures 9.1 – 9.21 (Volume II)** (these Study Areas also encompass the 500m CRC Study Area).
- 9.4.3 Initial walkover surveys (conducted in the summer of 2024) have indicated that the vast majority of these assets are not likely to be sensitive to the Scheme due to various factors such as distance, topography and screening. Whilst more detailed analysis will be undertaken as part of the assessment for the ES, the following assets have been identified as the most sensitive. All distances are approximate distances to the closest point of each Site.

Table 9.1: Most sensitive assets BESS Site

Designated Heritage Asset	NHLE Reference	Grade	Distance from the Site
Barn Cottages	1050010	II	300m to south
Friends Meeting House	1179618	II	920m to east
Prangle Farmhouse	1050008	II	920m to east

Table 9.2: Most sensitive assets Site 1 and National Grid Substation Site

Designated Heritage Asset	NHLE Reference	Grade	Distance from the Site
Moulton Farmhouse	1373270	II	150m to east
Laurels Farmhouse	1153200	II	300m to north
Barn immediately east of Laurels Farmhouse	1050326	II	300m to north

Table 9.3: Most sensitive assets Site 2

Designated Heritage Asset	NHLE Reference	Grade	Distance from the Site
Walk Farmhouse	1301881	II	200m (north and south)
Hill House	1050216	II	50m east
The Lodge	1301853	II	200m west
Friends Meeting House	1179618	II	200m west
Prangle Farmhouse	1050008	II	200m west
Wacton Conservation Area	N/A	N/A	600m to north

Table 9.4: Most sensitive assets Site 3

Designated Heritage Asset	NHLE Reference	Grade	Distance from the Site
Grange Farmhouse	1373387	II	180m to the south-west
Townhouse Farmhouse	1153325	II	70m to the north
Rose Cottage	1304365	II	80m to the north
Three Feathers	1153315	II	90m to the north
Barn and Stable range adjoining Three Feathers to the south-west	1050334	II	85m to the north

Table 9.5: Most sensitive assets Site 4

Designated Heritage Asset	NHLE Reference	Grade	Distance from the Site
Church of St Michael	1304267	I	50m to the south
The Old Rectory	1373264	II*	70m to the south
Barn north of the Old Rectory	1050306	II	15m to the south
Church Farmhouse	1153545	II	50m to the south
Cottage occupied by Mr and Mrs Woods	1050305	II	30m to the south-west
Walnut Tree Cottage and Low Cottage	1050313	II	370m to the south-west

Pair of Houses owned by Mr B R Weeden	1153535	II	200m to the west
Cottage occupied by Mrs Rye	1050315	II	210m to the west
The Cedars	1304177	II	70m to the west
The Hollies	1373282	II	250m to the east

Table 9.6: Most sensitive assets Site 5

Designated Heritage Asset	NHLE Reference	Grade	Distance from the Site
Church of St Catherine	1373281	I	20m to the south
Church Farmhouse	1050259	II	60m to the south-east
Barn immediately north-west of Church Farmhouse	1050260	II	30m to the south-east

Table 9.7: Most sensitive assets Site 6

Designated Heritage Asset	NHLE Reference	Grade	Distance from the Site
Poacher's Cottage	1153291	II	50m to the south-west
The Firs	1373239	II	100m to the south-west
The Haven	1304384	II	100m to the south

Table 9.8: Most sensitive assets Site 7

Designated Heritage Asset	NHLE Reference	Grade	Distance from the Site
Grove Farmhouse	1050330	II	60m to the south
Wood Farmhouse	1373238	II	30m south
The Countryman Public House	1373407	II	300m to the west
Former Quaker Meeting House	1178892	II	85m to the south-west
Hill Farmhouse	1050016	II	250m to the west
Manor Farmhouse Barn	1152344	II	65m to the north-west
Manor Farmhouse	1050675	II	70m to the north
Manor Cottage	1373079	II	55m to the north

Hill Cottages	1373062	II	90m to the north
Hill House	1152265	II	150m to the north
Villa Farmhouse	1050332	II	1.5km to the south
Church of St Margaret	1050328	I	950m to the south
Saxlingham Green Conservation Area	N/A	N/A	5m to the north
Oaks Farmhouse	1170906	II*	150m to the east

Table 9.9: Most sensitive assets Site 8

Designated Heritage Asset	NHLE Reference	Grade	Distance from the Site
Uagate Green Farmhouse	1050681	II	250m to the north
Outhouse to north of Uagate Green Farmhouse	1304804	II	300m to the north

Table 9.10: Most sensitive assets Site 9

Designated Heritage Asset	NHLE Reference	Grade	Distance from the Site
Oldhouse Farmhouse	1372864	II	200m to the west
Barn at Oldhouse Farmhouse	1051155	II	200m to the west
Waterfield Cottage	1372865	II	150m to the north-west
Brooke Conservation Area	N/A	N/A	50m to the north

Table 9.11: Most sensitive assets Site 10

Designated Heritage Asset	NHLE Reference	Grade	Distance from the Site
Beulah House	1051115	II	400m to the west
Beulah Barn	1305841	II	400m to the west
Old Rectory	1051116	II	300m to the west
Seething Conservation Area	N/A	N/A	1km to the north-east

Cable Route Corridor

- 9.4.4 Given that the CRC will be buried with no surface expression it is not capable of impacting the setting of any heritage assets following construction. During construction, activity will be of short duration as the cable is installed sequentially,

and not of a scale to be especially visible, or any more intrusive than agricultural activity. Construction activity is, therefore, not considered to pose any significant impact to designated heritage assets.

Non-Designated Heritage Assets

- 9.4.5 In accordance with Planning Practice Guidance¹⁶⁸ and Local Heritage Listing: Identifying and Conserving Local Heritage, HE Advice Note 7¹⁶⁹, 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 and neighbourhood plans, Conservation Area appraisals and decision-making on planning applications. SNC refers to Locally Important Buildings which they regard as Non-Designated Heritage Assets, yet at present do not appear to maintain a list of such buildings.
- 9.4.6 Some buildings within Conservation Areas are identified as Buildings of Townscape Significance, and it is assumed these are regarded as Non-Designated Heritage Assets. These Buildings of Townscape Significance within Conservation Areas are the only currently identified Non-Designated Heritage Assets within a 1km radius of the Scheme boundary. As non-designated heritage assets can be identified during the planning process it is proposed to undertake consultation with SNC to confirm whether they consider any historic features within or surrounding the Site to be non-designated heritage assets.

Archaeological remains

- 9.4.7 The following section is based upon a search of the HER, assessment of LiDAR data and initial findings of a geophysical survey. The geophysical survey was conducted in the Summer of 2024 by Magnitude Surveys to inform the initial appraisal. Several fields could not be surveyed at the time due to the presence of crops. Final results of the completed Geophysical Survey remain forthcoming and will be presented within the ES. This Scoping Report is informed by results obtained as of the end of September 2024. Locations of HER entries within the Study Area are illustrated on **Figures 9.1 – 9.21 (Volume II)**.

BESS Site

- 9.4.8 The HER does not contain any entries within the BESS Site, nor has the geophysical survey identified any potential archaeology within this area. Whilst there is a general potential for more ephemeral prehistoric and/or Roman remains to be present, that potential is considered to be low.

¹⁶⁸ Ministry of Housing, Communities and Local Government and Department for Levelling-Up, Housing and Communities 2021 Planning Practice Guidance

¹⁶⁹ Historic England 2017 Setting of Heritage Assets Historic Environment Good Practice Advice in Planning: 3 (2nd Edition)

Site 1 and National Grid Substation Site

- 9.4.9 The HER contains two records within the southern part of sub-Site 1B. One of these records relates to the site of All Saints Church (the recorded location of a demolished church), which was demolished in 1510 but is recorded as being situated within the Site. It is possible that some medieval settlement associated with the church also survives in this area. A scatter of medieval and early post-medieval pottery is recorded just to the north of the postulated church site, which may merely represent a manuring scatter (broken pottery and other artefacts were often disposed of in dung heaps that were subsequently spread on fields as fertiliser) but the concentration may be indicative of settlement activity given the proximity to the church.
- 9.4.10 Geophysical survey of Site 1 is awaiting harvesting of the current crop within the field. Consequently the current archaeological potential of the Site is considered unknown at this stage.

Site 2

- 9.4.11 There are no HER entries falling within Site 2 although there are a number of multi period findspots (prehistoric through to post-medieval) in the vicinity of and adjacent to the Site. In addition, the current A410, which lies to the immediate east of Site 2, originated as a Roman road.
- 9.4.12 Geophysical survey of Site 2 is awaiting harvesting of the current crop within the field and, therefore, the current archaeological potential of Site is considered unknown at this stage.

Site 3

- 9.4.13 Sub-Site 3A, and a small part of sub-Site 3B, are recorded by the HER as forming part of a World War II (WWII) airfield and possibly falling within a medieval deer park. Any boundary features of the medieval deer park, if present, would lie beyond the Site.
- 9.4.14 Sub-Site 3B is recorded on the HER as being subject to fieldwalking in the 1980s and metal detecting in the early 2000s. Those surveys identified concentrations of burnt flint, which can be common finds on prehistoric sites, likely related to food preparation. The HER notes these finds as potential burnt mounds. However, no corresponding responses were noted in the geophysical survey, and it is likely that the burnt flints only survive as surface deposits. The metal detecting survey identified a range of objects including a Roman coin and key handle, which may be related to the possible site of a Roman building located to the immediate north.
- 9.4.15 The geophysical survey of Site 3 has largely identified former field boundaries shown on historic mapping although there is a possible ring ditch appearing in sub-Site 3A.

Site 4

- 9.4.16 There are 14 HER entries falling within the Site 4 boundary. These are predominantly finds from fieldwalking and metal detecting. These include multi-period finds spanning the prehistoric through to post-medieval periods. In addition to this, the HER records medieval earthworks extending slightly into the southern edge of the Site. No such earthworks are visible in the LiDAR data although the geophysical survey has identified a group of enclosures in this area which extend to both sides of the A140.
- 9.4.17 Cropmarks of a ring ditch and possible Roman field system are recorded in the north-eastern part of sub-Site 4B and the ring ditch is also apparent in the geophysical data. Trial trenches excavated along the northern edge of sub-site 4B in 2018 (in connection with junction improvements) revealed no archaeologically significant material, whilst trial trenches in the north-eastern edge of sub-Site 4A, again in 2018, exposed poorly-dated pits and ditches with finds of flints and post-medieval brick and tile, largely from unstratified contexts.
- 9.4.18 The geophysical survey has also identified a concentration of enclosures and a possible trackway in the southern part of sub-Site 4B.

Site 5

- 9.4.19 There are five HER entries within Site 5 comprising a possible site of a medieval building and multi-period finds. The southern tip of Boyland deserted medieval village and Hall is also recorded as extending into the northern part of sub-Site 5A.
- 9.4.20 The geophysical survey has identified a range of enclosures and associated features along the eastern edge of sub-Site 5B which are likely to represent medieval/early post-medieval settlement and/or stock enclosures. Within the north-western part of sub-Site 5A the survey has identified a large oval enclosure, potentially with internal features. The date and nature of this feature is currently unclear.

Site 6

- 9.4.21 The only HER record falling within Site 6 relates to Saxon, medieval and post-medieval finds recovered by metal detecting within the site. It would seem likely that these finds derive from manuring scatters.
- 9.4.22 The geophysical survey has identified a number of former field boundaries, some of which aren't represented on historic mapping, but which are on a similar alignment and pattern to those shown on historic mapping.

Site 7

- 9.4.23 The HER contains 11 entries falling within Site 7. This includes the edge of a medieval moated site in sub-Site 7C, and a post-medieval coin found by metal detecting in sub-Site 7A. Fieldwalking in sub-Site 7B and 7C recovered medieval and post-medieval pottery. The site of a medieval/post-medieval house is recorded

in the northern part of sub-Site 7D (which coincides with a series of geophysical anomalies potentially indicating roadside settlement and/or stock enclosures).

- 9.4.24 A possible medieval moated site is recorded on the southern boundary of sub-Site 7E and 7F, although nothing obvious relating to this is shown on LiDAR and the area of the record was not suitable for geophysical survey due to it falling partly within a block of woodland and partly overgrown fallow land. A WWII bombing decoy is recorded in sub-Site 7H but no indication of any associated remains was identified by the geophysical survey. The remaining records within Site 7 relate to multi period findspots spanning the Bronze Age to post-medieval periods.
- 9.4.25 In addition to the roadside features in sub-Site 7D that are noted above the geophysical survey has identified a likely prehistoric ring ditch in sub-Site 7B and a series of undated enclosures in sub-Site 7C.

Site 8

- 9.4.26 The only HER entry for Site 8 relates to a findspot of five palaeolithic flint flakes recovered from the ploughed surface within sub-Site 8B. The only features identified by the geophysical survey within Site 8 relate to field boundaries shown on historic mapping.

Site 9

- 9.4.27 One HER entry has been identified within Site 9 following metal detecting in the central part of the Site, which recovered a medieval coin and a medieval/post-medieval copper alloy vessel fragment.
- 9.4.28 The geophysical survey has identified a series of enclosures of uncertain date in the north-eastern part of Site 9. These may be related to settlement activity or stock enclosures, which align with the former field boundary visible on the enclosure and tithe maps suggestive of a medieval to post-medieval date.

Site 10

- 9.4.29 There are four HER entries within Site 10 comprising metal detecting in sub-Site 10C, which recovered a medieval harness pendant, a medieval bronze plaque, a Roman coin and sherds of late Saxon and medieval pottery. Sub-Site 10E contained a fragment of a Roman quern-stone, and a medieval seal matrix was recorded in sub-Site 10A. The north-eastern part of sub-Site 10C, the eastern part of sub-Site 10B, along with sub-Site 10D and 10E, fall within the extents of the WWII airfield at Seething, which was considerably larger than the existing airfield beyond the Site boundary.
- 9.4.30 The geophysical survey has identified a number of rectilinear enclosures within sub-Site 10C. It is not possible to date these features on morphological grounds although they are unlikely to be prehistoric.

Cable Route Corridor

- 9.4.31 A significant number of HER records have been identified along the CRC, as shown on **Figures 9.11 - 9.21**. This will be used to inform further survey and assessment to be undertaken in agreement with Norfolk Historic Environment Service (NHES) and included within the ES.

9.5 Project Basis for Scoping Assessment

- 9.5.1 Details of the proposals and design parameters are laid out in **Chapter 3 Scheme Description** of this Scoping Report which has been used to inform this chapter.

9.6 Likely Significant Effects

- 9.6.1 At this scoping stage, embedded mitigation within the design of the Scheme is limited to the assumption that effects on the settings of heritage assets during the construction and operation periods will be mitigated through the incorporation of appropriate setbacks, buffers and landscaping, and any significant impacts upon buried archaeology may be mitigated through the imposition of no dig zones. There will be embedded mitigation in the outline Decommissioning Environmental Management Plan (ODEMP). This will ensure that protections put in place during the Construction Phase and Operational Phase will also apply during the Decommissioning Phase.
- 9.6.2 It is considered that there is the potential for likely significant effects upon the historic environment resulting from the Scheme, based on the current proposals at the time of writing. These may include:
- Direct impacts upon archaeological features and deposits resulting in their partial/total loss as a result of construction; and
 - Indirect impacts on the significance of designated heritage assets through changes to their settings, as a result of the presence of construction or decommissioning activities, or operation of the Scheme.
- 9.6.3 Given that lighting effects during construction and decommissioning works are expected to be limited in extent, intensity and duration, effects on heritage receptors during these phases are unlikely to be significant. There will be no permanent lighting required during operation, with the exception of motion-sensed security lighting at the Substations and BESS. Therefore, an assessment of these effects is also proposed to be scoped out of the Cultural Heritage ES chapter. As detailed in **Section 5.8** a Lighting Strategy will be developed to secure measures necessary to avoid and mitigation lighting effects.

Construction Phase

- 9.6.4 The baseline data included above combined with the interim results of the geophysical survey have demonstrated the potential for the Scheme to contain previously unrecorded archaeological remains. Construction of the Scheme will involve the installation of the solar PV array Mounting Structures and Associated

Development (for example the 400kV Substations (No's 1 and 2, National Grid Substation, BESS, Grid Connection Infrastructure) as well as trenches for cabling (including the CRC) and the establishment of Access Tracks and Temporary Construction Compounds, all of which could potentially affect below ground archaeological remains. A suitable evaluation, to be agreed in consultation with the NHES, 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.

- 9.6.5 There are no designated heritage assets within the Scheme boundary, therefore, there will be no direct impact upon any designated heritage assets. Any potential impacts to the settings of designated heritage assets during the construction phase would be temporary and at a lower magnitude than those during operation. Any such impacts are, therefore, not considered significant, and it is proposed that impacts during the construction phase on designated heritage assets can be scoped out of the ES.

Operational Phase

- 9.6.6 There are potential impacts on designated heritage assets within the Study Area during the Operational Phase of the Scheme (excluding the CRC), 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.
- 9.6.7 As the CRC will be below ground once constructed it will not result in any change to the setting of designated heritage assets and, therefore, it is proposed that impacts of the operational phase of the CRC upon designated heritage assets can be scoped out of the ES.
- 9.6.8 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.
- 9.6.9 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

- 9.6.10 There will be embedded mitigation in the Outline DEMP 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 Scheme returned to the landowner. Any potential impacts to the settings of designated heritage assets during the decommissioning phase would be temporary and at a lower magnitude than those during operation. Any such impacts are, therefore, not considered significant. The Decommissioning Phase will, therefore, be scoped out of assessment.

Cumulative Effects

- 9.6.11 Consideration will also be made in regard to the cumulative impact of the Scheme with other surrounding committed developments.

9.7 Impacts Scoped Out of the Assessment

- 9.7.1 **Table 9.12** below presents a summary of the aspects to be scoped in or out of the ES.
- 9.7.2 As detailed above, lighting impacts and construction impacts on designated assets will be scoped out of the ES.
- 9.7.3 Due to the nature of cabling, being underground, there will be no post construction impact upon the setting of any heritage asset, and any impact during construction will be temporary and very minor, i.e. only short periods for each individual section of cable trench and levels of visual intrusion and noise little different to existing agricultural activity. It is therefore proposed that operational or decommissioning impacts upon the setting of heritage assets be scoped out of the assessment with regards to the CRC. In addition, decommissioning impacts are scoped out for below ground assets, as any disturbance would be limited to the construction phase.

9.8 Proposed Approach to the ES

- 9.8.1 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.

Consultation

- 9.8.2 Consultation with NHES commenced in spring 2024 and will continue throughout the evolution of the Scheme design. In addition, the Applicant is seeking to consult with the Local Planning Authority's Conservation Officer at SNC, in respect of the scope of the assessment with initial contact having been made in August 2024. Ongoing consultation will take place with NHES, Historic England and the SNC Conservation Officer, as further assessment work progresses.

Baseline

- 9.8.3 In line with section 5.9 of National Policy Statement EN-1 and sections 2.10.107-2.10.119 of NPS EN-3, 2.9.25 of NPS EN-5 and professional guidance (Chartered Institute for Archaeologists (CIfA) 2020)¹⁷⁰; the following information sources have been consulted to inform this assessment of the baseline within the Study Area and will be further 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 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'¹⁷¹; and
 - Site visits as required.
- 9.8.4 Walkover surveys were 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.
- 9.8.5 As detailed above, geophysical survey was also undertaken in Summer/Autumn 2024. Several fields could not be surveyed at this time due to the presence of crop. Final results of the completed Geophysical Survey remain forthcoming and will be set out in the ES. This Scoping Report is informed by results obtained as of the end of September 2024.
- 9.8.6 Additional surveys will be undertaken to inform the baseline for the ES. An Aerial Photographic Assessment and LiDAR Survey has also been commissioned. Results of both will be utilised in further assessment work as part of the EIA.
- 9.8.7 Consultation with NHES over the need for any scope of any intrusive (trial trench) investigation is ongoing. If intrusive investigation is required, the results of this will be included within the ES.

Receptor Sensitivity

- 9.8.8 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 9.12**. Using professional judgement and the results of consultation,

¹⁷⁰ CIfA (2020) Standard and guidance for historic environment desk-based assessment. available at: https://www.archaeologists.net/sites/default/files/CIfAS%26GDBA_4.pdf

¹⁷¹ Medlycott, 2011. Research and Archaeology Revisited: A Revised Framework for the East of England.

heritage assets are also assessed on an individual basis and regional variations and individual qualities are taken into account, where applicable.

Table 9.12 Criteria for the Assessment of the Value of Heritage Assets

Value	Designation
Very High (International)	World Heritage Sites
High (National)	Scheduled Monuments Grade I and II* Listed Buildings Grade I and II* Registered Parks and Gardens Registered Battlefields Archaeological sites of schedulable quality and significance
Medium (Regional)	Grade II Listed Buildings Grade II Registered Parks and Gardens Conservation Areas Archaeological sites that can be shown to have demonstrable regional importance
Low (Local)	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

- 9.8.9 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 development as set out in **Table 9.13** below. Impacts can potentially be caused during the construction and operational phases of the Scheme (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 9.13 Criteria for Assessing the Magnitude of Development Impacts on Cultural Heritage

Impact Magnitude	Example
Major	Total or substantial loss of the significance of a heritage asset. 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.
Moderate	Partial loss or alteration of the significance of a heritage asset. 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. This equates to less than substantial harm in terms of the NPPF.

Minor	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). Some harm to the heritage asset's setting, but not to a degree that it would materially compromise the significance of the heritage asset. Perceivable level of harm, but insubstantial relative to the overall interest of the heritage asset.
Negligible	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. 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.

- 9.8.10 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 9.14**, below.
- 9.8.11 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.
- 9.8.12 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 considering which is the most appropriate significance of effect to apply.
- 9.8.13 Based on professional judgement, a 'significant' effect in terms of the EIA process is considered to be one of Moderate significance or above.

Table 9.14 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

- 9.8.14 The ES will assess effects with embedded mitigation measures in place. Where significant adverse effects are identified after considering these embedded measures 'additional mitigation measures' will be proposed. Following application of additional mitigation measures an assessment of residual effects will be produced.

9.9 Summary

9.9.1 **Table 9.15** below summarises the proposed Cultural Heritage scope.

Table 9.15: Cultural heritage and archaeology scoping summary

Aspect	Construction	Operation	Decommissioning	Surveys Required
Solar Pannels, BESS, Sub-station				
Direct impacts to below ground archaeology	Scoped in	Scoped in	Scoped out	Desk Based Assessment Geophysical Survey Aerial Photographic and LiDAR Assessment Trial Trench Evaluation
Indirect impacts to designated heritage assets	Scoped out	Scoped in	Scoped out	Setting Assessment
Indirect impacts to non-designated heritage assets	Scoped out	Scoped in (should a NDHAs be identified)	Scoped out	Setting Assessment
Cable Route Corridor				
Direct impacts to below ground archaeology	Scoped in	Scoped in	Scoped out	Desk Based Assessment Aerial Photographic and LiDAR Assessment Potential for targeted Trial Trench Evaluation
Indirect impacts to designated heritage assets	Scoped out	Scoped out	Scoped out	n/a
Indirect impacts to non-designated heritage assets	Scoped out	Scoped out	Scoped out	n/a

10 Transport and Access

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 transport and access. It describes the baseline conditions for the Scheme relating to transport and access; and sets out the potential impacts that could occur during the construction, operation and decommissioning phases of the Scheme. It also gives a description of the measures that will be embedded in the design and management of the Scheme to mitigate or minimise these impacts.
- 10.1.2 During the construction and decommissioning phases, impacts could arise from vehicles travelling to and from the Scheme to deliver or collect construction materials, in addition to workforce trips. During the operation of the Scheme, there will be occasional operational traffic, including Light Goods Vehicles (LGV)¹⁷² for maintenance purposes, ad-hoc deliveries using Heavy Goods Vehicles (HGV)¹⁷³, and the use of LGVs and HGVs in the event of panel and / or equipment replacement.

10.2 Study Area

- 10.2.1 An indicative Study Area for transport and access is shown in **Figure 10.1 (Volume II)** which identifies the road network likely to be affected by the Scheme. The transport and access Study Area has been identified based on the likely vehicle routing to access the Scheme Sites and Cable Route Corridor (CRC) from the Strategic Road Network (SRN) or other key link roads. In this instance, the key regional link roads are A11 and A47 to the north and A143 to the south. The Study Area will consist of, but is not limited to (subject to consultation), the following links:

- A140 Norwich Road / Ipswich Road;
- Mill Lane / Norwich Road;
- Cargate Lane;
- The Street (Hempnall) / Broaden Lane / Church Hill / The Street (Saxlingham Nethergate);
- Fairstead Lane;
- B1527 (between A140 and B1332);
- Long Stratton Bypass;
- Bussey's Loke / The Green;
- The Street (south of B1527);
- Alburgh Road / Lundy Green / Spring Lane / Barondale Lane / Broad Road / The Street / Low Road / Tunbeck Road;
- Shotesham Road / Woodton Road / Baxter's Lane;
- B1332 Norwich Road;
- Littlebeck Lane;
- Harvey Lane / Upgate Road;

¹⁷² Light Goods Vehicles are defined as goods vehicles with a Gross Vehicle Weight not exceeding 3.5 tonnes.

¹⁷³ Heavy Goods Vehicles are defined as goods vehicles with a Gross Vehicle Weight exceeding 3.5 tonnes.

- B1134 Station Road; and
 - Lodge Road / Frith Way.
- 10.2.2 The final access strategy and proposed vehicle routeing is still under consideration, notably for access to Sites 7 and 8. Local roads to the north of B1527 including, but not limited to, Fairstead Lane, Broaden Lane and Bussey's Loke have been included in the Study Area for Transport and Access as they may be suitable as Site access links for potential internal construction vehicle routes (including Sites 7 and 8). Whilst roads passing through Hempnall have been included within the Study Area, options for accessing Sites 7 and 8 that do not route via Hempnall are being explored. The access strategy and proposed vehicle routeing will be designed with the aim to minimise trips through settlements to limit impacts to the local road network and residents.
- 10.2.3 Long Stratton bypass is included within the Study Area as it is currently under construction and expected to be completed by late 2025, prior to the time the construction phase begins for the Scheme. Subject to the completion of the bypass, all vehicles associated with the Scheme will be routed along the bypass to avoid travelling through Long Stratton.

10.3 Overview of Legislation, Policy and Guidance

Legislation

- 10.3.1 There is no legislation specifically relevant to the assessment of traffic and transport in relation to the Scheme.

National Policy

- 10.3.2 The key national policies relevant to the Scheme are outlined below.
- 10.3.3 Overarching National Policy Statement for Energy 2023 (EN-1)¹⁷⁴:
- *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*

¹⁷⁴ Department for Energy and Net Zero (2023). Overarching National Policy Statement for Energy ('EN-1', 2023).

- *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”*

10.3.4 National Policy Statement on Renewable Energy Infrastructure 2023 (EN-3)¹⁷⁵:

- *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.”*

10.3.5 National Policy Statement on Renewable Energy Infrastructure 2023 (EN-5)¹⁷⁶:

- *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.”*

10.3.6 National Planning Policy Framework 2024 (NPPF)¹⁷⁷:

- *Paragraph 109 of the NPPF states that “Transport issues should be considered from the earliest stages of plan-making and development proposals, using a vision-led approach to identify transport solutions that deliver well-designed, sustainable and popular places. This should involve:*

¹⁷⁵ Department for Energy and Net Zero (2023). National Policy Statement on Renewable Energy Infrastructure (EN-3, 2023).

¹⁷⁶ Department for Energy and Net Zero (2023). National Policy Statement for Electricity Networks Infrastructure (EN-5, 2023).

¹⁷⁷ Ministry of Housing, Communities and Local Government (2024). National Planning Policy Framework (NPPF, 2024)

- a) *making transport considerations an important part of early engagement with local communities;*
- b) *ensuring patterns of movement, streets, parking and other transport considerations are integral to the design of schemes, and contribute to making high quality places;*
- d) *understanding and addressing the potential impacts of development on transport networks;*
- e) *realising opportunities from existing or proposed transport infrastructure, and changing transport technology and usage – for example in relation to the scale, location or density of development that can be accommodated;*
- f) *identifying, assessing and taking into account the environmental impacts of traffic and transport infrastructure – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains.*
- *Paragraph 116 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, following mitigation, would be severe, taking into account all reasonable future scenarios.”*
- *Paragraph 118 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 vision-led transport statement or transport assessment so that the likely impacts of the proposal can be assessed and monitored .”*

Local Policy

10.3.7 Norfolk County Council (NCC) Local Transport Plan 4 Strategy 2021-2036 (2022)¹⁷⁸:

- *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.”*
- *Policy 6 states “We will work with the development community and local stakeholders to ensure greener transport solutions are embedded in land-use planning to significantly reduce traffic generation by private car.”*
- *Policy 15 states “It is important to ensure good connections for freight... initiatives such as freight consolidation onto smaller vehicles or electric powered cargo bikes might provide an answer.”*

¹⁷⁸ Norfolk County Council (2022). Local Transport Plan 4 Strategy 2021-2036

Guidance

- 10.3.8 Guidelines for the Environmental Assessment of Transport and Access published by the IEMA (the IEMA Guidelines)¹⁷⁹ have been considered and are set out in **Section 10.6**.
- 10.3.9 The Planning Inspectorate's guidance on Scoping Solar Development¹⁸⁰ has been considered in this Chapter. A summary of the reasoning behind the scope of assessment to be undertaken is provided in **Section 10.9** of this Chapter and summarised in **Chapter 15**.

10.4 Baseline Environment

Highway Access

- 10.4.1 The road network surrounding the Scheme consists of two main north to south links, namely the A140 and B1332, and one main east to west link, the B1527. These three links will comprise the key arterial connectors for construction traffic accessing the Scheme. B1134 Station Road runs west of A140 and will be the key link for access to the proposed National Grid Substation, BESS and south-western sites, (Site 1 and 2).
- 10.4.2 The remaining links within the Study Area comprise more rural roads with intermittent road markings and varying carriageway widths. **Table 10.1** summarises the attributes of the road network within the indicative Study Area.

Table 10.1: Indicative Study Area Links

Link	Description	Speed Restriction	Notes
A140	Single carriageway	60mph; 50mph (Swainsthorpe); 40mph (Newton Flotman); 50mph (Upper Tasburgh); 30-50mph (Long Stratton)	Key arterial road with variable speed limit, carriageway width suitable for large vehicles to pass and good forward visibility. Avoids routing through Long Stratton, subject to completion of Long Stratton Bypass. Passes through some residential / commercial areas.
Mill Lane / Norwich Road	Single carriageway, single track	60mph; 30mph (Saxlingham Nethergate)	7.5T weight restriction except for loading (Mill Lane). Shotesham Ford located on Mill Lane, potential flooding and consequent inaccessibility by vehicles. Variable width and hedgerows on either side of the carriageway.

¹⁷⁹ Guidelines for the Environmental Assessment of Traffic and Movement (2023) Institute of Environmental Management and Assessment. Digital Copy. Available at: <https://www.iema.net/resources/blog/2023/07/12/new-iema-guidance-environmental-assessment-of-traffic-and-movement> Accessed October 2024

¹⁸⁰ Planning Inspectorate (2024) Nationally Significant Infrastructure Projects: Technical Advice Page for Scoping Solar Development

Cargate Lane	Single carriageway, single track at points	60mph	Good forward visibility with variable street widths and provision of vehicle passing points.
The Street (Hempnall) / Broaden lane / The Street (Saxlingham)	Single carriageway	60mph; 30mph (Hempnall); 20mph (Hempnall – overhanging building)	Hempnall Primary School and Saxlingham Primary School located along route. On-street parking along Hempnall section. Overhanging building in Hempnall with speed restriction.
Fairstead Lane	Single carriageway, single track	60mph	Good forward visibility with some overhanging trees, potentially challenging for two-way vehicle routeing.
B1527	Single carriageway	60mph; 30mph (west of Hempnall); 20-30mph (Hempnall)	Hempnall village with on-street parking, variable road width and alignment, some narrow footways. Carriageway width suitable for large vehicles to pass and good forward visibility along remainder of link eastbound and westbound to/from Hempnall.
Long Stratton Bypass	Single carriageway	60mph (assumed)	Usage for Scheme subject to bypass construction / completion.
Bussey's Loke / The Green	Single carriageway, single track	60mph; 20mph (Hempnall)	7.5T weight restriction except for loading. Some overhanging trees and varying road widths, potentially challenging for two-way vehicle routeing.
The Street (south of B1527)	Single carriageway	60mph	Good forward visibility with some overhanging trees.
Alburgh Road / Lundy Green / Spring Lane	Single carriageway, single track at points	60mph; 40mph (Hempnall Green)	Variable road width on Lundy Green, overall good visibility, passes through some built-up residential areas.
Shotesham Road / Woodton Road / Baxter's Lane	Single carriageway, single-track, one-way access at some junctions	60mph	7.5T weight restriction except for loading (Shotesham Road). Varying road widths and one-way access at some junctions. Potentially challenging for two-way vehicle routeing.
B1332	Single carriageway	60mph; 40mph (Ditchingham)	Arterial road with good forward visibility. Passes through some residential / commercial areas.
Littlebeck Lane	Single carriageway, single track	60mph	Varying road width, potentially challenging for two-way vehicle routeing.
Harvey Lane / Upgate Road	Single carriageway	60mph	Varying road widths, existing crossover points and good overall visibility.
B1134	Single carriageway	60mph	Good overall visibility, some varying road widths, level crossing to the west.

Lodge Road / Frith Way	Single carriageway, single track	60mph	Single track with varying road widths.

Public Transport Access

- 10.4.3 The Great Eastern Main Line (GEML) runs approximately 6km to the west of Hempnall, running north to south from Norwich to London Liverpool Street. The line is double-tracked on the section south of the A47 to Diss and is electrified with overhead catenaries. The nearest railway station to the northern extent of the Scheme is Norwich, which is located approximately 14km north of Hempnall (or 10km north of Site 9). The nearest railway station to the south-western extent of the Scheme is Diss, which is located approximately 10km south-west of the A140 / B1134 roundabout (or 9.5km south-west of sub-Site 2A). **Table 10.2** summarises the services available from both railway stations.

Table 10.2: Railway Services

Railway Station	Destination	Operator	Frequency, Mon-Fri (approx.)	Operating Hours, Mon-Fri (approx.)
Norwich	Lowestoft	Greater Anglia	Hourly	05:30 – 23:00
	Great Yarmouth	Greater Anglia	Hourly	05:00 – 23:00
	London Liverpool Street / Ipswich	Greater Anglia	Twice-hourly	05:00 – 23:00
	Cambridge / Stansted Airport	Greater Anglia	Hourly	05:30 – 22:30
	Sheringham / Cromer	Greater Anglia	Hourly	05:00 – 23:00
	Liverpool Lime Street / Manchester Piccadilly / Nottingham / Sheffield	East Midlands Railway	Hourly	06:00 – 20:00
Diss	Norwich	Greater Anglia	Twice-hourly	05:00 – 23:00
	London Liverpool Street / Ipswich	Greater Anglia	Twice-hourly	05:00 – 23:00

- 10.4.4 The key bus corridors within the vicinity of the Scheme, within the Study Area are summarised in **Table 10.3**. Bus stops located within the Study Area are shown in **Figure 10.2 (Volume II)**.

Table 10.3: Bus Services

Service No.	Route	Operator	Frequency, Mon-Fri (approx.)	Operating Hours, Mon-Fri (approx.)
84	Norwich – Hempnall – Harleston	Konectbus	Every 2 hours	08:00 – 18:00
41 / 41A / X41 / 941	Norwich – St Stephens Street – Bungay	First Eastern Counties	Twice hourly	08:00 – 23:00
1 / 1A	Norwich – Long Stratton – Burston – Diss	Konectbus	Every 3-4 hours	08:00 – 16:00
36 / 36A / 36B	Horsford – Norwich – Long Stratton – Harleston	First Eastern Counties	Twice hourly	06:00 – 22:00
82	Norwich – Diss	Simonds	Hourly	08:00 – 23:00

Cycle and Pedestrian Network

- 10.4.5 There are several PRoW which intersect with the Scheme Sites and the roads within the Study Area (as shown on **Figure 10.2**). PRoWs which directly interact with Scheme include, but are not limited to:
- Long Stratton FP3/FP4: which crosses sub-Site 4B and intersects with B1527;
 - Hempnall FP2: which crosses sub-Site 7B and intersects with Fairstead Lane;
 - Saxlingham Nethergate FP10: which crosses sub-Sites 7F and 7E;
 - Shotesham FP19/FP22: which crosses sub-Sites 8A and 8B and intersects with Woodton Road and Baxter's Lane;
 - Brooke FP6: which crosses sub-Site 9;
 - Morningthorpe FP5: which crosses sub-Sites 5A and 5B and intersects with B1527;
 - Hempnall FP25/FP28: which cross sub-Site 3B and intersects with Spring Lane; and
 - Great Moulton RB19; which crosses sub-Site 1B.
- 10.4.6 National Cycle Network (NCN) routes 30 and 40 run to the south of the Scheme, roughly on a south-west to north-east direction. NCN route 30 runs east from Thetford, roughly following A1066 and A143 via Diss, Harleston, Bungay and Beccles. The route continues in a circular direction along the Norfolk coast. NCN route 40 runs further south and roughly parallel to route 30 between Bungay and Eye, before travelling south to Framlingham.
- 10.4.7 NCN route 1 runs east of the Scheme, travelling in a roughly north to south direction from Norwich to Beccles via Loddon, continuing south towards London and north-west towards, northern England and Scotland.
- 10.4.8 Boudicca Way is a long-distance trail which passes through the rural countryside of south Norfolk, running for approximately 58 km (36 miles) between Norwich and Diss, roughly parallel to A140 and adjacent to sub-Site 7A on Fairstead Lane. The

trail also interacts with CRC4. Another long-distance trail, Angles Way, runs to the south of the Scheme on a 150 km (93 mile) route following the county boundary of Norfolk and Suffolk from Great Yarmouth to Thetford. The closest sub-Site to the trail is sub-Site 10A which is located approximately 4km to the north.

- 10.4.9 **Figure 10.2** identifies the PRowS, NCN routes and bus stops in relation to the Scheme.

Vehicle Routes and Site Access

- 10.4.10 The final access strategy is under consideration and will be subject to further assessment and agreement with NCC. The likely vehicle routes and Site access points are shown in **Table 10.4**.

Table 10.4: Likely Access Routeing

Sites	Main Access Routeing*
National Grid Substation and BESS	From A140 / B1134 roundabout: westbound on B1134 Station Road, northbound on agricultural access track.
1A – 1B	(Option A) Internal access via BESS Site; (Option B) From A140 / B1134 roundabout: westbound on B1134 Station Road, northbound on Lodge Road and Frith Way – potential to require one-way routeing or secondary access via BESS site.
2A – 2C	(Option A) Internal access via BESS site and along the CRC; (Option B) From A140 / B1134 roundabout: westbound on B1134 Station Road, northbound on Lodge Road and Frith Way – potential to require one-way routeing or secondary access via BESS Site; (Option C) Access from A140 Norwich Road converting existing layby or identifying other suitable access point.
3A – 3B	(Option A) From B1332 Norwich Road, westbound on B1527 Church Road, B1527 Hempnall Road, B1527 Bungay Road, southbound on Alburgh Road. For sub-Site 3A access: southbound on Spring Lane and agricultural access track. For sub-Site 3B access: westbound on Lundy Green, southbound on agricultural access track; (Option B) Internal access via cable corridor from sub-Sites 5A and 5B.
4A	From A140 / B1527 roundabout: off south-west exit of roundabout.
4B	(Option A) From A140 / B1527 roundabout: eastbound on B1527, south onto access point; (Option B) From A140 / B1527 roundabout: eastbound on B1527, southbound on Brick Kiln Lane, westbound on agricultural access track or internal access along cable route corridor.
5A – 5B	(Option A) From A140 / B1527 roundabout: eastbound on B1527, south onto access point; (Option B) From A140 / B1527 roundabout: eastbound on B1527, south on The Street, west onto access point.
6	From B1332 Norwich Road, westbound on B1527 Church Road, B1527 Hempnall Road, B1527 Bungay Road, southbound on Alburgh Road, east onto access point.
7A – 7L, 8A – B	(Option A) Potential one-way internal haul route between Sites 7 and 8: From A140 Norwich Road, east on Fairstead Lane, north onto access point for sub-Site 7A. Internal access between sub-Sites 7A – 7L and 8A – 8B utilising

	internal haul roads and cable corridor. Exit from access point for sub-Site 7L, south on Woodton Road, south on Shotesham Road, east on B1527 Church Road, north or south onto B1332 Norwich Road. (Option A.1) Additional entrance / exit route: From B1332 Norwich Road, west on B1527 Church Road, north on Shotesham Road, north on Woodton Road, north on Baxter's Lane, west onto access point on sub-Site 8B. (Option A.2) Additional entrance / exit route: From B1332 Norwich Road, west on Littlebeck Lane, north onto access point on Site 9.
9	(Option A) From B1332 Norwich Road, westbound on Littlebeck Lane, north onto access point on Site 9. (Option B) Access from internal haul route, connected to Sites 7 and 8.
10A – 10E	From B1332 Norwich Road, eastbound on Harvey's Lane, south onto access points for sub-Sites 10A – 1D. Northbound on Seething Road and west onto access for sub-Site 10E.
* All vehicles will be routed northbound / southbound along A140 or B1332 to access the Strategic Road Network (SRN). Both corridors connect northbound to A47 and southbound to A143.	

10.4.11 A map of the proposed vehicle routing and site access locations is shown in full in **Figure 10.3 Sheets 1 - 7 (Volume II)**, and below.

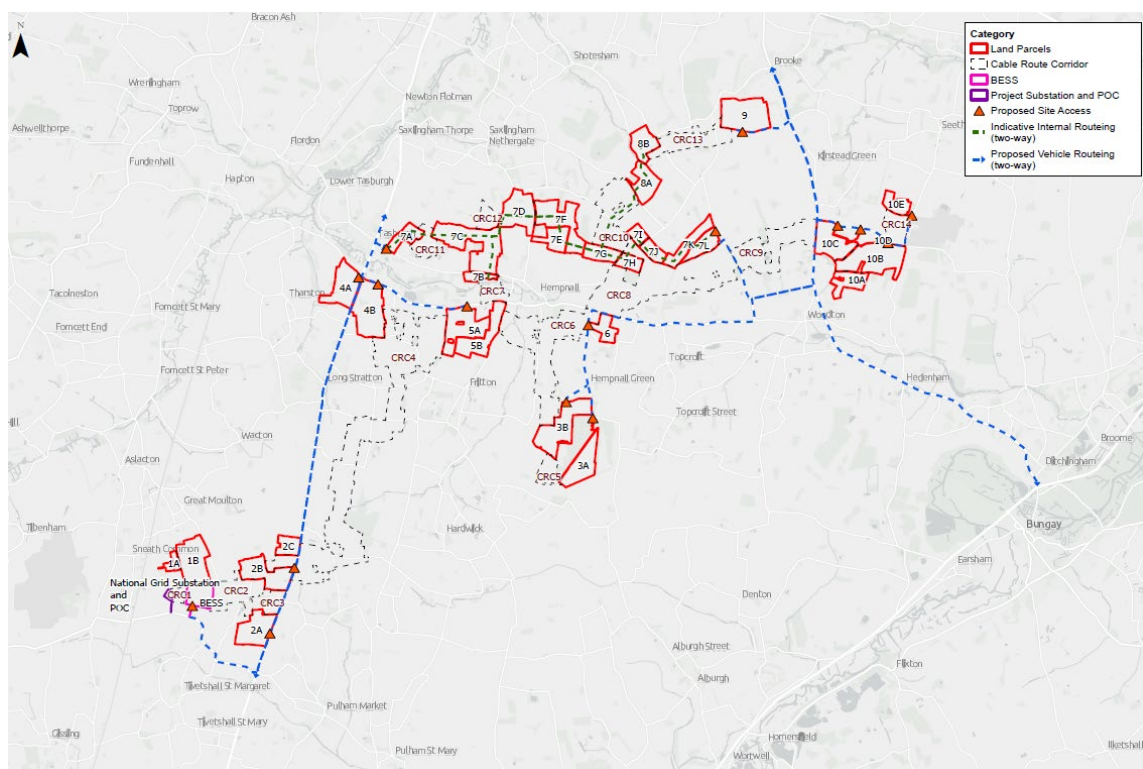


Figure 10.3 Proposed Vehicle Routing and Access (overview Sheet 1)

10.4.12 The use of internal haul roads between sites, particularly in the cluster of sub-Sites to the north of Hempnall (i.e. sub-Sites 7A – 7L, 8A – B, Site 9), is being considered as part of the emerging access strategy to avoid routing any vehicles through sensitive areas or roads which are unsuitable for LGVs and HGVs. However, due to the geographical conditions and existing road network, some single carriageway,

single track, rural links will need to be utilised for site accesses. For this reason, a one-way system may be adopted to minimise conflict points with vehicles and avoid and minimise routing vehicles through sensitive areas such as Hempnall. The final proposed access strategy will be prepared in collaboration with NCC and analysed through the EIA.

Traffic Flows

- 10.4.13 A combination of Automatic Traffic Count (ATC) surveys, Manual Classified Count (MCC) surveys and DfT Manual Count Point (MCP) data will be assessed within the Study Area of the Scheme and potential access junctions.
- 10.4.14 The ATC and MCC surveys were undertaken between Friday 1st November 2024 and Thursday 7th November 2024. ATC surveys were collected for a 7-day, 24-hour period and the MCC survey was for a one-day 24-hour period, on Thursday 7th November.
- 10.4.15 The survey locations are summarised as follows. Note that the A140 / B1527 roundabout is referred to as Hempnall Roundabout:
- ATC Location 1: A140, north of Hempnall Roundabout;
 - ATC Location 2: B1527, east of Hempnall Roundabout;
 - ATC Location 3: A140 south of Hempnall Roundabout;
 - ATC Location 4: Bungay Road, west of Hempnall Roundabout;
 - ATC Location 5: Fairstead Lane, west of Hempnall;
 - ATC Location 6: Norwich Road, north of Saxlingham Nethergate;
 - ATC Location 7: Broaden Lane, north of Hempnall;
 - ATC Location 8: Littlebeck Lane, south of Brooke;
 - ATC Location 9: Shotesham Road, north of B1527;
 - ATC Location 10: B1332, north of Woodton;
 - ATC Location 11: Harvey Lane, south of Kirstead Green;
 - ATC Location 12: B1527, north of Woodton;
 - ATC Location 13: B1332, southeast of Woodton;
 - ATC Location 14: Alburgh Road, north of Hempnall Green;
 - ATC Location 15: The Street, north of Fritton;
 - ATC Location 16: Lodge Road, north of B1134;
 - ATC Location 17: B1134, west of A140 / B1134 roundabout;
 - ATC Location 18: The Green, southeast of Saxlingham Nethergate;
 - ATC Location 19: Wash Lane, southeast of Saxlingham Nethergate;
 - ATC Location 20: Baxter's Lane, east of Saxlingham Nethergate; and
 - MCC Location 1: Hempnall Roundabout.
- 10.4.16 **Figure 10.4 (Volume II)** shows the ATC and MCC survey locations. **Table 10.5** summarises the baseline results of the ATC locations. Baseline results are also shown in a diagrammatic format in **Figure 10.5 (Volume II)**.

Table 10.5: ATC Baseline Flows

ATC Location	Total Flows, 24hr, Two-way							Weekday Average*
	Fri 1 st	Sat 2 nd	Sun 3 rd	Mon 4 th	Tue 5 th	Wed 6 th	Thu 7 th	
01: A140	22,098	17,322	15,641	20,425	20,573	20,780	21,277	21,031
02: B1527	5,270	4,432	3,332	5,616	5,708	5,837	5,354	5,557
03: A140	22,117	17,664	15,660	20,874	21,292	21,185	22,223	21,538
04: Bungay Road	2,708	2,137	1,798	2,670	2,905	2,972	2,850	2,821
05: Fairstead Ln	65	76	62	86	80	90	113	87
06: Norwich Rd	1,231	1,037	825	1,234	1,400	1,341	1,471	1,335
07: Broaden Ln	1,215	1,102	879	1,213	1,392	1,329	1,474	1,325
08: Littlebeck Ln	87	102	78	120	95	128	113	109
09: Shotesham Rd	117	125	105	134	139	153	163	141
10: B1332	7,839	6,460	5,108	7,198	7,385	7,640	7,724	7,557
11: Harvey Ln	496	289	251	460	527	553	471	501
12: B1527	974	747	564	956	970	1,048	1,062	1,002
13: B1132	8,427	6,344	5,186	7,942	7,812	8,111	7,927	8,044
14: Alburgh Rd	1,125	951	672	1,199	1,268	1,151	1,170	1,183
15: The St	1,401	1,118	962	1,467	1,570	1,581	1,684	1,541
16: Lodge Rd	184	182	104	196	176	198	166	184
17: B1134	3,301	2,009	1,786	3,186	3,323	3,375	3,571	3,351
18: The Grn	60	53	59	79	70	67	82	72
19: Wash Ln	60	53	59	79	70	67	82	72
20: Baxter's Ln	146	114	94	154	171	150	142	153

* Weekday average does not include Sat 2nd or Sun 3rd

10.4.17 **Table 10.6** outlines the review of MCP locations within the Study Area and their respective Annual Average Daily Flow (AADF). The latest year that data was collected or estimated for these points was 2019.

10.4.18 It is generally agreed that traffic data older than 3-5 years can be considered 'outdated'. Whilst this is the case for the below MCPs, they have been included within the Scoping Report as they provide a pre-Covid baseline which will be assessed against the ATC surveys. DfT data additionally suggests that nationally, traffic in 2023 was 2.3% lower than 2019 pre-Covid levels¹⁸¹. Therefore, the MCP data provides a relevant baseline for traffic movements, in particular for movements that were not subject to Covid restrictions.

Table 10.6: MCP Locations in Study Area

MCP	Road Section	Latest Estimated / Manual Count Year	AADF (2019)	% HGV (2019)
941724	B1527 east of A140 / B1527 roundabout	2019 (estimated); 2018 (manual count)	3,472	3%

¹⁸¹ Department for Transport (2024) Road traffic estimates in Great Britain. Accredited official statistics: Road traffic estimates in Great Britain: 2023 - GOV.UK Accessed November 2024

807192	Broaden Lane north of Hempnall	2019 (manual count)	2,038	0%
806210	Field Lane south of B1527 Hempnall	2019 (estimated); 2018 (manual count)	552	1%
802270	Low Road north of Hardwick	2019 (estimated); 2018 (manual count)	863	0%
941771	B1527 north of Woodton	2019 (estimated); 2018 (manual count)	901	4%
806756	Triple Plea Road south of Hempnall Road	2019 (manual count)	290	1%
951638	B1332 north-west of Ditchingham	2019 (manual count)	6,080	5%

Consultation

- 10.4.19 Consultation with NCC (the Local Highway Authority) was undertaken on 15 October 2024 to better understand the road network within the Study Area, and any other concerns NCC may have relating to transport and access.
- 10.4.20 NCC was generally in agreement that the A140, B1527 and B1332 were the most suitable key access routes for the Scheme. It was acknowledged that the completion of the Long Stratton bypass would be beneficial to the Scheme. The village of Hempnall and the B1527 running through it was also identified as a challenge due to its residential nature and varying road width.
- 10.4.21 It was noted by NCC that the A140 is a key arterial route and can become congested in the morning and afternoon peaks with 07:30 to 09:00 identified as the busiest period. As outlined in **Section 10.8**, mitigation measures such as seeking to avoid network peak hours through vehicle scheduling will be included to minimise effects on the network. Additionally, construction working hours are likely to mean that staff movements will occur before the peak AM period identified by NCC.
- 10.4.22 NCC indicated that more information will be needed relating to trip-distribution across the sub-Sites in order to identify the most appropriate access strategy and potential mitigation. Future engagement with NCC will therefore be held to discuss these issues. Initial trip-distribution figures are outlined in **Section 10.5**.
- 10.4.23 NCC advised that the Council's network management and modelling teams should be engaged to request any additional data to support the Scheme's DCO Application. This includes information such as personal injury records, which has since been collected and will be assessed in more detail within the Transport Assessment (TA). The Council's network management and modelling team advised that the transport modelling undertaken for the Long Stratton Bypass may be outdated and that whilst the surveys were carried out in 2021/22, they are treated carefully due to lower traffic levels during the pandemic and limited knowledge as to how traffic levels may recover. As such, it is not proposed to utilise this traffic modelling data in support of the assessment of traffic and transport for the Scheme.

10.5 Project Basis for Scoping Assessment

Trip-Generation: Construction and Decommissioning

- 10.5.1 It is expected that a range of vehicles would access the Site to enable construction and decommissioning, which would comprise the following, but not be limited to:
- LGVs i.e. vans and small flatbeds – movements for plant maintenance, PPE, fixings / small components, sundry items, canteen supplies, couriers, post / parcels;
 - HGVs i.e. 2-6 axle rigid or articulated lorries – movements of materials / component deliveries, PV tables, mounts and panels, plant deliveries, piling rigs, spoil removal, aggregate supplies, cabling, containerised equipment, fencing etc;
 - Cars and minibuses for staff transport – assuming a minibus capacity of 7; and
 - Abnormal Indivisible Loads (AIL) i.e. girder frame trailer and tractor combination for substation transformers (see **Section 10.7** for further information).
- 10.5.2 The construction vehicle trip generation estimate for the Scheme was informed by trip generation information from two previous IGP solar farm DCO schemes – Cottam (recently approved by the Secretary of State) and West Burton (decision pending). These schemes are very similar in energy generation capacity and location characteristics by means of their disparate site locations and rural setting. The construction trip generation estimate for the Scheme was then benchmarked against several other similar solar DCO projects to ensure a robust trip generation estimate was achieved.
- 10.5.3 The final estimates outlined below include a 15% contingency mark up to account for the additional trips expected to be generated as a result of the more dispersed Site layout across the Scheme.

Solar Farm Trip-Generation (HGVs and LGVs)

- 10.5.4 The indicative average trip-generation estimates have shown an anticipated level of traffic during the construction phase of the solar farm (not including the construction of the CRC), with an average of 36 HGVs (72 movements) and 15 LGVs (30 movements) per day across all solar Sites. The Scheme's construction programme will not have a flat profile, with the peak period of construction expected to occur when multiple teams are on-Site undertaking piling, constructing the framework and mounting solar PV modules. These daily estimates are therefore anticipated to peak at 54 HGVs (108 movements) and 22 LGVs (44 movements) per day across all solar Sites.
- 10.5.5 Individual sub-Sites have been grouped indicatively based on potential shared access routes. The trip-generation of these groups has then been apportioned based on Site area (ha) as a percentage proportion of the total Site area. Note that this does not include vehicles associated with the CRC construction. The trip-generation estimates for the Substation(s) and BESS equipment are inherent within the overall total vehicle calculations for each Site where applicable. This is shown

in **Table 10.7**. Note that estimates may be subject to change based on further assessment work and agreement with NCC.

Table 10.7: Trip-Generation Estimates by Site Group – Solar Farm

Site Group	% of Total Solar Farm Site Area	HGVs (vehicles)			LGVs (vehicles)			Cars / Shuttle (vehicles)	
		Total	Peak Daily	Avg. Daily	Total	Peak Daily	Avg. Daily	Peak Daily	Avg. Daily
Station Road Sites: 1A, 1B, BESS	7%	999	4	3	400	2	1	19	15
A140 South Sites: 2A, 2B, 2C	9%	1,252	5	3	501	2	1	24	19
Alburgh Road Sites: 3A, 3B, 6	11%	1,438	6	4	575	2	2	27	21
A140 West: 4A	4%	510	2	1	204	1	1	10	8
A140 East: 4B	6%	756	3	2	303	1	1	14	11
Morningthorpe North Sites: 5A, 5B	8%	1,140	5	3	456	2	1	22	17
Hempnall North Sites: 7A, 7B, 7C, 7D, 7E, 7F, 7G, 7H, 7I, 7J, 7K, 7L, 8A, 8B	36%	4,853	20	13	1,941	8	5	92	72
Littlebeck Lane: 9	5%	732	3	2	293	1	1	14	11
Woodton East Sites: 10A, 10B, 10C, 10D, 10E	14%	1,839	7	5	736	3	2	35	27
Total Vehicles (Excluding CRC)	100%	13,521	54	36	5,408	22	15	256	201
Total Movements (Arrivals + Departures) (Excluding CRC)	-	27,042	108	72	10,816	44	30	512	402

Cable Route Corridor (CRC) Trip-Generation (HGVs and LGVs)

- 10.5.6 The indicative trip-generation estimates have shown an anticipated level of traffic during the construction phase of the CRC, with a peak of 22 HGVs (44 movements) and 22 LGVs (44 movements) in total per day. The trip generation and distribution estimates for the cable corridor is subject to confirmation of the construction

programme and methodology i.e. multiple teams working in parallel at different cable corridor locations or sequential movement along the cable corridor by a single team.

- 10.5.7 Horizontal Directional Drilling (HDD) or other trenchless methods will be adopted where appropriate along key arterial routes such as A140, B1527 and B1134 in order to minimise impacts associated with road closures from cable trenching. Open-cut trenching will likely be utilised for the remainder of the CRC.

Staff Trip-Generation: Solar Farm and Cable Corridor

- 10.5.8 Utilising the same trip-generation methodology to calculate staff numbers (i.e. calculating average staff per hectare for Cottam and West Burton), it is anticipated that construction of the Scheme will require an average of 495 staff per day, with a peak of 630 staff per day. This includes both labourers and technical / office staff. The indicative trip-generation estimates have shown an average of 165 cars and 36 minibuses per day and a peak of 210 cars and 46 minibuses per day across the whole scheme (including both the solar farm and CRC).
- 10.5.9 The number of trips associated with shuttle bus movements will be confirmed following development of the construction programme and identification of likely shuttle bus routeing. Staff are expected to be staying in locally-based accommodation (rather than travelling long distances on a daily basis) and minibuses will be used to transport workers to Site to minimise vehicle trips. A framework Construction Worker Travel Plan (CWTP) will be submitted as part of the DCO Application.

Construction Programme and Phasing

- 10.5.10 The overall construction programme is expected to last 24 months. While peak traffic flows for each Site will be assessed in determining the worst-case scenario for traffic effects, it is likely that such traffic flows will be able to be refined and minimised further as the construction programme is developed. As further detail becomes available for the construction programme and phasing, this will inform development of the ES.

Decommissioning

- 10.5.11 The Scheme has a modelled operational lifespan of up to 60 years. At the end of this period, the Scheme will be decommissioned, and the above-ground infrastructure will be removed from Site, with the exception of the National Grid Substation. The number of vehicle movements associated with the decommissioning phase is not anticipated to exceed that set out for the construction phase. An Outline Decommissioning Environmental Management Plan (ODEMP) will be submitted alongside the DCO Application, which include measures that are similar to those implemented during construction to manage vehicle movements and traffic, and other transport related matters. A DEMP will then be prepared and implemented during this phase.

Trip-Generation: Operational

General maintenance

- 10.5.12 During the Scheme's operational phase there are anticipated to be a limited number of visits per week for maintenance. These would likely be dispersed across the Scheme with little overlap in the number of visits occurring at the same time. Visits would typically be made by LGVs or four-wheel drive vehicles with operatives to perform checks and maintenance of plant and equipment. There could also be an occasional ad-hoc visit using HGVs for operations such as equipment (panel and battery) replacement that are expected on a number of occasions over the operational phase. The permanent Site accesses will be designed to accommodate HGVs, allowing them to enter and exit in forward gear. Where HGVs are required for the operational phase, they will be routed to avoid sensitive receptors where possible.
- 10.5.13 It is also anticipated that general maintenance operational trips will not exceed that of the Sites' existing uses, which is mostly agricultural. As such, the impacts of these trips on traffic and access are expected to be negligible or neutral, which are not considered to be significant.

Solar PV and Battery Replacement

- 10.5.14 It is anticipated that the solar PV panels could require replacement up to two times and the batteries up to four times during the operation of the Scheme. The number of trips generated for panel and battery replacement will be subject to detailed design.
- 10.5.15 The programme for replacement is currently unknown. However, it is not anticipated to generate as many vehicle trips as the construction phase, although it is expected to generate more than general operational maintenance activities. It is also likely to occur in phases such that impacts on the road network can be minimised. It is anticipated that similar management and mitigation measures to those identified in the CTMP will be utilised for panel and battery replacement operations.

10.6 Likely Significant Effects

- 10.6.1 The Scheme's impacts on the environmental impact criteria set out in the IEMA Guidelines have been considered. These criteria comprise:
- Accidents and Safety;
 - Severance;
 - Driver Delay;
 - Pedestrian Delay (incorporating delay to all non-motorised users);
 - Pedestrian Amenity (including Fear and Intimidation); and
 - Hazardous / Large Loads.
- 10.6.2 In instances where there is expected to be a significant effect on any of the criteria outlined by the IEMA Guidelines, the necessary mitigation measures will be

identified and detailed within the TA and Outline Construction Traffic Management Plan (OCTMP), which will be prepared in support of the Scheme's DCO Application.

Accidents and Safety

- 10.6.3 The IEMA Guidelines do not include any definition in relation to the assessment of effects on accidents and safety, advising that professional judgement should be used to assess the implications of local circumstance, or factors which may increase or decrease the risk of accidents.
- 10.6.4 Personal Injury Crash (PIC) records of the past five years will be obtained from NCC, which will provide more information to assess the level of effect for accidents and safety as a result of the Scheme. An alternative to collecting PIC data will be to assess Crashmap report data.
- 10.6.5 An initial review of Crashmap records of the past five available years (2018-2022) show a cluster of incidents at the A140 / B1527 roundabout (locally referred to as Hempnall Roundabout). Engagement with NCC evidenced that this roundabout used to be a crossroad and was turned into a roundabout in 2019. Seven of the ten incidents occurred after the completion of the roundabout. As a result of this, a MCC survey is proposed to be undertaken at the roundabout to understand traffic flows and assist in identifying mitigation measures to minimise any accident and safety effect as a result of the Scheme.
- 10.6.6 There are no other notable clusters of incidents within the Study Area. However detailed reports will be collected where considered necessary and assessed as part of the TA and OCTMP.

Severance

- 10.6.7 The IEMA Guidelines define severance as 'the perceived division that can occur within a community when it becomes separated by major traffic infrastructure' (paragraph 3.13) that 'separates people from places and other people'. An example would be difficulty crossing a heavily trafficked road, or the physical barrier created by infrastructure.
- 10.6.8 There are a range of indicators for determining the significance of effects resulting from changes in severance. The IEMA Guidelines suggest that '*changes in traffic flow of 30%, 60% and 90% are regarded as producing slight, moderate and substantial changes in severance respectively*' (paragraph 3.16). The guidance also notes that '*although these thresholds no longer appear in Department for Transport guidance, they have not been superseded by subsequent changes to guidance and are established through planning case law. However, caution needs to be observed when applying these thresholds as very low baseline flows are unlikely to experience severance impacts even with high percentage changes in traffic*' (paragraph 3.16).
- 10.6.9 An ATC survey will be undertaken at key links within the Study Area to obtain a more accurate assessment of current traffic flows. This baseline assessment will be supported by the trip-generation and distribution estimates. The results of this

analysis will generate the percentage change in traffic flow, allowing severance to be accurately assessed.

- 10.6.10 The assessment of severance will be considered with respect to any effects on PRowS within the Transport and Access Study Area. Any relevant mitigation measures in relation to PRowS will be specified within the TA and OCTMP being prepared in support of the Scheme's DCO Application. Additional pedestrian and cyclist data may also be collected, if considered appropriate.

Driver Delay

- 10.6.11 The IEMA Guidelines state that *'delays are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system'* (paragraph 3.20). As such, the impact of a scheme on driver delay is typically considered in relation to background traffic.
- 10.6.12 Consultation with NCC and an assessment of ATC and MCC data will confirm whether the Scheme is likely to have an effect on driver delay by means of adding additional vehicles on links during the construction, operational and decommissioning phases. Baseline data will also be assessed to identify whether the current traffic flows are at, or approaching the theoretical network capacity as classified within the Design Manual for Roads and Bridges (DMRB)¹⁸².

Pedestrian Delay (incorporating delay to all non-motorised users)

- 10.6.13 The IEMA Guidelines states that *'the assessment of pedestrian delay serves as a proxy for the delay that other modes of non-motorised users may experience when crossing roads'* (paragraph 3.23). The IEMA Guidelines subsequently state *'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'* (paragraph 3.26).
- 10.6.14 As stated in the driver delay sub-section, consultation with NCC and an assessment of ATC and MCC data will provide the sufficient evidence to confirm effects on the network, including any effects on PRowS within the Study Area. Further discussions with NCC will additionally allow information to be collected on any specific links within the Study Area which may require further assessment or mitigation with respects to pedestrian delay. Additional pedestrian and cyclist data may also be collected, if considered appropriate.

Pedestrian Amenity (including Fear and Intimidation)

- 10.6.15 Pedestrian amenity is broadly defined in the IEMA Guidelines as *'the relative pleasantness of a journey'* (paragraph 3.29) and can be affected by traffic flow, composition, and footway width/separation from traffic. The definition includes

¹⁸² Design Manual for Roads and Bridges, Volume 5: Assessment and Preparation of Road Schemes, Section 1: Preparation and Implementation, Part 3: TA 79/99 Amendment No 1, Traffic Capacity and Urban Roads

pedestrian fear and intimidation and can be considered a much broader category when considering the overall relationship between pedestrians and traffic. The IEMA Guidelines suggest that a threshold for judging this would be '*where the traffic flow (or its HGV component) is halved or doubled*' (paragraph 3.30).

- 10.6.16 As stated in the driver delay sub-section, consultation with NCC and an assessment of ATC and MCC data will provide the sufficient evidence to confirm effects on the network. Discussions with NCC will additionally allow information to be collected on any specific links within the Study Area which may have require further assessment or mitigation with respects to pedestrian amenity. Consideration will also be given to other non-motorised road users such as cycling and horse-riding.

Hazardous / Large Loads

- 10.6.17 The IEMA Guidelines state that some developments include hazardous and large (abnormal) loads, and that this should be recognised as an environmental impact criterion. An Abnormal Indivisible Load (AIL), in its simplest definition, is typically classified as a vehicle which exceeds 44 tonnes Gross Vehicle Weight, or its width is more than 2.9m, or its rigid length is more than 18.65m.
- 10.6.18 There will be a limited number of AILs to transport items for the Scheme, such as the transformers for the Substations. There are anticipated to be a number of Substations as part of the Scheme. However, the number of transformers or components requirements is not yet confirmed. The maximum number of AIL trips required for the Scheme will be confirmed subject to consultation with an AIL specialist team (undertaken by Wynns) and the design team.
- 10.6.19 There are established management practices including the requirement for movement orders, use of specialist hauliers, stakeholder notification procedures, routing assessments and Police escorts (where necessary) that could be implemented for the Scheme, as required. Notification systems such as Electronic Service Delivery for Abnormal Loads (ESDAL) can be used for this purpose¹⁸³.
- 10.6.20 An AIL report will be prepared and included within the ES as part of the DCO Application.
- 10.6.21 There are no hazardous loads anticipated as part of the construction, operation or decommissioning of the Scheme.

Sensitivity of Receptors

- 10.6.22 There are two thresholds stated within the IEMA Guidelines which define the extent of assessment for transport and access:
- Rule 1: Include highway links where traffic flows will increase by more than 30% (or where the number of HGVs will increase by more than 30%); and

¹⁸³ National Highways: Abnormal Loads and the ESDAL System. Available at: Abnormal loads and the ESDAL system - National Highways [Accessed 21 October 2024]

- Rule 2: Include any other specifically sensitive areas where traffic flows have increased by 10% or more.

10.6.23 Where forecast increases in vehicle flows are lower than the 10% and 30% thresholds, the significance of the effects should be considered to be low or not significant enough to require further detailed assessment. **Tables 10.8 and 10.9** define the criteria used to determine receptor sensitivity and magnitude of impact respectively.

Table 10.8: Sensitivity / Importance of Identified Receptor

Sensitivity	Definition
High	Receptors of greatest sensitivity to traffic flows, such as schools, playgrounds, accident blackspots, retirement homes, areas with no footways with high pedestrian footfall, congested areas
Medium	Receptors with some sensitivity to traffic flow, such as Conservation Areas, listed buildings, tourist attractions, and residential areas
Low	Receptors with low sensitivity to traffic flows, and those distant from affected roads
Negligible	Receptors with no material sensitivity to traffic flows

Table 10.9: Magnitude of Change Assessment Criteria

Potential Impact	Assessment Criteria for Determining the Magnitude of Change
Severance	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: ▪ <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	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. 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, 60-90% is medium and >90% is large), to determine whether there is likely to be any significant changes to driver delay.
Pedestrian Delay	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 purposes of this assessment, the following thresholds related to changes in total traffic are applied alongside professional judgement and interpretations of the local conditions: ▪ <30% - negligible magnitude of change; ▪ 30-60% - small magnitude of change; ▪ 60-90% - medium magnitude of change; and ▪ >90% - large magnitude of change.

Potential Impact	Assessment Criteria for Determining the Magnitude of Change
Non-Motorised User Amenity	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. 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.
Fear and Intimidation	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. In determining the degree of hazard, the assessment will apply a score based on three parameters: ▪ 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; ▪ Total HGV flows – the total volume of HGVs over an 18-hour day. A higher HGV volume represents a greater perceived hazard; and ▪ Average speeds – the mean speed of vehicles on the road link. Higher speeds are associated with greater hazard. Once calculated, the total hazard score will be presented to determine the level of fear and intimidation, as follows: ▪ 0-20 – small; ▪ 21-40 – moderate; ▪ 41-70 – great; and ▪ 71+ - extreme. 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. 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. The magnitude of impact will then be determined as follows: ▪ Negligible – no step change from baseline; ▪ Low – one step change from baseline (<400 vehicle trip increase); ▪ Medium – one step change from baseline (>400 daily vehicle trip increase); and ▪ High – two step changes from baseline.
Road Safety	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 and 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

Potential Impact	Assessment Criteria for Determining the Magnitude of Change
	a Stage 1 Road Safety Audit to determine the suitability of any transport and access related works that are proposed.
Hazardous and Large Loads	The IEMA Guidance does not set specific thresholds for the consideration of Hazardous and Large loads, only that professional judgement should be utilised based on the frequency and nature of any Hazardous and/or Large loads.

10.6.24 The magnitude of change and receptor sensitivity have been compared to determine the overall significance of effects. This is shown in **Table 10.10**. There are five categories which outline the significant of the effect:

- Neutral: No change from baseline conditions;
- Negligible: Very little change from baseline conditions;
- Minor: A minor shift away from baseline conditions;
- Moderate: A material shift away from baseline conditions; and
- Major: Substantial alteration to baseline conditions.

Table 10.10: Significance of Potential Effects

Sensitivity (Right)	High	Medium	Low	Negligible
Magnitude (Below)				
High	Major	Major / Moderate	Moderate	Low
Medium	Major / Moderate	Moderate	Moderate / Minor	Low
Low	Moderate	Moderate / Minor	Minor	Negligible
Negligible	Moderate / Minor	Minor	Negligible	Negligible
Neutral	Neutral	Neutral	Neutral	Neutral

10.6.25 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.

10.6.26 It is considered that only moderate and major effects are significant for the purpose of assessment. Effects can be temporary or permanent and short, medium or long term in duration. The definitions of these are as follows:

- A short-term effect – an effect that will be experienced for 0-5 years;
- A medium-term effect – an effect that will be experienced for 5-15 years; and
- A long-term effect – an effect that will be experienced for 15 years or longer.

10.6.27 The construction phase (which is anticipated to be 24 months) and decommissioning phase (which is anticipated to follow a similar programme to

construction but in reverse) are both well within the threshold of being short-term effects. Whilst the operational effects are long-term, the number of trips generated during the operational phase are anticipated to be low.

Cumulative Effects

- 10.6.28 There are a number of developments within the vicinity of the Scheme which may have cumulative effects with respect to Transport and Access. Any relevant local developments will be identified within the TA, and engagement with the respective development teams may be undertaken if necessary. The impact of cumulative effects on the transport network will be assessed through the TA which may include local junction modelling if necessary.
- 10.6.29 The potential cumulative developments are shown in **Chapter 14**.

10.7 Impacts Scoped Out of the Assessment

- 10.7.1 As stated in **Section 10.5**, the number of trips generated for the general maintenance of the Scheme is expected to be negligible or neutral. It is also considered that the significance of the environmental effects during this phase is not significant in EIA terms with respect to Transport and Access. It is therefore proposed that a detailed assessment of the operational phase is scoped out of the ES for Transport and Access.
- 10.7.2 It is assumed that any operational traffic generated would fall within the IEMA thresholds of less than 30% change in total vehicle flows, or 10% change in daily HGVs. This would be secured by requirement through the preparation of an Operational Environmental Management Plan which would detail the anticipated levels of operational trips required each year, excluding maintenance and replacement of the Scheme.
- 10.7.3 The supporting TA will include a section summarising operational trips and applicable mitigation measures. Any replacement activities planned for the Scheme will have traffic impacts mitigated through a series of measures equivalent to those proposed in the OCTMP.

10.8 Proposed Approach to the ES

- 10.8.1 An ES chapter for Transport and Access will be prepared, and will include sections including:
- An assessment of relevant legislation and policy;
 - Assessment methodology and the criteria used to evaluate transport and access impacts;
 - Baseline conditions;
 - Details of consultations with NCC and other bodies;
 - An assessment of the likely impacts, effects and judgement of significance associated with the construction and decommissioning phases; and

- Mitigation measures and actions to minimise effects from traffic and transport, including embedded mitigation.

10.8.2 A TA and OCTMP will be prepared to support the DCO Application of the Scheme and will follow best practice and will identify a series of measures to mitigate or minimise the impacts of the construction and decommissioning phase of the Scheme. The measures will include but not be limited to:

- Adherence to designated vehicle routes;
- Use of a Delivery Management System and a commitment to avoid network peak hours for deliveries where possible, as well as school drop off and pick up times where necessary;
- A commitment to, if relevant, seeking to coordinate deliveries with other developments in the area;
- Vehicle Site entry and exit in forward gear and requirement for engines to be switched off on-Site when not in use;
- Provision of Site compounds, including an appropriate number of parking spaces;
- Signing to direct construction vehicles;
- Wheel cleaning facilities, where appropriate water connections and drainage are available.
- Creation of temporary vehicle passing bays (if necessary);
- Spraying of areas with water as and when conditions dictate to prevent the spread of dust;
- Vehicles carrying waste material off-Site to be sheeted;
- Component prefabrication where possible;
- Re-use of material on-Site where practicable;
- Traffic marshals and gate staff to be provided at Site access points and PRoW where appropriate to ensure the safe movement of all construction vehicles;
- The contact details of the Site Manager to be provided on notice boards for the local communities;
- The agreement to undertake a pre and post construction highway condition survey at agreed locations;
- Adherence to best practice schemes for vehicle standards and driver training;
- A system of engagement with local affected stakeholders; and
- Implementation of the CWTP and a detailed CTMP by the Principal Contractor.

10.8.3 In support of the preparation of the TA and OCTMP, the following activities will be undertaken:

- Further engagement with NCC;
- Confirmation of Transport and Access Study Area;
- Collection of PIC data;
- Commissioning of ATC and MCC surveys;
- Assessment of baseline conditions (ATC and MCC data);
- Agreement of proposed access strategy and vehicle routing; and
- Assessment of cumulative effects – identification of other developments that may give rise to cumulative effects of the construction and decommissioning phases.

10.9 Summary

Table 10.11: Summary of Scope for Transport and Access

Discipline	Scoped In Elements	Scoped Out Elements
Transport and Access	<u>Construction:</u> Effects deriving from vehicles accessing the Sites. Effects associated with construction vehicles to be assessed within the TA and OCTMP alongside mitigation measures to minimise impacts on the road network. <u>Decommissioning:</u> Decommissioning is not anticipated to exceed traffic volumes associated with the construction phase. Effects associated with decommissioning vehicles will be assessed within the DEMP.	<u>Operational (General Maintenance):</u> General maintenance trips not anticipated to exceed the traffic volumes generated by the Sites' existing agricultural use. <u>Operational (Solar PV and Battery Replacement):</u> Anticipated to generate fewer vehicle trips than construction. Similar measures to those outlined in the OCTMP will be in place for the replacement phase.

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 noise and vibration during construction, operation and decommissioning. Consideration has been given to the following potential significant effects within this Chapter:

- Construction noise;
- Construction vibration;
- Construction traffic noise;
- Construction traffic vibration;
- Operational noise;
- Operational vibration;
- Decommissioning noise; and
- Decommissioning vibration.

11.2 Study Area

11.2.1 There is no specific best practice guidance which details Study Areas for noise and vibration effects from the Scheme.

11.2.2 Based on professional judgement, experience from working on other large scale solar and BESS project and related guidance and standards (detailed in **Section 11.3**), the following Study Areas have been proposed:

- Construction noise – 300m from Site;
- Construction vibration – 100m from Site;
- Construction traffic noise – 50m from roads providing access to the Site;
- Construction traffic vibration – 50m from roads providing access to the Site;
- Operational noise – 500m from the Site;
- Operational vibration – 50m from the Site;
- Decommissioning noise – 300m from the Site; and
- Decommissioning vibration – 50m from the Site.

11.3 Overview of Legislation, Policy and Guidance

11.3.1 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

11.3.2 The Environmental Protection Act 1990 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 1974 Part III 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.

- 11.3.3 The Planning Act 2008 confers statutory authority unless there is a provision in a granted DCO to the contrary.

National Planning Policy

- 11.3.4 The Overarching National Policy Statement (NPS) for Energy (EN-1)¹⁸⁴ 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.
- 11.3.5 The NPS for Renewable Energy Infrastructure (EN-3)¹⁸⁵ 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.
- 11.3.6 The NPS for Electricity Networks Infrastructure (EN-5)¹⁸⁶ 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.
- 11.3.7 The Noise Policy Statement for England (NPSE)¹⁸⁷ and National Planning Policy Framework (NPPF)¹⁸⁸ 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.

¹⁸⁴ Department for Energy Security and Net Zero (2024). The National Policy Statement (NPS) for Energy (EN-1).

¹⁸⁵ Department for Energy Security and Net Zero (2024). The National Policy Statement (NPS) for Renewable Energy Infrastructure (EN-3).

¹⁸⁶ Department for Energy Security and Net Zero (2024). The National Policy Statement (NPS) for Electricity Networks Infrastructure (EN-5).

¹⁸⁷ Department for Environment, Food and Rural Affairs (2010). Noise Policy Statement for England (NPSE).

¹⁸⁸ Department for Levelling Up, Housing and Communities (2024). National Planning Policy Framework (NPPF).

Planning Policy Guidance

- 11.3.8 The National Planning Practice Guidance (NPPG) on noise¹⁸⁹ provides more detailed information on the relevance of noise to the planning process and on defining effect thresholds.

Local Planning Policy

- 11.3.9 The South Norfolk Local Plan Development Management Policies Document was produced in October 2015. This document forms part of a set of documents that together constitute a Local Plan for the future development of the area. The Development Management Policies determine how the council carries out its development management responsibilities to promote sustainable development and how it will determine planning applications.

- 11.3.10 In relation to noise, Policy DM 3.13 *Amenity, noise and quality of life* states:

“(1) Development should ensure a reasonable standard of amenity reflecting the character of the local area. In all cases particular regard will be paid to avoiding:

a. Overlooking and loss of private residential amenity space

b. Loss of day light, overshadowing and overbearing impact

c. Introduction of incompatible neighbouring uses in terms of noise, odour, vibration, air, dusts, insects, artificial light pollution and other such nuisances.

Planning permission will be refused where proposed development would lead to an excessive or unreasonable impact on existing neighbouring occupants and the amenity of the area or a poor level of amenity for new occupiers.

(2) In considering applications which may result in an increase in noise exposure, account will be taken of the operational needs of the proposed and neighbouring businesses, the character and function of the area including background noise levels at different times of day and night and the need to protect areas of rural tranquillity.

(3) Development will not be permitted where the proposed development would generate noise or artificial light which would be significantly detrimental to the amenity of nearby residents or the occupants of other noise sensitive uses. Proportionate mitigating measures including limiting conditions will be used to reduce the potential noise or artificial light impact to an appropriate level whenever practical to do so.”

¹⁸⁹ Department for Levelling Up, Housing and Communities (2014, updated 2019) - Planning Practice Guidance – Noise (NPPG).

11.3.11 Policy DM 4.1 *Renewable Energy* states:

“Proposals for renewable energy generating development requiring planning permission other than for proposals for wind energy development will be supported and considered (taking account of the impact of relevant ancillary equipment) in the context of sustainable development and climate change on the wider environmental, social and economic benefits of maximising use of renewable energy. The Council will encourage the use on-site communal-scale energy generation measures.

(1) The effect of the proposal will be considered on:

a) The effect on the character and appearance of the landscape;

b) Designated and undesignated heritage assets;

c) The amenities and living conditions of nearby residents by way of noise, outlook, and overbearing effect or unacceptable risk to health or amenity by way of other pollutants such as dust and odour.

Permission will be granted where there are no significant adverse effects or where any adverse effects are outweighed by the benefits. When attributing weight to any harm, including heritage assets regard will be given to national policy and guidance, statutory duty and legislation, and other policies in the Local Plan including Policy DM4.10;

[...]”

Professional Guidance

11.3.12 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 Part 1¹⁹⁰ and 2¹⁹¹ 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 Bridges¹⁹² provides a methodology for assessing the impacts of noise and vibration associated with road traffic, both on a long- and short-term basis
- BS 4142¹⁹³ 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

¹⁹⁰ The British Standards Institution (BSI) (2014a). 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise

¹⁹¹ The British Standards Institution (BSI) (2014b). 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 2: Vibration

¹⁹² Standards for Highways (2020) Design Manual for Roads and Bridges, LA 111, Noise and Vibration Revision 2

¹⁹³ The British Standards Institution (BSI) (2019) British Standard 4142:2014 +A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound

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 9613-2¹⁹⁴.

11.4 Baseline Environment

- 11.4.1 Based on a desktop review of the Site and its surroundings, there are noise sensitive receptors within the proposed Study Areas. Ordinance Survey (OS) address data has been used to identify the location and types of receptors within the Study Areas.
- 11.4.2 The sensitivity of receptors has been defined based on guidance within **Chapter 4**.
- 11.4.3 The assessment will consider noise-sensitive residential receptors within the Study Area, which are considered to have a high sensitivity to noise.
- 11.4.4 Users of PRoWs within the Study Area could experience noise or vibration from the Scheme on a transient basis. Due to the recreational nature of the paths and transient nature of receptors using the paths, these would not necessarily be considered in noise and vibration assessments. However, it is proposed to consider 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.
- 11.4.5 Receptors of low or very low sensitivity, such as unoccupied agricultural buildings or industrial/commercial facilities are proposed to be discounted from the analysis as significant effects are unlikely.
- 11.4.6 Based on a preliminary desktop review, the following receptors have been identified immediately surrounding the BESS Site and Site 1:

Table 11.1: Identified Noise and Vibration Sensitive Receptors - BESS Site and Site 1

Receptor	Receptor Type
Dwellings in the south of Great Moulton	Residential dwelling
Woodlands and Frith Farms	Residential dwelling
Dwellings on Station Road	Residential dwelling

¹⁹⁴ International Organization for Standardization (ISO) (2024). ISO 9613 Acoustics – Attenuation of sound during propagation outdoors, Part 2: General method of calculation

Dwellings on Broadgate Lane	Residential dwelling
Commercial and agricultural facilities on Broadgate Lane	Commercial and agricultural facility
Great Moulton FP12,14,15,16,17,18 Great Moulton RB18-19 Tivetshall St Margaret FP2-3	Public Rights of Way

- 11.4.7 Based on a preliminary desktop review, the following receptors have been identified immediately surrounding Site 2:

Table 11.2: Identified Noise and Vibration Sensitive Receptors - Site 2

Receptor	Receptor Type
Dwellings on Lodge Road	Residential dwelling
Dwellings on Ipswich Road	Residential dwelling
Dwellings on Frith Way	Residential dwelling
Red House Farm Bed & Breakfast on Station Road	Hotel
Existing businesses along Station Road	Commercial facility
Great Moulton FP11 Pulham Market FP6 Tivetshall St Margaret BR7,9 Tivetshall St Margaret FP4,5,8,10 Tivetshall St Margaret RB6 Wacton FP43 Wacton RB31,40	Public Rights of Way

- 11.4.8 Based on a preliminary desktop review, the following receptors have been identified immediately surrounding Site 3:

Table 11.3: Identified Noise and Vibration Sensitive Receptors - Site 3

Receptor	Receptor Type
Plumtree Cottage, Spring Lane	Residential dwelling
Springwood, Spring Lane	Residential dwelling
Dwellings on Barondale Lane	Residential dwelling
Grange Farm	Residential dwelling
Dwellings on Lundy Green	Residential dwelling

Commercial and agricultural facilities on Spring Lane	Commercial and agricultural facility
Hempnall FP24,25,26,28,29	Public Rights of Way

- 11.4.9 Based on a preliminary desktop review, the following receptors have been identified immediately surrounding Site 4:

Table 11.4: Identified Noise and Vibration Sensitive Receptors - Site 4

Receptor	Receptor Type
Mill Farm, Hempnall Road	Residential dwelling
Dwellings on Brick Kiln Lane	Residential dwellings
Dwellings on Norwich Road	Residential dwellings
Dwellings on Brands Lane	Residential dwellings
Dwellings on Hall Lane	Residential dwellings
Dwelling in Tasburgh	Residential dwellings
St Michael's Church	Religious facility
Long Stratton FP1-7 Morningthorpe FP1	Public Rights of Way

- 11.4.10 Based on a preliminary desktop review, the following receptors have been identified immediately surrounding Site 5:

Table 11.5: Identified Noise and Vibration Sensitive Receptors - Site 5

Receptor	Receptor Type
Dwellings on Bungay Road	Residential dwellings
Commercial facilities on Bungay Road	Nursery
Jack in the Box Nursery	Nursery
Beech Farm, The Street	Residential dwelling
Dwellings on The Street	Residential dwellings
Church Farm House, The Street	Residential dwelling
St Catherine's Church	Religious facility
Hall Farm Cottage and Commercial Facilities	Residential dwelling and commercial facility
Hempnall FP33	Public Rights of Way

Morningthorpe FP5,6,7,9,10,11,12,17,31,32	

- 11.4.11 Based on a preliminary desktop review, the following receptors have been identified immediately surrounding Site 6:

Table 11.6: Identified Noise and Vibration Sensitive Receptors - Site 6

Receptor	Receptor Type
Firs Field Farm, Bungay Road	Residential dwelling and agricultural facility
Dwellings on Silver Green Road	Residential dwellings
Agricultural Facility on Silver Green Road	Agricultural facility
Dwellings on Silver Green	Residential dwellings
Commercial Facility on Alburgh Road	Commercial facility
Hempnall FP14	Public Right of Way

- 11.4.12 Based on a preliminary desktop review, the following receptors have been identified immediately surrounding Site 7:

Table 11.7: Identified Noise and Vibration Sensitive Receptors – Site 7

Receptor	Receptor Type
Dwellings on Church Lane	Residential dwellings
Dwellings on The Green	Residential dwellings
Thetford Farm House on The Green	Residential dwellings
Woodton Farm, Fylands Road	Residential dwellings
Oakdene Cottage, Shotesham Road	Residential dwellings
Dwellings on Springwood Lane	Residential dwellings
Dwellings on Pymars Lane	Residential dwellings
Agricultural facility on Pymars Lane	Agricultural facility
Grove Farm, Fairstead Lane	Residential dwelling
Dwellings on Fairstead Lane	Residential dwellings
Limetree Farm, Fairstead Lane	Residential dwellings
Dwellings on Quaker Lane	Residential dwellings

Dwellings in Tasburgh	Residential dwellings
Dwellings on Ipswich Road	Residential dwellings
Hempnall BR30 Hempnall FP1-5 Morningthorpe FP1 Saxlingham Nethergate FP9-14,27,28 Saxlingham Nethergate RB17 Tasburgh FP2 Woodton RBN10	Public Rights of Way

- 11.4.13 Based on a preliminary desktop review, the following receptors have been identified immediately surrounding Site 8:

Table 11.8: Identified Noise and Vibration Sensitive Receptors - Site 8

Receptor	Receptor Type
Dwellings on Brooke Road	Residential dwellings
Dwellings on Baxter's Lane	Residential dwellings
Dawsons Farm, Wash Lane	Residential dwelling
Dwellings on Wash Lane	Residential dwelling
Market Lane Farm	Residential dwelling
Shotesham FP16-18, 22	Public Rights of Way

- 11.4.14 Based on a preliminary desktop review, the following receptors have been identified immediately surrounding Site 9:

Table 11.9: Identified Noise and Vibration Sensitive Receptors - Site 9

Receptor	Receptor Type
Dwellings on High Green	Residential dwellings
Dwellings on Littlebeck Lane	Residential dwellings
Dwellings on Mill Lane	Residential dwelling
Highfield Farm, Highfield Lane	Residential dwelling
Old House Farm, Woodton Road	Residential dwelling
Dwellings on Honeypot Lane	Residential dwelling
Brooke FP6	Public Right of Way

- 11.4.15 Based on a preliminary desktop review, the following receptors have been identified immediately surrounding Site 10:

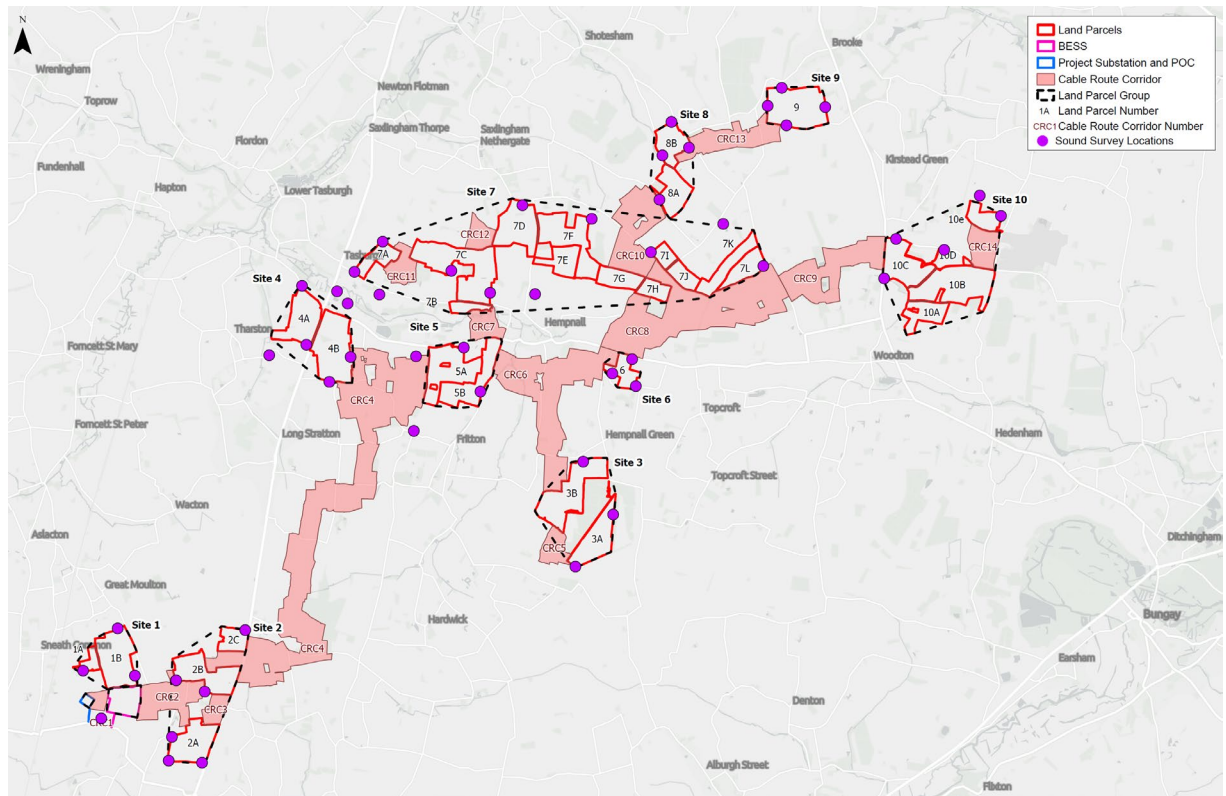
Table 11.10: Identified Noise and Vibration Sensitive Receptors - Site 10

Receptor	Receptor Type
Gerrins Farm	Residential dwelling
Dwellings on Ugate Road	Residential dwellings
Ugate Farm	Residential dwelling
Commercial facilities on Harvey Lane	Commercial facility
Dwellings on Harvey Lane	Residential dwelling
Dwellings in Woodton	Residential dwellings
Dwellings on Norwich Road	Residential dwellings
Dwellings on Seething Road	Residential dwelling
Hedenham RB9 Seething RB13 Woodton RB3	Public Rights of Way

- 11.4.16 The Site is spread over multiple land parcels and over a large geographic area. The baseline sound climate around the Site will be dependent on local sound sources which could include (but not be limited to) sources such as vehicles on local roads, railways, industrial uses, agricultural activity, aircraft, and natural sounds from wildlife and vegetation during windy conditions.

Consultation

- 11.4.17 To support the assessment, a sound survey will be undertaken at locations which are considered to be representative of the nearest noise sensitive receptors. In advance of the submission of this Scoping Opinion Request, the early opinion regarding noise survey locations was sought from the Environmental Health Officer at South Norfolk Council (SNC). On the 15th October 2024 the Applicant submitted a Noise Method Survey Statement (see **Appendix 11.1 (Volume III)**) to SNC seeking feedback on the proposed survey and assessment approach. At time of writing, no response has been received. The location of the proposed surveys is detailed in **Figure 11.1** below (and also provided in **Volume II** of the Scoping Report).



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Figure 11.1: Proposed Sound Survey Locations

- 11.4.18 The final locations are subject to land access requirements and local conditions. The sound survey locations and summary of the measurement results will be presented within the ES.

11.5 Project Basis for Scoping Assessment

- 11.5.1 The Scheme will incorporate flexibility into the design to allow the latest technology to be installed at the time of construction. It is therefore not possible to specify exact manufacturers and models of equipment which are going to be installed, although consideration can be given to the expected noise levels generated by items of equipment based on comparable technology. This approach is supported by the National Policy Statements for Energy, and in the Planning Inspectorate's Advice Note 9 Rochdale Envelope.

Solar Arrays

- 11.5.2 Two different design options for the solar arrays will be considered as part of the assessment, these being the Single Axis Tracker PV Panels ('tracker panels') and the Fixed South Facing PV Arrays ('fixed panels').
- 11.5.3 Tracker panels 'track' the sun to maximise efficiency of the solar panels and change their tilt through the day. This is achieved by small motors which are installed on

the panel structure. These motors generate very low levels of noise and are not expected to generate significant effects. However, in changing the tilt of the solar panels, the level of acoustic screening provided by solar panels has the potential to vary throughout the day.

- 11.5.4 Fixed panels do not tilt, and therefore they generate no noise, and the level of screening provided by the panels is fixed.
- 11.5.5 The effect of tracker panels (i.e. the potential change in tilt and therefore screening), will be considered within the assessment presented within the ES, to ensure a worst-case assessment outcome is considered.
- 11.5.6 Vibration associated with the operation of the PV Panels is considered in **Section 11.7**.

Substations and BESS

- 11.5.7 Noise generating plant associated with the Scheme will be typical for this type of development, consisting of inverters, battery energy storage systems, transformers and substations. The specification of these will be typical of that utilised at other, similar developments.

Grid Connection Infrastructure

- 11.5.8 Noise generating plant associated with the Scheme will be typical for this type of development, which could consist of new overhead power lines (but limited only to the location /area of the Point of Connection).

11.6 Embedded Mitigation

- 11.6.1 At this stage in the design, specific forms of mitigation have not been considered. However, as the design is developed, the assessment will inform the location of noise generating elements of the operational scheme, which will form part of the embedded mitigation.

11.7 Likely Significant Effects and Additional Mitigation

- 11.7.1 The significance of noise and vibration effects will be determined based on the methodology outlined with **Chapter 4** of the Scoping Report. On this basis, the magnitude of impact will be determined as well as the receptor sensitivity. These will be used to determine overall significance of the effect with professional judgement where required.

Construction Traffic Noise

- 11.7.2 Construction traffic noise is related to construction related vehicles access the Site. This is expected to include HGVs and deliveries, as well as site operatives accessing the Site.

- 11.7.3 Based on guidance within the Design Manual for Roads and Bridges (DMRB) LA 111, construction traffic noise shall constitute a significant effect where it is determined that a major or moderate magnitude of impact will occur for a duration exceeding:
- 10 or more days or nights in any 15 consecutive day or nights; or
 - A total number of days exceeding 40 in any 6 consecutive months.
- 11.7.4 Based on Table 3.17 of the DMRB LA 111, moderate impacts from construction traffic noise are deemed to occur when there is an increase of between 3 and 5dB in the basic noise level (BNL). Major impacts are deemed to occur when there is an increase of 5dB or more in the BNL.
- 11.7.5 As neither existing traffic flows nor construction vehicle traffic flows are yet known and traffic generated by the construction of the Scheme may generate significant effects, it is not possible at this stage to determine whether a significant effect could occur. For this reason, construction traffic noise is proposed to be scoped into the ES.
- 11.7.6 To support the application, a Construction Traffic Management Plan (CTMP) will be developed which would minimise likely significant noise impact from construction traffic. An outline version of this document will be submitted with and secured via the DCO.

Construction Noise

- 11.7.7 Based on guidance within DMRB LA 111, construction noise shall constitute a significant effect where it is determined that a major or moderate magnitude of impact will occur for a duration exceeding:
- 10 or more days or nights in any 15 consecutive day or nights; or
 - A total number of days exceeding 40 in any 6 consecutive months.
- 11.7.8 Based on guidance provided in BS 5228-1:2009+A1:2014 and DMRB LA 111, the Significant Observed Adverse Effect Level (SOAEL) for construction noise at noise sensitive receptors would be the threshold level as determined by the method as detailed in Appendix E of BS 5228-1:2009+A1:2014. The Lowest Observed Adverse Effect Level (LOAEL) would be the measured ambient sound level. Where the noise level exceeds the SOAEL, this is considered to be a moderate impact.
- 11.7.9 The dominant source of noise associated with the construction phase of the Scheme is anticipated to be piling and Horizontal Directional Drilling (HDD), when being undertaken. An assessment of construction activity noise will be undertaken and presented in the ES. The assessment will be based on guidance provided within BS 5228-1:2009+A1:2014. Construction activity noise is proposed to be scoped into the ES.
- 11.7.10 To support the application, a Construction Environmental Management Plan (CEMP) will be developed which would minimise likely significant noise impact from

construction activity noise. An outline version of this document will be submitted with and secured via the DCO.

- 11.7.11 The potential effects of noise levels associated with construction and decommissioning activities on sensitive ecological receptors is addressed in **Chapter 8: Ecology and Biodiversity** of this EIA Scoping Report.

Construction Vibration

- 11.7.12 Based on guidance provided within BS 5228-2:2009+A1:2014, the SOAEL for vibration at vibration sensitive receptors would be 1mm/s peak particle velocity (PPV) and the LOAEL would be 0.3mm/s PPV. Where the vibration level exceeds the SOAEL, this is considered a moderate impact, which would be considered significant.
- 11.7.13 During construction, piling and HDD is anticipated to be the main vibration generating activity.
- 11.7.14 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 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.
- 11.7.15 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 50m 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 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).
- 11.7.16 Where likely significant effects are identified, suitable additional mitigation and management measures will be considered and secured as part of the CEMP.
- 11.7.17 The potential effects of noise levels associated with construction and decommissioning activities on sensitive ecological receptors is addressed in **Chapter 8: 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 Noise from BESS, Substations, Inverters and Transformers

- 11.7.18 The key consideration in relation to operational noise is the elements of the Scheme that contain plant, such as substations and associated infrastructure.
- 11.7.19 The available technology has potential to change during the design due to advances in technology. It will therefore not be possible to undertake a detailed assessment of operational noise emissions of the final equipment selection until the equipment selection has been finalised. This is expected to occur after the DCO decision and would therefore form a requirement of the DCO. However, it will be possible to undertake a preliminary assessment of noise based on equipment which is expected to be comparable to the final selection and present the assessment within the ES. Due to advances in technology, any identified effects are only anticipated to become less significant over time.
- 11.7.20 However, to consider potential impacts within the EIA, a preliminary assessment will be undertaken, which will provide an indication of the potential noise impact, based on library data for similar plant. The assessment will be based on guidance provided within BS 4142:2014+A1:2019. Operational noise from the BESS, substations, inverters and transformers is proposed to be scoped into the ES.
- 11.7.21 The Scheme will be operational for up to 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.
- 11.7.22 The components of the Scheme are anticipated to have the following approximate lifespans:
- Photovoltaic Panels – 25-40 years; and
 - Batteries – 15-20 years.
- 11.7.23 It is therefore assumed that the solar panels could require replacement up to two times and the batteries up to four times during the operation of the Scheme.
- 11.7.24 Although they may affect human receptors, operational noise levels are of such magnitude that they are unlikely to affect ecological receptors. The assessment of operational noise on ecological receptors is scoped out of the ES.

Operational Traffic Noise

- 11.7.25 Vehicular movements during the operational phase of the Scheme, related to routine servicing and maintenance, would be very limited and unlikely to be associated with any significant noise effects.
- 11.7.26 The Scheme will be operational for up to 60 years, and the replacement assumptions are listed above.

- 11.7.27 Traffic movements associated with replacement of the abovementioned elements could be carried out on a larger scale than routine servicing and maintenance, therefore would require further consideration.
- 11.7.28 Operational traffic noise impacts are therefore scoped into the EIA and will be assessed similarly to the construction phase using the guidance set out in the DMRB and BS 5228. Where likely significant effects are identified, suitable additional mitigation and management measures will be implemented as part of the OEMP.
- 11.7.29 Although they may affect human receptors, operational traffic noise levels are also of such magnitude that they are unlikely to affect ecological receptors, and this is also scoped out of the ES.

Cumulative Effects

- 11.7.30 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 cumulative effects with the Scheme will be presented in the ES and assessed where relevant.

11.8 Impacts Scoped Out of the Assessment

Construction, Operational and Decommissioning Traffic Vibration

- 11.8.1 Vibration from traffic is proposed to be scoped out of the EIA. In relation to vibration from traffic movements, DMRB LA 111 states the following:

‘Operational vibration is scoped out of the assessment methodology as a maintained road surface will be free of irregularities as part of project design and under general maintenance, so operational vibration will not have the potential to lead to significant adverse effects.’

- 11.8.2 While DMRB LA 111 applies to road schemes, this guidance is relevant to this assessment, as it indicates that if road surfaces do not contain irregularities, then vibration effects should not result at receptors. DMRB advises that significant vibration impacts from traffic using the road network is unlikely (although momentary vibration may be perceptible in some cases).
- 11.8.3 BS 5228-2 provides guidance from construction sites and does not consider vibration from vehicle movements as a notable source.

Operational Vibration

- 11.8.4 Based on experience of similar recent projects, the Scheme’s operational equipment would generate insignificant levels of vibration at vibration sensitive receptors. All noise generating plant located within the National Grid substation will

be mounted on suitable anti-vibration mounts where required which will minimise likely significant effects.

11.8.5 Piling, which may cause vibration effects, is not anticipated to be required during replacement of batteries or solar panels.

11.8.6 Therefore, operational vibration is proposed to be scoped out of the ES.

Operational Noise and Vibration from Panels

11.8.7 The only noise generating element which could form part of a solar panel would be the motor fitted to tracker panels, if this option is utilised. Noise levels associated with tracker panel motors are very low as they operate at very low speeds and are not expected to result in significant effects. Therefore, operational noise from panels is proposed to be scoped out of the ES.

Operational Noise and Vibration from Cable Route Corridor

11.8.8 With the cable being underground, noise and vibration are not expected to be perceptible from the cable routes and are therefore proposed to be scoped out of the ES.

11.8.9 The Grid Connection Infrastructure could potentially include new overhead lines, which can generate noise at low level in certain weather conditions (corona discharge noise), 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

11.8.10 Noise impacts associated with decommissioning of the Scheme are expected to be no worse than those associated with construction. On this basis, impacts associated with construction activity are expected to be reflective of the anticipated impacts associated with decommissioning. Effects during decommissioning are therefore not considered further as construction represents a worst-case scenario.

Decommissioning Vibration

11.8.11 Piling is not anticipated to be required during decommissioning. Vibration associated with decommissioning therefore is not expected to be significant and is also scoped out of the ES. An Outline Decommissioning Environmental Management Plan (ODEMP) will be submitted alongside the DCO Application, which include measures that are similar to those implemented during construction to manage noise and vibration. A DEMP will then be prepared and implemented during this phase.

11.9 Proposed Approach to the ES

11.9.1 The following approach is proposed to be taken to undertake the assessment within the ES:

- A baseline sound monitoring exercise will be undertaken. The locations and methodology will be agreed with the Local Planning Authority prior to undertaking the survey.
- Based on the results of the environmental sound survey and relevant guidance, the assessment criteria will be established for construction and operational noise. The survey results and proposed assessment criteria will be presented within the ES.
- The layout of the Scheme will be considered such that operational noise impacts are controlled, based on the established assessment criteria.
- The assessment methodology and outcomes will be presented within the ES.

11.10 Summary

11.10.1 **Table 11.11** provides a summary of the noise and vibration scope.

Table 11.11: Summary of Scope for Noise and Vibration

Discipline	Scoped In Elements	Scoped Out Elements
Noise and Vibration	Construction traffic noise Construction noise Construction vibration Operational noise from BESS, substations, inverters and transformers Operational traffic noise	Construction, operational and decommissioning traffic vibration Operational vibration Operational noise and vibration from panels Operational noise and vibration from cable route corridor Decommissioning noise Decommissioning vibration

12 Climate Change

12.1 Introduction

- 12.1.1 This Chapter sets out the scope and methodology for assessing the likely significant effects on Climate Change as a result of the Scheme during Construction, Operation and Decommissioning.
- 12.1.2 Regulation 4(2)(c) of the Town and County Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) requires significant effects on climate to be considered, as appropriate, within the EIA process¹⁹⁵. In addition, Schedule 4 to the 2017 EIA Regulations requires likely significant effects resulting from *“the impact of the project on climate...and the vulnerability of the project to climate change”* to be addressed within the ES.
- 12.1.3 The climate change assessment comprises two elements which are both presented within this Chapter:
- The impact of the Scheme on climate change by considering all GHG emissions associated with the Scheme (Greenhouse (GHG) Gas Emissions Assessment); and
 - The impact of climate change on the Scheme (Climate Change Risk Assessment – CCRA).

12.2 Study Area

- 12.2.1 The GHG Protocol (WBCSD and WRI, 2019) categorises direct and indirect emissions into three broad scopes:
- Scope 1: all direct GHG emissions;
 - Scope 2: indirect GHG emissions from the generation of purchased electricity, heat or steam; and
 - Scope 3: other indirect emissions, such as the extraction and production of purchased materials and fuels, electricity-related activities not covered in Scope 2, outsourced activities, waste disposal etc.
- 12.2.2 The Study Area for the GHG assessment and CCRA comprises the land, infrastructure and activities that occur within the Site boundary during construction and operation of the Scheme. For the GHG assessment, it will extend to include activities that occur beyond the Site boundary, such as the transport of construction materials. It is not possible at this stage to define the exact location for some sources of GHG emissions that will occur outside of the Site boundary, such as materials production.

¹⁹⁵ Town and Country Planning (Environmental Impact Assessment) Regulations 2017. Available at **The Town and Country Planning (Environmental Impact Assessment) Regulations 2017**. Accessed on 21.10.24.

12.3 Overview of Legislation, Policy and Guidance

12.3.1 The following legislation and policy will inform the assessment of effects within the EIA:

- **Climate Change Legislation:** including the EIA Regulations 2017¹; Climate Change Act 2008 (2050 Target Amendment) Order 2019¹⁹⁶; Carbon Budget Orders 2009, 2011, 2016 and 2021¹⁹⁷; the Climate Change Committee's (CCC) Climate Change Risk Assessment 2021¹⁹⁸; the Third National Adaptation Programme (NAP3) and the Fourth Strategy for Climate Adaptation Reporting 2023¹⁹⁹.
- **International Agreements:** the Paris Agreement 2015²⁰⁰ and United Nations Climate Change Conference – COP26 Glasgow 2021, COP27 Sharm el Sheikh 2022, COP28 United Arab Emirates 2023.
- **Planning Policy:** National Planning Policy Framework (NPPF) 2024²⁰¹; Overarching National Policy Statement (NPS) for Energy (EN-1) 2023²⁰²; NPS for Renewable Energy Infrastructure (EN-3) 2023²⁰³; NPS for Electricity Networks Infrastructure (EN-5) 2023²⁰⁴.
- **Other relevant publications:** Clean Growth Strategy 2017²⁰⁵; UK Government Ten Point Plan 2020²⁰⁶; The Road to Zero 2018²⁰⁷; Powering Our

¹⁹⁶ Department for Business, Energy and Industrial Strategy (2019) Climate Change Act (2008) (2050 Target Amendment) Order 2019. Available at <https://www.legislation.gov.uk/ukdsi/2019/9780111187654> Accessed on 04/10/2024

¹⁹⁷ Climate Change Committee (CCC) (2020) Sixth Carbon Budget. Available here: <https://www.theccc.org.uk/publication/sixth-carbon-budget/> Accessed 04/10/2024

¹⁹⁸ CCC (2021) 'Independent Assessment of UK Climate Risk' Climate Change Committee [online]: <https://www.theccc.org.uk/publication/independent-assessment-of-uk-climate-risk/> Accessed: 04/10/2024.

¹⁹⁹ HM Government (2023) 'The Third National Adaptation Programme (NAP3) and the Fourth Strategy for Climate Adaptation Reporting' Available here: https://assets.publishing.service.gov.uk/media/64ba74102059dc00125d27a7/The_Third_National_Adaptation_Programme.pdf Accessed on 04/10/2024

²⁰⁰ United Nations (2015) Paris Agreement. Available at: https://unfccc.int/sites/default/files/english_paris_agreement.pdf Accessed 04/10/2024

²⁰¹ Ministry of Housing, Communities & Local Government (2024) National Planning Policy Framework. Available at **National Planning Policy Framework - GOV.UK**. Accessed 21/10/24

²⁰² Department for Energy Security and Net Zero (2023) Overarching National Policy Statement for Energy (EN-1). Available at **EN-1 Overarching National Policy Statement for Energy**. Accessed 21.10.24.

²⁰³ Department for Energy Security and Net Zero (2023) National Policy Statement for renewable energy infrastructure (EN-3). Available at **National Policy Statement for renewable energy infrastructure (EN-3) - GOV.UK**. Accessed 21.10.24.

²⁰⁴ Department for Energy Security and Net Zero (2023) National Policy Statement for electricity networks infrastructure (EN-5). Available at **National Policy Statement for electricity networks infrastructure (EN-5) - GOV.UK**. Accessed 21.10.24

²⁰⁵ Department for Business, Energy and Industrial Strategy (2017) The Clean Growth Strategy. Available at <https://assets.publishing.service.gov.uk/media/5ad5f11ded915d32a3a70c03/clean-growth-strategy-correction-april-2018.pdf> Accessed 04/10/2024

²⁰⁶ Department for Energy Security and Net Zero (2020) The ten point plan for a green industrial revolution. Available at <https://www.gov.uk/government/publications/the-ten-point-plan-for-a-green-industrial-revolution> Accessed 04/10/2024

²⁰⁷ DfT (2018) 'The Road to Zero'. Available here: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/739460/road-to-zero.pdf Accessed 04/10/2024

Net Zero Future 2020²⁰⁸; Power Up Britain: Energy Security Plan 2023²⁰⁹; Powering Up Britain: Net Zero Growth Plan 2023²¹⁰; Transport Decarbonisation Plan 2021²¹¹; Net Zero Strategy 2021²¹²; Review of Net Zero 2023²¹³; the Climate Change Committees Progress in Reducing Emissions Report to Parliament 2024²¹⁴; Carbon Budget Delivery Plan 2023²¹⁵.

- **Local Publications:** Norfolk Climate Change Partnership Annual Report 2023; Norfolk County Council Climate Strategy, 2023; and Norfolk County Council Environmental Policy 2018²¹⁶; the Greater Norwich Local Plan 2024²¹⁷; Long Stratton Area Action Plan 2016²¹⁸; Long Stratton Neighbourhood Plan 2021²¹⁹; The Tivetshalls Neighbourhood Plan 2022²²⁰; and the Tasburgh Neighbourhood Plan 2024²²¹.

12.4 Baseline Environment

Baseline Sources

12.4.1 The following data sources were reviewed to establish the baseline conditions for the Site:

- Met Office historic climate data (Met Office, undated) – to identify the historic trends of relevant climate factors for the geographic area of the Site²²²;
- Google Maps (2024) – to identify the GHG baseline of the Site²²³; and

²⁰⁸ Department for Energy Security and Net Zero (2020) Energy white paper: Powering our net zero future. Available at <https://www.gov.uk/government/publications/energy-white-paper-powering-our-net-zero-future> Accessed 04/10/2024

²⁰⁹ Department for Energy Security and Net Zero (2023) Powering Up Britain: Energy Security Plan. Available at <https://www.gov.uk/government/publications/powering-up-britain/powering-up-britain-energy-security-plan> Accessed 04/10/2024

²¹⁰ Department for Energy Security and Net Zero (2023) Powering Up Britain: Net Zero Growth Plan. Available at <https://www.gov.uk/government/publications/powering-up-britain/powering-up-britain-net-zero-growth-plan> Accessed on 04/10/2024

²¹¹ Department for Transport (2021) Transport Decarbonisation Plan. Available at <https://www.gov.uk/government/publications/transport-decarbonisation-plan> Accessed on 04/10/2024

²¹² HM Government (2021). Net Zero Strategy: Build Back Greener. Available at Net Zero Strategy: Build Back Greener - GOV.UK. Accessed on 21.10.14.

²¹³ Department for Energy Security and Net Zero (2022). Mission Zero: Independent Review of Net Zero. Available at Review of Net Zero - GOV.UK. Accessed 21.10.24.

²¹⁴ Climate Change Committee (2024) 2024 Progress Report to Parliament. Available at Progress in reducing emissions 2024 Report to Parliament - Climate Change Committee. Accessed 21.10.24.

²¹⁵ Department for Energy Security and Net Zero (2023) Carbon Budget Delivery Plan. Available at <https://www.gov.uk/government/publications/carbon-budget-delivery-plan> Accessed 04/10/2024.

²¹⁶ Ref 14-159 Norfolk Climate Change Partnership (2023) Annual Report; Ref 14-160 Norfolk County Council (2023) Climate Strategy; Ref 14-161 Norfolk County Council (2018) Environmental Policy 2018.

²¹⁷ Various (2024) Greater Norwich Local Plan, Available at: <https://www.gnlp.org.uk/local-plan-examination-local-plan-examination-document-library/j-inspectors-report-and-adoption>

²¹⁸ South Norfolk Council (2016) Long Stratton Area Action Plan

²¹⁹ LSNP (2016)_ Long Stratton Neighbourhood Plan

²²⁰ The Tivetshalls Neighbourhood Plan 2022 – 2042, Adopted December 2022

²²¹ The Tasburgh Neighbourhood Plan, Adopted July 2022

²²² Met Office (undated) UK Climate Averages. Scole (Norfolk) UK climate averages - Met Office. Accessed on 21.10.24

²²³ Google Maps (2024) Available at Google Maps. Accessed 21.10.24

- Environment Agency (EA) Flood Map for Planning (2024) – to identify the Site’s flood risk²²⁴ and its susceptibility to the effects of climate change.

GHG Baseline

- 12.4.2 Current GHG emission sources relate to the agricultural use on Sites 1 to 10 for the solar PV array Sites, BESS Site and the National Grid Substation Site. It is expected that existing farming practices provide a source of GHG emissions due to equipment/ machine use, soil disturbance, pesticides and/or livestock grazing.
- 12.4.3 Hedgerows and trees surrounding the boundaries of Sites 1 to 10 provide a limited amount of carbon sequestration. The BESS Site comprises grassland bordered by lines of trees and hedgerows, and the National Grid Substation Site is bordered by sporadic trees, which provide limited amounts of carbon sequestration.
- 12.4.4 As part of the GHG baseline, it is noted that beyond the Site boundary there are existing GHG emissions from the generation of National Grid electricity. Electricity from the National Grid includes a mix of sources such as gas, nuclear and renewable energy. This is relevant to this assessment as the nature of the Scheme contributes towards the generation of renewable energy generation.
- 12.4.5 While it is expected there will be some baseline emissions from the Site’s current use, it will be assumed within the assessment that there are no emissions from the current use of the Site.
- 12.4.6 The CRC once constructed, will be located beneath the ground under agricultural fields. Carbon storage in soil is a current store of GHG emissions. There are areas of peat located within CRC7 and which are current stores of GHG emissions.

CCRA Baseline

- 12.4.7 Historic climate averages during the period 1991 – 2020 for the closest climate station to the Site at approximately 10 km to the south of the Site (Scole, Norfolk), obtained from the Met Office website (Met Office, undated), indicate the following:
- Average annual maximum temperature was 14.81°C;
 - Warmest month on average was July (average maximum temperatures of 22.78°C);
 - Coldest month on average was February (average minimum temperature of 1.46°C);
 - Average total annual rainfall was 626.19mm;
 - Wettest month on average was November (average monthly rainfall of 78.24mm); and
 - Driest month on average was April (average monthly rainfall of 37.90mm).

²²⁴ Environment Agency (2024) Flood Map for Planning. Available at Flood map for planning - GOV.UK. Accessed on 21.10.24

- 12.4.8 The majority of the Site is located within Flood Zone 1 with a low probability of fluvial flooding. This is an area with a lower than 0.1% annual probability of fluvial flooding.
- 12.4.9 There are small areas of Flood Zone 2 and 3 as detailed in **Chapter 5, Section 5.3** of the Scoping Report.

Future Baseline

GHG

- 12.4.10 The future baseline will take into consideration how national policy and Government strategies are likely to cause a reduction in emissions from transport and energy in the coming decades.

CCRA

- 12.4.11 The UKCP18 produced by the UK Met Office is the main source of information on the future baselines. UKCP18 uses observations of weather and climate combined with climate models to create a range of climate projections for different emissions scenarios. UKCP18 uses Representative Concentration Pathways (RCPs) to develop projections which will result in a different range of global mean temperature increases until 2099. RCP8.5 is the most conservative, highest-impact scenario.
- 12.4.12 This section presents a summary of the future climate simulations extracted from UKCP18 data provided by the UK Met Office at intervals from 2028 to 2099. The Site is located within the 637500, 287500 25km grid cell and the 612500, 287500 25km grid cell.
- 12.4.13 An average of the two 25km grid cells are provided in **Table 12.1** below and considers the baseline year (2024), the completion year (2030), as well as 2050, 2075 and 2099, as this is the last date available in the UKCP18 data.

Table 12.1. Average 50th Percentile Climate Projections at 25km grid square 637500, 287500 and 612500, 287500 using baseline 1981-2000 scenario RCP 8.5

Year	Climate Variable at 50th Percentile					
	Mean air temperature anomaly at 1.5 m (°C)	Annual Precipitation rate anomaly (%)	Maximum Summer air temperature anomaly at 1.5 m (°C)	Average Summer Precipitation rate anomaly (%)	Minimum Winter air temperature anomaly at 1.5 m (°C)	Average Winter Precipitation rate anomaly (%)
2028	1.00	-0.88	1.31	-10.56	0.91	4.51
2030	0.80	-1.12	1.38	-10.90	0.97	4.75
2050	1.80	-4.06	2.38	-19.99	1.71	7.41
2075	3.11	-3.91	4.23	-34.96	2.85	14.23
2099	4.75	-5.32	6.56	-49.68	4.39	22.60

*Anomaly refers to the change compared to the baseline. The projections are not absolute values.

- 12.4.14 The Site and surrounding area are expected to experience warmer, drier summers and milder, wetter winters as a result of climate change. Extreme weather events

such as heatwaves and heavy rainfall are also expected to increase in frequency and intensity in the coming decades (Met Office, 2022²²⁵).

- 12.4.15 Due to the lack of any observed trends, there haven't been any studies so far which provide a link between changes in UK storminess and climate change. Met Office climate projections indicate that winter windstorms will increase slightly in number and intensity over the UK i.e. more winter storms, including disproportionately more severe storms, are projected to cross the UK. However, this has medium confidence because a few climate models indicate differently (Met Office, no date).

Consultation

- 12.4.16 No consultation in relation to climate change has been undertaken at the time of writing this chapter. We request the local planning authorities and PINS opinion on the contents of this climate change aspects of this Scoping Report. Further targeted consultation may be recommended following completion of the technical assessment and/or responses to the Scoping Report.

12.5 Project Basis for Scoping Assessment

- 12.5.1 The assessment considers a reasonable worst case for likely significant effects as a result of the Scheme during construction, operation and decommissioning of the Scheme.
- 12.5.2 For the purposes of the GHG assessment, there is anticipated to be no worst-case option between the Single Access Tracker Panels and the Fixed Panels as the options do not change the information that the assessment will be based on.
- 12.5.3 The assessment of climate change and GHG emissions is based on available best practice information.

12.6 Embedded Mitigation

- 12.6.1 The following mitigation measures will be embedded into the design of the Scheme;
- The height of the solar PV arrays will be designed as such that they will be raised adequately above the ground so surface water flow routes can continue to flow across the Site unimpeded.
 - Any compounds, Substations and the BESS will incorporate a surface water drainage strategy to sufficiently manage surface water runoff arising from increases in impermeable area due to the Scheme, in accordance with the requirements of Norfolk County Council (NCC) as the Lead Local Flood Authority (LLFA) for the area. The strategy will incorporate suitable water quality treatment before surface water runoff is discharged to the receptor (i.e. receiving watercourse or into the ground).

²²⁵ Met Office (2022) UK Climate Projections: Headline Findings. Available at https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/research/ukcp/ukcp18_headline_findings_v4_aug22.pdf Accessed on 04/10/2024

- The ground levels along the CRC will be kept at, or as close to existing as necessary, to maintain surface water flow routes.
- The design of the Scheme will be informed by the Building Research Establishment's Biodiversity Guidance for Solar Developments (2014) and NPS for Energy (EN-1).
- Infrastructure development on habitats of ecological value within the Site, including woodlands, hedgerows, watercourses, will be avoided or minimised, with infrastructure development focused on existing agricultural land.
- The long-term management for the Site will be detailed within a Landscape Ecological Management Plan (LEMP), and management activities subject to long-term ecological monitoring commitments.

12.7 Likely Significant Effects

Construction

GHG

12.7.1 During construction GHG emissions would be generated from the following activities which have the potential to cause significant effects:

- Scope 1: construction processes such as emission resulting from the combustion of fuels in construction vehicles, transportation of workers, plants or equipment used for construction of the Scheme, emissions associated with soil disturbance, including potential release of carbon stores from peat if disturbed during construction, and tree cutting during the construction of the underground cables;
- Scope 2: emissions associated with purchased electricity needed for plant and welfare facilities and air conditioning systems; and
- Scope 3: embodied carbon from purchased construction materials required to construct the Scheme such as waste disposal and staff commuting.

Operation

GHG

12.7.2 The Scheme will provide a source of renewable, low carbon energy generation. that. During operation GHG emissions would be generated from the following activities which have the potential to cause significant effects:

- Scope 1: emissions associated with on-Site energy generation from solar panels. The proposed ecological mitigation and enhancement areas on the Site, such as grassland and meadow, additional hedgerows, new tree planting and vegetated buffers would provide carbon sequestration.
- Scope 2: emissions associated with energy consumption from lighting, BESS and connection of the 400kV Substation (1) to the National Grid Substation.
- Scope 3: emissions that are predominantly outside the Applicant's control, for example, processing waste associated with purchased materials used for the operation of the Scheme to replace and maintain solar panels and associated

infrastructure, maintenance and the provision of clean water for cleaning panels and treatment of wastewater, and transport to and from the Site during operation of the Scheme.

- 12.7.3 The Scheme is anticipated to have a 60-year operational life. It is estimated that the solar panels could require replacement up to two times and the batteries up to four times during the operation of the Scheme. It is likely that new technology during these replacement periods which may increase efficiency.

12.8 Impacts Scoped Out of the Assessment

GHG

Construction

- 12.8.1 The likely significant effects during construction are considered in **Section 12.7**. Therefore, no GHG effects during construction are proposed to be scoped out of the ES.

Operation

- 12.8.2 The likely significant effects during operation are considered in **Section 12.7**. Therefore, no GHG effects during operation are proposed to be scoped out of the ES.

Decommissioning

- 12.8.3 Emissions associated with the decommissioning stage in terms of vehicle fuel use for transportation of workers, materials to off-site locations, recycling and disposal are anticipated to be similar to that identified at the construction stage. However, it is anticipated that the construction and operation of the Scheme will have the greatest potential to emit GHGs compared to the decommissioning stage, particularly when considering the trend of national decarbonisation over time and the legislative requirement for the UK to meet carbon neutral targets by 2050 (Climate Change Act 2008) resulting in the assumption that vehicles during the decommissioning phase are likely to have a lower emissions profile in comparison to during the construction phase.
- 12.8.4 The Scheme is anticipated to have a 60-year operational life. Consequently, there is not enough certainty about the likelihood, type or scale of activities that could emit GHG emissions at the time of decommissioning. For instance, the type of fuel that would be used for transport is unknown at this stage. Therefore, it is difficult to quantify emissions for this stage. Emissions associated with the decommissioning of the Scheme are therefore scoped out of the ES.

CCRA

Construction

- 12.8.5 It is anticipated that the risk of climate hazards will be managed through adherence to the CEMP subject to planning condition and standard construction and health and safety practices, such as securing material/equipment for correct storage to mitigate against hazards during adverse weather events and not undertaking works during periods of extreme rainfall or high winds.
- 12.8.6 Construction of the Scheme is anticipated to commence in 2028 at the earliest. It is estimated that it will take approximately 24 months to construct. As a result, the conditions during construction are anticipated to be similar to the existing baseline and no significant effects are anticipated on the Scheme as a result of climate change as shown in **Table 12.1**. Between 2028 and 2030, the maximum summer air temperatures are projected to increase by 0.07°C and minimum temperatures are set to rise by 0.06°C. The risk of climate hazards during construction is considered to be not significant and proposed to be scoped out of the ES.

Operation

- 12.8.7 During operation, the Scheme may be vulnerable to climate risks such as flooding, increasing temperatures, heatwaves and storm and/ or wind damage. Infrastructure is considered to be the main receptor to these risks, such as the solar PV mounting structure, BESS and Substations which are at risk of damage resulting in reduced efficiency in energy generation. Design standards for this infrastructure will be required to be followed to mitigate against this effect.
- 12.8.8 As mentioned above, the majority of the sub-Sites within the Scheme are located within Flood Zone 1 'Low Probability' (defined as less than a 1 in 1000 (0.1%) annual probability (AP) of fluvial or sea flooding), with the exception of small areas of Flood Zone 2 and Flood Zone 3 from fluvial flooding. All built development will be located outside of any fluvial floodplain, and therefore the location and height of the solar panels will be above existing and future flood levels as advised by the National Significant Infrastructure Projects: Technical Advice Page for Scoping Solar Development (2024)²²⁶. The BESS and Substations will follow design standards to provide adequate mitigation against flood risk including in the future. A Flood Risk Assessment will be prepared and submitted with the application. **Chapter 5, Section 5.3 Water Environment** contains further information on how these potential effects will be addressed including Water Environment being scoped out of the ES as no significant effects are considered for the Scheme.
- 12.8.9 Human receptors, such as site maintenance operators, may be vulnerable to climate risks, some of which will be more susceptible to climate change than others depending on a range of factors such as age (the elderly and people with existing poor health). It is anticipated that site maintenance operators will not be

²²⁶ Planning Inspectorate (2024) Nationally Significant Infrastructure Projects: Technical Advice Page for Scoping Solar Development. Available 8t: Nationally Significant Infrastructure Projects: Technical Advice Page for Scoping Solar Development - GOV.UK. Accessed on 03/12/24.

permanently on Site and will not be required to visit the Site frequently over the operational period of the Scheme, and that general health and safety practices will be applied to reduce the risk of working in extreme weather conditions.

- 12.8.10 In addition, during operation of the Scheme, landscaping and planting mitigation may be considered sensitive to the effects of climate changes depending on their current distribution or climatic tolerances. It is anticipated that plant species suited to the local area will be utilised to provide resilience to the local climatic conditions. The landscaping will be managed and monitored through a Landscape Environmental Management Plan (LEMP). The LEMP will provide details of how these can be managed and maintained in the long-term providing a source of carbon sequestration that mitigates against climate change.

Decommissioning

- 12.8.11 Human receptors, such as decommissioning workers, may be vulnerable to climate risks, some of which will be more susceptible to climate change than others depending on a range of factors such as age and people with existing poor health. It is anticipated that general health and safety practices will be applied to reduce the risk of working in extreme weather conditions and standard practices, such as securing material/ equipment for correct storage to mitigate against hazards during adverse weather events and not undertaking works during periods of extreme rainfall or high winds are implemented.
- 12.8.12 Based on the above, the Scheme is considered to be resilient to climate change, to the extent that likely significant effects are not anticipated to arise, throughout the construction, operation and decommissioning stages, and the effect of climate change on the Scheme is considered to be not significant and is proposed to be scoped out of the ES.

In-Combination Effects

- 12.8.13 There is potential for in-combination climate change effects to exacerbate other environmental effects identified in other topic chapters without mitigation, although implementation of embedded mitigation measures will reduce the potential for significant in combination effects. The future climate change baseline set out in **Section 12.4** will be considered by each topic chapter of the ES to identify any potential in-combination climate effects. This will be done with respective topic chapters and so a separate in-combination effects section will not be provided in the climate change ES chapter.

Cumulative Effects

- 12.8.14 IEMA Guidance (2022)²²⁷ identifies that all global cumulative GHG sources are relevant to the effect on climate change. For this reason, the IEMA Guidance recommends that effects of GHG emissions from specific cumulative projects should not be individually assessed, as there is no basis for selecting particular

²²⁷ Institute of Environmental Management & Assessment (IEMA) (2022) 'Assessing Greenhouse Gas Emissions and Evaluating their Significance' [online]: J35958_IEMA_Greenhouse_Gas_Guidance-1.pdf Accessed: 04/10/2024

cumulative projects that have GHG emissions over others. By its nature, the contextualisation of GHG emissions to the national carbon targets incorporates cumulative contributions of other GHG sources which make up that context. Therefore, a separate cumulative assessment will not be undertaken for the GHG assessment.

- 12.8.15 In terms of CCRA cumulative effects, the potential significant effects during construction, operation and decommissioning are specific to the Scheme. Therefore, the consideration of the Scheme with other development is not required as there are no cumulative CCRA effects, and this assessment is scoped out of the ES.

12.9 Proposed Approach to the ES

- 12.9.1 The Institute of Environmental Management and Assessment (IEMA) (2022) recommends that the significance of a scheme's GHG emissions should be based on the net impact across the Scheme lifetime, including removal of current agricultural activities. Significance may be beneficial, adverse or negligible as detailed in **Table 12.2**.
- 12.9.2 The methodology will adopt emission boundaries (i.e. defining the scope of emissions) that align with the Greenhouse Gas Protocol (WBCSD and WRI 2019)²²⁸ and Publicly Available Standard (PAS) 2080: Carbon Management in Infrastructure (BSI, 2023)²²⁹.
- 12.9.3 There is no nationally adopted method for assessing climate change within EIA, and therefore the assessment approach draws upon IEMA guidance (IEMA, 2022). IEMA guidance identifies that all GHG emissions contribute to a negative environmental impact and contribute to climate change, thus might be considered significant. It therefore suggests the impact of a development on climate should be based on its potential to emit GHGs.
- 12.9.4 The assessment will include a quantitative assessment of GHG emissions during the construction and operation of the Scheme including panel and battery replacement during operation, in comparison with current and future baseline GHG emissions.
- 12.9.5 The metric for assessing the carbon emissions is units of CO₂ equivalent (CO₂e). This allows the use of Global Warming Potential (GWP) for the emissions of seven key GHGs, including carbon and methane, to be expressed in terms of their equivalent GWP as a mass of CO₂e.
- 12.9.6 The following equation will be used to quantify GHG emissions:

$$\text{Activity data} \times \text{GHG emissions factor} = \text{GHG emissions}$$

²²⁸ World Business Council for Sustainable Development (WBCSD) / World Resources Institute (WRI) (2019) Greenhouse Gas Protocol. Available: <http://ghgprotocol.org/about-us>

²²⁹ BSI (2023) PAS 2080:2023 Carbon management in buildings and infrastructure. Available: <https://pages.bsigroup.com/l/35972/2023-04-03/3t5zgck>

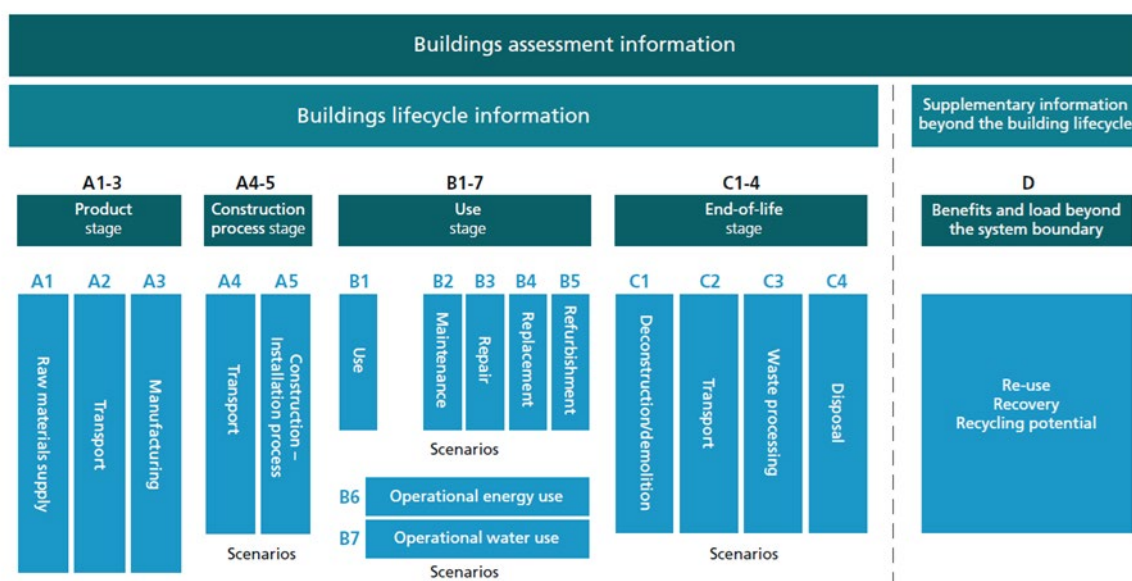
- 12.9.7 The Department for Environment, Food and Rural Affairs' (DEFRA 2024) emissions factors will be used as the source data for calculating emissions²³⁰.

Baseline Emissions

- 12.9.8 A high-level review of the existing land use and associated activities will be undertaken to identify the baseline GHG emissions on the Site, as outlined in **Section 12.4** Local and national baseline GHG emissions will be identified through a review of the UK Carbon Budget Orders and UK Local Authority GHG inventory data (DESNZ, 2024).
- 12.9.9 The construction phase will fall under the 5th Carbon Budget period (2028-2032) and operation of the Scheme will fall under the 5th and 6th Carbon Budget period (2033-2037). Operation of the Scheme will continue beyond the 6th Carbon Budget period and 2050, with an operational lifespan of 60 years.

Scope of Assessment

- 12.9.10 The GHG emissions assessment will identify sources of emissions from the three scopes defined in **Section 12.4** alongside the lifecycle stages set out in **Insert 12.1**.



Source: BS EN 15978:2011

Insert 12.1. PAS 2080 Lifecycle Stages.8

- 12.9.11 The assessment will be based on available Scheme information. Where necessary, reasonable assumptions may need to be made to complete the assessment. These will be set out within the ES along with any other limitations or uncertainty associated with the assessment.

²³⁰ Department for Energy Security and Net Zero (DESNZ) (2024) Greenhouse gas reporting: conversion factors 2024. Available at Greenhouse gas reporting: conversion factors 2024 - GOV.UK Accessed 21.10.24

Identification of Receptors

- 12.9.12 GHG emissions have a global effect rather than directly affecting specific local receptors to which levels of sensitivity can be assigned. The global climate will therefore be treated as a single receptor.

Defining Significance

- 12.9.13 Given the global scale and severe consequences of climate change and limited recoverability, the receptor sensitivity is considered to be High in accordance with the IEMA (2022) guidance. There is an absence of significance criteria or defined threshold for determining the significance of effects resulting from GHG emissions in EIA. Significance of effect is therefore determined using professional judgement as a 'competent professional', and consideration of the following elements:

- Appraisal of the Scheme's emissions in the context of national, regional and local emissions;
- IEMA EIA Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance (IEMA, 2022); and
- How the Scheme has embedded design features to reduce GHG emissions and identified opportunities for further mitigation in the Scheme's design and delivery.

- 12.9.14 The UK has set a legally binding GHG reduction target for 2050 which, according to the Climate Change Committee (CCC), is compatible with the magnitude and rate of GHG emission reductions required in the UK to meet the goals of the Paris Agreement. Given this, IEMA guidance states 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." (IEMA, 2022)

- 12.9.15 The assessment will apply the following significance criteria in **Table 12.2** that is set out in the IEMA (2022) guidance.

Table 12.2. GHG Significance (IEMA, 2022)

Significance	Measure of Effect
Major Adverse	the project's GHG impacts are not mitigated or are only compliant with do-minimum standards set through regulation, and do not provide further reductions required by existing local and national policy for projects of this type. A project with major adverse effects is locking in emissions and does not make a meaningful contribution to the UK's trajectory towards net zero.
Moderate Adverse	the project's GHG impacts are partially mitigated and may partially meet the applicable existing and emerging policy requirements but would not fully contribute to decarbonisation in line with local and national policy goals for

Significance	Measure of Effect
	projects of this type. A project with moderate adverse effects falls short of fully contributing to the UK's trajectory towards net zero.
Minor Adverse	the project's GHG impacts would be fully consistent with applicable existing and emerging policy requirements and good practice design standards for projects of this type. A project with minor adverse effects is fully in line with measures necessary to achieve the UK's trajectory towards net zero.
Negligible	the project's GHG impacts would be reduced through measures that go well beyond existing and emerging policy and design standards for projects of this type, such that radical decarbonisation or net zero is achieved well before 2050. A project with negligible effects provides GHG performance that is well 'ahead of the curve' for the trajectory towards net zero and has minimal residual emissions
Beneficial	the project's net GHG impacts are below zero and it causes a reduction in atmospheric GHG concentration, whether directly or indirectly, compared to the without-project baseline. A project with beneficial effects substantially exceeds net zero requirements with a positive climate impact.

12.9.16 Effects that are described as 'minor' or 'negligible' are determined to be 'Not Significant', and effects that are described as 'moderate' or 'major' are determined to be 'Significant'.

12.10 Summary

12.10.1 **Table 12.3** provides a summary of the matters to be scoped in and scoped out of the ES.

Table 12.3: Summary of Scope of ES for Climate Change

Discipline	Sub-Element	Scoped In/Out Elements
GHG Emissions	Construction	In
	Operation and Maintenance	In
	Decommissioning	Out
CCRA	Temperature	Out
	Precipitation	Out
	Extreme Weather Conditions	Out
	Sea Level Rise	Out

In-Combination Assessment	Temperature	Out
	Precipitation	Out
	Extreme Weather Conditions	Out
	Sea Level Rise	Out

13 Soils and Agricultural Land

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 Soils and Agricultural Land during the Construction, Operation and Decommissioning Phases.

13.2 Study Area

- 13.2.1 The Study Area for this assessment is the Site. Particular focus is on National Grid Substation Site, BESS Site and Sites 1 – 10. The Cable Route Corridor (CRC) is included in the assessment albeit works within the CRC will be short term and temporary.

13.3 Overview of Legislation, Policy and Guidance

National Planning Policy

- 13.3.1 The key national policies and legislation relevant to the Scheme include:

- Overarching National Policy Statement for Energy 2024 (EN-1)²³¹;
- National Policy Statement on Renewable Energy Infrastructure 2024 (EN-3)²³²;
- National Policy Statement for Electricity Networks Infrastructure (EN-5)²³³; and
- National Planning Policy Framework 2024 (NPPF)²³⁴.

Guidance

- 13.3.2 Other Guidance that will be considered will include:

- Natural England's TIN049 (2012) "*Protecting the best and most versatile agricultural land*"²³⁵.
- MAFF (1988) ALC of England and Wales: revised guidelines and criteria for grading the quality of agricultural land²³⁶.
- Defra (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites²³⁷

²³¹ Department for Energy and Net Zero (2024). Overarching National Policy Statement for Energy ('EN-1', 2024)

²³² Department for Energy and Net Zero (2024). National Policy Statement on Renewable Energy Infrastructure ('EN-3', 2024)

²³³ Department for Energy and Net Zero (2024). National Policy Statement for Electricity Networks Infrastructure ('EN-5', 2024)

²³⁴ Ministry of Housing, Communities and Local Government (formerly the Department for Levelling Up, Housing and Communities) (2024) National Planning Policy Framework (NPPF)

²³⁵ Natural England Technical Information Note 049 "Protecting the Best and Most Versatile agricultural land, edition 2" (2012).

²³⁶ Agricultural Land Classification of England and Wales: revised guidelines and criteria for grading the quality of agricultural land, MAFF (1988).

²³⁷ Department for Environment, Food and Rural Affairs (2009). Construction Code of Practice for the Sustainable Use of Soils on Construction Sites

- Institute of Quarrying (2021) Good Practice Guide for Handling Soils²³⁸; and
- Institute of Environmental Management and Assessment (2022) A New Perspective on Land and Soil in Environmental Impact Assessment²³⁹.
- Greater Norwich Local Plan (2024)²⁴⁰
- South Norfolk District Council Development Management Policies Document (2015)²⁴¹

13.4 Baseline Environment

13.4.1 The baseline information for soils, agricultural land and local agricultural circumstances is assessed in terms of:

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

Agricultural Land Quality

- 13.4.2 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).
- 13.4.3 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 NPPF (2024), Annex 2). Natural England estimates in TIN049 that 42% of agricultural land in England is of BMV quality.
- 13.4.4 The Ministry of Agriculture, Fisheries and Food (MAFF) produced a series of Provisional ALC maps in the 1970s. These were reprinted by Natural England in 2010. These maps were produced at a scale of 1:250,000 and are for strategic purposes only. They do not show the subgrades of Grade 3.
- 13.4.5 The Provisional Map for the East of England²⁴² shows the Site to be mostly of undifferentiated Grade 3. Sub-Site 3A lies in an area partly shown as provisional Grade 4. **Insert 13.1** below shows the provisional ALC maps for the general area. These maps are for strategic purposes and are not for site-specific use, and the Site boundary is therefore not shown on these extracts.

²³⁸ Institute of Quarrying (2021) Good Practice Guide for Handling Soils.

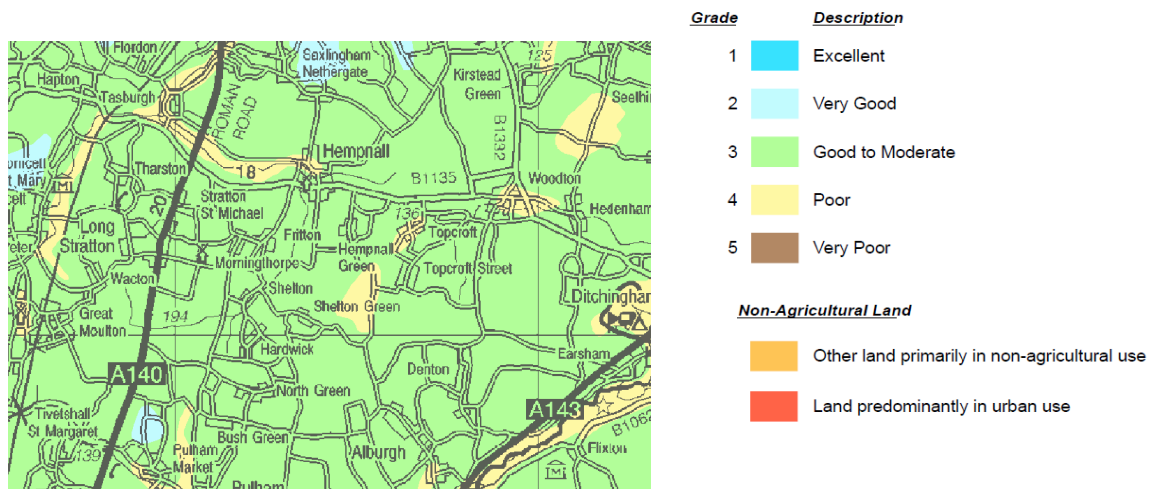
²³⁹ Institute of Environmental Management and Assessment (2022) A New Perspective on Land and Soil in Environmental Impact Assessment.

²⁴⁰ Greater Norwich Local Plan, adopted by SNC 25 March 2024

²⁴¹ South Norfolk Council "Development Management Policies Document", adopted October 2015

²⁴² Natural England 1:250,000 Series Agricultural Land Classification "East Region" (2010)

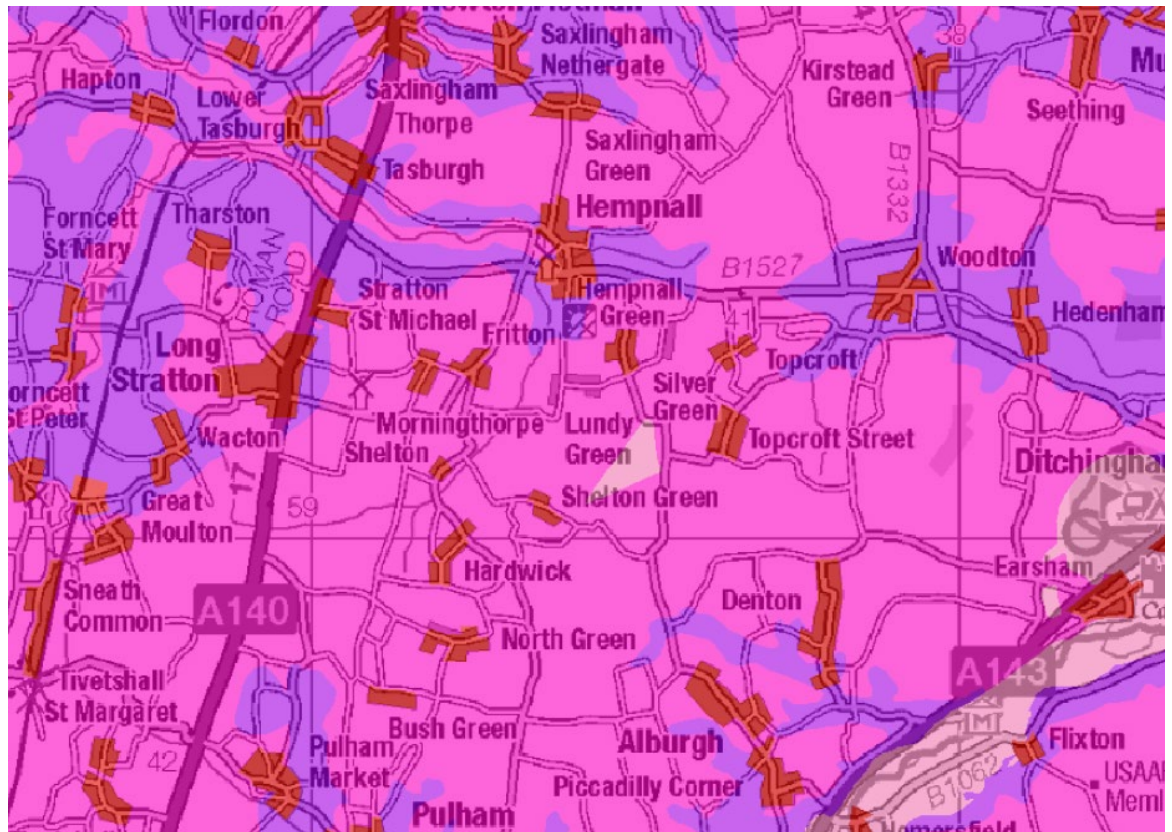
Insert 13.1: Provisional ALC Map extract and Groups



13.4.6 In 2017 Natural England published a series of maps, also at 1:250,000 scale, showing the likelihood of BMV land²⁴³. These maps divide the country into three categories: low (<20% area BMV), moderate (20%-60% area BMV), and high (>60% area BMV). The majority of the Site is shown in the “*moderate likelihood of BMV (20 – 60% area BMV)*” category, which predominates across the wider area. Sub-site 3A is shown as falling in the “*low likelihood*” area. Sub-Site 4A and 4B are mostly in the “*high likelihood of BMV*”. **Insert 13.2** below shows the predictive BMV maps for the general area.

²⁴³ Natural England 1:250,000 Likelihood of Best and Most Versatile (BMV) Agricultural Land "East Region" (2017)

Insert 13.2: Predictive Likelihood of BMV

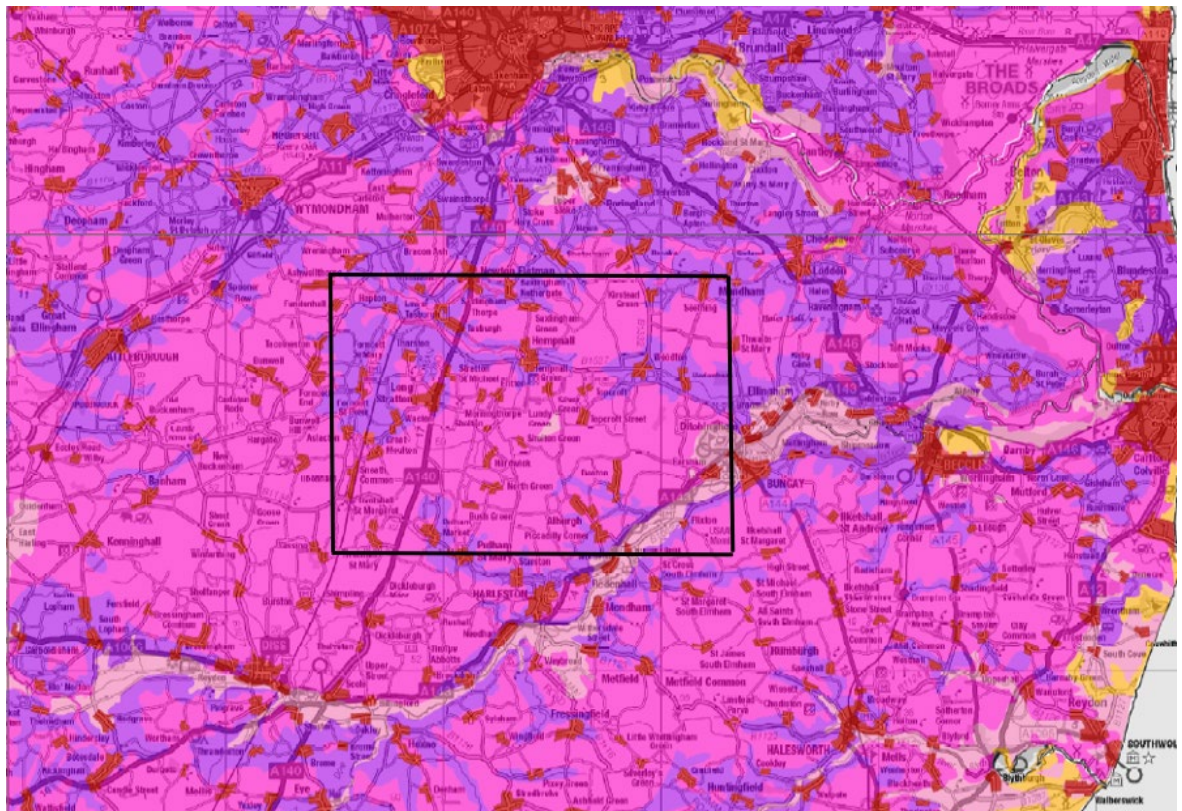


Predictive BMV Land Assessment © Defra

- High likelihood of BMV land (>60% area bmv)
- Moderate likelihood of BMV land (20 - 60% area bmv)
- Low likelihood of BMV land (<= 20% area bmv)
- Non-agricultural use
- Urban / Industrial

- 13.4.7 Across the wider geographic area, as shown on **Insert 13.3**, the only land shown as falling into the low likelihood of BMV is the small area within the Site, and land adjacent to the River Witham, or the coastal areas.

Insert 13.3: Predictive Likelihood of BMV, Wider Area



Predictive BMV Land Assessment © Defra

- High likelihood of BMV land (>60% area bmv)
- Moderate likelihood of BMV land (20 - 60% area bmv)
- Low likelihood of BMV land (<= 20% area bmv)
- Non-agricultural use
- Urban / Industrial

- 13.4.8 ALC field surveys are currently being undertaken. These are being carried out across the Sites, excluding the CRC, at a detailed survey level of 1 auger per hectare. The survey will enable the ALC grade for these Sites to be determined. These surveys will inform the ES and will provide baseline soil data to inform Soil Management Plans (SMPs).
- 13.4.9 No soil surveys are currently proposed for the CRC. The installation of the cable will involve a working corridor (up to 50m) over which topsoil will be stripped, and the installation of a trench (typically less than 2 metres). The soils will be removed and replaced in the same order. The survey of the CRC is proposed to take place as part of a Soil Resources Management Plan (SRMP) post DCO, once the exact route of the cable has been identified.

Soils

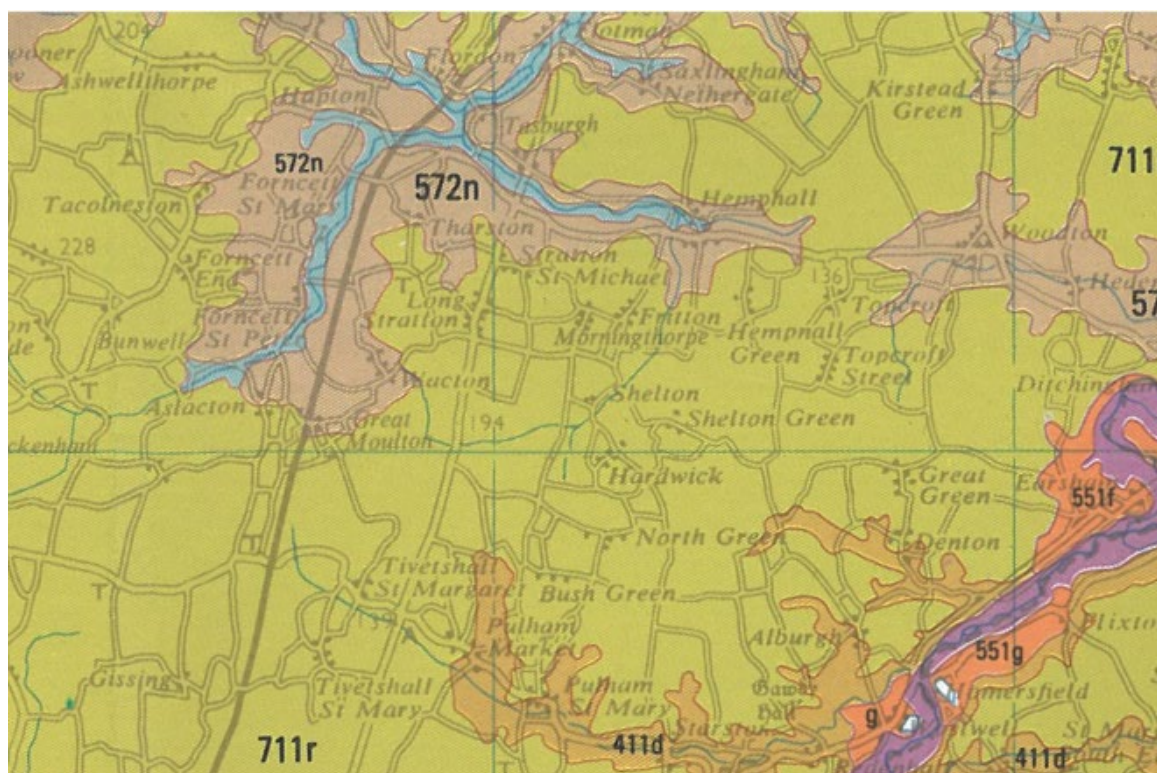
- 13.4.10 The Soil Survey of England and Wales 1:250,000 Sheet 4 Eastern England²⁴⁴ identifies the soils as mostly of 711r Beccles 1 Association, comprising slowly

²⁴⁴ Soil Survey of England and Wales, Sheet 4 Eastern England, SSEW (1983)

permeable, seasonally waterlogged fine loamy over clayey soils. In the north, in areas around Sites 4, 5 and 6, the soil is mapped as 572n Burlingham 1 Association, deep coarse and fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging.

- 13.4.11 The distribution is shown on the extract from the SSEW 1:250,000 map below (Insert 13.4).

Insert 13.4: Extract from the National Soil Map



- 13.4.12 Soil surveys are currently being undertaken. The results are finding soils that broadly correlate to those described in the National Soil Map. The soils in the Sites are described very briefly as follows:
- Sites 1, 2 and 8 tend to be clay or clay loam topsoil, often calcareous, and dark greyish-brown or dark grey over generally clay or clay loam subsoils;
 - Site 4 is mostly medium sandy loam or sandy clay loam over medium sandy loam or sandy clay loam upper subsoils;
 - Site 3, 4, 5, 6 and 7 are mostly clay or clay loam topsoil, often calcareous, and dark greyish-brown or brown, over clay or clay loam subsoils, usually grey. Subsoils are generally poorly structured and slowly permeable.
- 13.4.13 The soil information is being collected as part of the ALC survey and will inform the SMPs and inform on timing for construction activities.

Local Agricultural Circumstances

- 13.4.14 Based on an initial site view, and from the land use identified during the ongoing ALC surveys, the land use across the sub-Sites is predominantly arable cropping.

Land use will be identified in detail as part of the assessment. This will inform the farm business impact assessment and will inform the wider assessment of the effects of the Scheme on agricultural interests.

Consultation

- 13.4.15 No formal consultation has been undertaken to date in respect of land and soils. Comments received with regard to soils and agriculture during the statutory consultation period and Scoping Opinion will be dealt with in the ES.

13.5 Project Basis for Scoping Assessment

- 13.5.1 This section is divided into three sections:

- Assessing sensitivity, magnitude and significance;
- Preliminary analysis of likely sensitivity; and
- Preliminary analysis of likely magnitude.

Sensitivity, Magnitude, Significance

- 13.5.2 The methodology to determine significance of effect identifies the sensitivity of the various receptors in terms of their importance (e.g. BMV land quality) and their susceptibility to damage when being moved or trafficked (i.e. driven over by vehicles) for example for a sensitive soil type. The assessment draws from guidance set out by IEMA.
- 13.5.3 The assessment considers land of ALC Grade 1, 2 and 3a to be of “*high*” sensitivity, and land of Subgrade 3b to be of “*medium*” sensitivity. Land of Grades 4 and 5 is “*low*” sensitivity.
- 13.5.4 The methodology considers soils of high clay content in wetter climatic regions to be sensitive to damage from trafficking, and those in drier areas to be less sensitive.
- 13.5.5 As part of the detailed ALC assessment it has been identified that the Field Capacity Days of this area are between 110 and 124 days. This is the period when soils are saturated. The climate in the area shows Average Annual Rainfall of between 588mm and 633mm, representing a drier climate region. This suggests that soils will be no higher than medium sensitivity across this Site.
- 13.5.6 The IEMA Guidance does not provide magnitude and sensitivity definitions for farm businesses, although effects are described in paragraph 8.3.3 of the IEMA Guidance. The sensitivity of receptors will be measured as set out in **Table 13.1** below. The criteria in **Tables 13.1** to **13.3** below are based on available guidance and professional judgement. The methodology considers farm businesses to be more resilient to change. Full-time businesses that would be terminated by the 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 resilience to change, including for example partial temporary loss of farmland to a solar farm use.

Table 13.1: Methodology for Determining Receptor Sensitivity for Agriculture and Soils

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 soils where the FCD is >225	(No farm businesses are of high sensitivity)
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 on short-term arrangements.
Negligible	Land of ALC Grades 4 and 5 with only indirect links	(No soil types are of negligible sensitivity)	Agricultural land that is not farmed or does not form part of a farm business.

* FCD is when soils are saturated and cannot absorb any more water.

- 13.5.7 The magnitude of impacts will be assessed as per the methodology set out in **Table 13.2** below. The determination of “loss” will draw on the definition in the IEMA Guide. 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 13.2: Methodology for Determining Magnitude of Change for Agriculture and Soils

Magnitude of Impact	Definition	
	Effects on Agricultural Land (Soils)	Effects on Farm Businesses (agricultural businesses)
High	The development would directly lead to the loss (including permanent sealing or land quality downgrading) of over 50 hectares (ha) of soil-related features; or potential for improvement in one or more soil functions over an area of more than 50ha.	The impact of development would render a full-time agricultural business non-viable.
Medium	The development would directly lead to the loss (including permanent sealing or land quality	The impact of the development would require significant changes in the day-to-day management of a

	downgrading) over an area of between 20ha and 50ha of soil-related features; or potential for improvement in one or more soil functions over an area of between 20ha and 50ha.	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 5ha of adjacent land to be farmed fully.
Low	The development would directly lead to the loss (including permanent sealing or land quality downgrading) of less than 20ha of soil-related functions; or potential for improvement in one or more soil functions over an area of less than 20ha.	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

13.5.8 The assessment of the significance of effects will be determined based on the matrix in **Table 13.3** below. Likely significant effects are those that are moderate or above.

Table 13.3: 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
	Negligible	Negligible	Negligible	Negligible	Negligible

Preliminary Assessment of Likely Sensitivity

Land Quality

- 13.5.9 The Provisional ALC assessment identifies that most of the Site is Grade 3, with small areas of Grade 4. The provisional maps do not differentiate between the ALC subgrades of 3a and 3b.
- 13.5.10 On the Likelihood of BMV maps, the Site is shown as mostly falling into the moderate likelihood of BMV, such that somewhere between 20 and 60% of the land will be BMV. There are some areas falling into the high likelihood, such that more than 60% of land is BMV.
- 13.5.11 Land classification surveys are currently underway, and early results show a mixture of Grade 2 and subgrades 3a and 3b.
- 13.5.12 The Provisional and Likelihood of BMV maps identify the Site as comprising land not likely to be any better quality than land in a wider area, but nevertheless likely to contain significant proportions of land of the best and most versatile quality.
- 13.5.13 The land within the Site is expected to fall mostly into the categories of “*high*” and “*medium*” sensitivity in the assessment process, with the exact nature and extent of the land sensitivity to be confirmed through ALC surveys that will inform development of the ES.

Soils

- 13.5.14 The National Soil Map shows soils to be loamy and clayey soils, with a fairly widespread and even distribution. The ongoing soil survey is identifying clay or clay loam topsoils, with a medium sandy loam or sandy clay loam topsoil in places.
- 13.5.15 In this climatic area (<150 Field Capacity Days) the soils are not expected to be any higher than of “*medium*” sensitivity.

Local Agricultural Circumstances

- 13.5.16 There is expected to be a mix of full-time and part-time farm businesses affected by the Scheme. Overall, it is anticipated that some farm businesses may fall into the medium sensitivity category, but that most will be in the “low” sensitivity category. This will be further determined by additional assessment work and reported in the ES. This will include farm business interviews.
- 13.5.17 The Scheme will be located in a rural area that is mostly farmed. The assessment will consider the wider economic and employment impacts of the Scheme, including on food production.

Preliminary Assessment of Likely Magnitude

- 13.5.18 An initial assessment of the potential magnitude of likely impacts from the construction works is provided below. This section describes the likely impacts of the construction, operation and decommissioning of the Scheme.
- 13.5.19 The potential for adverse effects on agricultural land (both on the soils and the land quality) resulting from the construction of the following elements of the Scheme are considered:
- Temporary construction compounds;
 - Access Tracks;
 - Solar PV Arrays;
 - Vehicle trafficking (during construction and decommissioning);
 - Electrical cabling and the CRC;
 - Substations and BESS; and
 - Enhancement and mitigation areas.

Temporary Construction Compounds

- 13.5.20 The topsoil removed for the temporary construction compounds will be placed temporarily in a low-level bund or bunds on land outside the compound, within the Site boundary. 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, with a number of different parcels the collective magnitude of construction compounds may be of medium magnitude, but the works will be temporary and reversible. The outline Soil Management Plan (OSMP), submitted with and secured via the DCO will provide details of soil suitability assessments and an outline of the construction methodology and timing.

Access Tracks

- 13.5.21 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 long-term storage areas for the topsoil, which will be used in restoration when the Scheme is decommissioned after operation. The access tracks are not expected to have any permanent significant adverse effects on soils or agricultural land quality. Collectively, given the size of the site, the area involved may be of low or medium magnitude. The OSMP will provide information on the construction and management of any soil bunds, to ensure that soils are suitably handled during construction so that they remain healthy through the operational phase.

Solar PV Arrays

- 13.5.22 The Solar PV modules will likely mostly be mounted onto piles. It is anticipated that these will be inserted into the ground using a pneumatic hammer or screw-driven 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. There is not expected to be any significant adverse effects to soil resource and the inherent agricultural land quality. In some areas solar PV modules will potentially be mounted on blocks where non-penetrative methods are required, such as in areas of archaeological or ground conditions sensitivity. The overall magnitude of land affected is likely to be in the low or negligible magnitude category. The OSMP will provide details on assessing soil suitability for being driven over during the panel installation process.

Vehicle Trafficking

- 13.5.23 Construction of the Scheme will involve vehicle trafficking over agricultural land, not just during panel assembly but also in localised places for access for other construction activities. There is the potential for the soil to be adversely affected by vehicular movement, although the OSMP for the Scheme will take this matter into account. The OSMP will be submitted with the DCO Application. In any event, the magnitude of land adversely affected is likely to be low or negligible.

Electrical Cabling and Cable Route Corridor

- 13.5.24 Cabling around the PV modules is usually limited to the end of each row of solar PV arrays, connecting back to the relevant electrical equipment. Some cables may be buried, others may be attached under the solar PV arrays. Where buried the cabling normally involves a narrow trench with soils replaced in the same order as they were removed, shortly after the trench is dug. This operation does not cause a significant effect on soils, but there is the potential for localised effects. Overall, therefore, the magnitude of effects on soil is likely to be low.
- 13.5.25 The CRC will involve a trench, typically from 1.2 to 1.7m deep when open trench construction is employed. The depth of the CRC may be deeper where no-dig techniques are employed, such as horizontal directional drilling. The width and spacing is subject to design and further environmental consideration. This will be dug within a working corridor that is anticipated to be a maximum of up to 50m wide, potentially involving topsoil stripping for at least part of the width. These works will be temporary and reversible and should result in only a low or negligible significance effect.
- 13.5.26 An outline Soil Resources and Management Plan (OSRMP) (which will be a separate document to the OSMP) will be produced, to be submitted with the DCO Application, for the CRC. This will set out a methodology for surveying the soils resource along the cable route, once defined, which will be used in a SMP to ensure that soils will be restored to the same ALC grade irrespective of grade encountered. It will address any impacts on under-field drainage to ensure the drainage is unaffected post installation.

Substations (including the National Grid Substation) and BESS

- 13.5.27 The location of the BESS and Substations, including the National Grid Substation are not yet fully determined so land quality is not known for these areas at this stage. These areas are likely to involve a total area of land in the medium magnitude

category (between 5 and 20 ha). The National Grid Substation will be a permanent installation.

Enhancement and Mitigation Areas

- 13.5.28 It is not expected that any soil will need to be disturbed in these areas. Accordingly land quality and soil impacts will not occur.

Collective Construction Works

- 13.5.29 For the great majority of the area for the proposed solar PV arrays and related works, and for the proposed mitigation and enhancement areas, there will be no adverse impact on agricultural land quality or on soils. It is only for generally small areas where soil will be disturbed and consequently ALC grade affected. Because of the potential size of the BESS and Substations, and given the scale of the proposals, the collective area of land disturbed will be in the 5 – 20 ha or possibly >20 ha category, for the duration of the operational phase.
- 13.5.30 The construction compounds and cable works will be short-term, temporary works with full restoration during the construction phase. They are not assessed in terms of the construction phase areas affected because they are short-term works. The areas disturbed for tracks, infrastructure etc will be disturbed during construction and not restored until decommissioning. These areas are considered as short term construction impacts and will likely be in the medium magnitude (5 – 20 ha) or into the high magnitude (>20 ha) impact categories, and will be assessed separately.
- 13.5.31 Depending upon the quantum of land affected that fall into ALC Grades 1, 2 or 3a, these longer-term temporary impacts could result in a medium or high magnitude effect.
- 13.5.32 The effect will be minimised by good soil management mitigation, as set out in the OSMP and OSRMP which will be submitted with the DCO Application.
- 13.5.33 With the exception of the National Grid Substation, whilst these effects will last for the duration of the operational phase they will be restored on decommissioning, when these areas will be restored to the original ALC grade.

Operation

Land Quality

- 13.5.34 The land under and around the Solar PV arrays will be sown as grassland and meadow, managed with limited cutting and a mix of some areas being potentially grazed and others not. Depending upon the mowing or grazing regime, there may be periodic need for some vehicular access to manage grassland, but this is considered to be normal agricultural activity and would have no adverse effect on soils. As such, there will be no significant adverse effects on soil resource or agricultural land quality during normal operation, and the magnitude of effect is low or negligible.

- 13.5.35 There may be periodic need to repair or replace individual panels, which may require vehicular access. This will utilise the tracks so far as possible, with limited need for travel on the grassland between the solar PV arrays. Batteries and other fixed equipment can be accessed via the tracks. The OSMP will set out operational phase land management soil protection measures, and land quality will not be affected adversely.
- 13.5.36 There is the expectation that all the panels will be replaced up to twice during the operational phase. This will be undertaken on a phased programme and will be undertaken at an appropriate time of the year when soil conditions are suitable. The works will be covered in the OSMP, and post DCO in a SMP and, subject to suitable management, the impact will be negligible.

Soils

- 13.5.37 The soils will not be adversely affected by the operational period, therefore the magnitude of effect will be low or negligible. There is however scientific data²⁴⁵ to show that the soil is likely to benefit from being rested from intensive arable cropping. There is a relatively large annual rate of soil carbon accumulation in the early years after a major change in land use or management, but this rate of accumulation declines as the soil reaches its new equilibrium, which is usually after 20 – 100 years. Increases beyond 20 years are low, but the soil is still holding higher levels of Soil Organic Carbon, so the benefit will last for the duration of the operational phase.
- 13.5.38 During operation the panels will require replacement up to twice. It is assumed that the mounting structures will not be re-piled, and therefore there will be no impact upon the soil resource. Replacement activities will be pre-planned and the timing of the works, especially in respect of the PV panels, will need to be programmed so that the work takes place when the soils are sufficiently dry to be trafficked by vehicles without compaction. This will be covered in the OSMP. Works to replace batteries will only involve vehicle activity on the tracks and hardstanding and will not affect soils or land quality.

Local Agricultural Circumstances

- 13.5.39 The Scheme in terms of the sub-site areas has the potential for adverse economic impacts as a result of reduced agricultural income for the businesses affected during the operational stage. However, this will be alleviated by alternative incomes received by leasing of the land for the Scheme. It is anticipated that agricultural activity, potentially involving grazing, 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. Whether operated as part of the current farms or not, there is the potential for ongoing agricultural income in addition to the income received from leasing the land for solar development. Overall, the magnitude of effects on farm businesses and the wider economy is likely to be low.

²⁴⁵ British Society of Soil Science "Science Note: Soil Carbon" (2021)

- 13.5.40 The agricultural production of the area is likely to change. Much of the Site is currently in arable use likely growing food and non-food crops as well as being used for biodiversity. Arable uses will cease in Solar PV Array areas, and there may be an overall reduction of food produced, likely to result in a low magnitude of effect (when considered in the context of the regional and national agricultural sector). This will be assessed in the ES, in so far as it is relevant, in terms of the economic and other benefits of BMV land.

Decommissioning

- 13.5.41 Decommissioning works will include removing all the solar infrastructure including PV Panels, Mounting Structures, above ground cabling, fencing, Ancillary Infrastructure, BESS and the Substations, which would be removed over a 12 to 24 month period as described in **Chapter 3: Scheme Description** of the Scoping Report. The below ground cabling and National Grid Substation are likely to remain in situ. These works, depending upon time of year and ground conditions, have the potential to affect soils and land quality in localised small areas. The soils on Site are generally resilient to being handled in this climatic area and the decommissioning works are likely to involve only limited disturbance to agricultural land and soils. 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, to ensure restoration of soils back to pre-existing land grades.
- 13.5.42 The magnitude of land that will be affected at decommissioning will be the same as affected during construction and is likely to be in the medium or high significance category. The effect following decommissioning, and restoration of areas where soils have been affected, is likely to be medium (5 – 20 ha) reflecting the land for the National Grid Substation.

13.6 Embedded Mitigation

- 13.6.1 The design of the Scheme will seek to minimise disturbance and loss of agricultural land, especially that of BMV land. For some infrastructure (e.g. the Substations and BESS) there are locational constraints based on design requirements and land agreements which means this may not be possible. Surveys are currently ongoing, but the available information and early results indicate that there is BMV widespread in the area. This limits the potential to avoid BMV, and therefore BMV land is likely to be involved. However, the loss of such land, by permanent sealing or irreversible downgrading, will be minimised, so far as is practicable.
- 13.6.2 The OSMP will be submitted with the application to cover key aspects of the Scheme, including the solar PV arrays area, fixed infrastructure, and the CRC. The OSMP, secured through the CEMP, OEMP and DEMP via the DCO will set out the principles of handling soils at construction, operation and decommissioning phases, and set a framework for a detailed SMP to be provided post DCO and pre-construction.

13.7 Likely Significant Effects

13.7.1 The likely significant effects are considered in terms of:

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

Agricultural Land Quality

- 13.7.2 Land quality across the Site is expected to comprise a mixture of BMV and non-BMV land. The proportion of BMV land will be determined by survey, but the Site lies in an area of moderate (20-60%) or high (>60%) likelihood of BMV, as is almost all of the wider area.
- 13.7.3 Given the scale of the Scheme, there is the potential for in excess of 20ha of land to be adversely and temporarily affected, by the creation of access tracks, fixed infrastructure bases, Sustainable Urban Drainage Systems and landscape mitigation etc, such that a medium magnitude impact (20 – 50 ha) or high magnitude (> 50 ha) of BMV land is possible.
- 13.7.4 The effects at construction stage are therefore likely to be of medium or high magnitude. The quantum of land of medium or high sensitivity is not known at this stage. There is the potential, given the scale of the Scheme, for there to be a high magnitude impact on resources of high sensitivity, which would be an effect of major adverse significance. This would be a temporary effect, largely or wholly reversible on decommissioning, and will therefore be scoped into the ES.
- 13.7.5 During the operational phase the magnitude of impacts is predicted to be low on resources of high or medium sensitivity, resulting in effects of minor or moderate significance. Operational effects are therefore scoped into the ES.
- 13.7.6 On decommissioning the magnitude of impacts will be similar to that at the construction phase, as the areas temporarily disturbed are restored to their original land quality and soil profile. The result is likely to be a medium or high magnitude impact on resources of medium or high sensitivity, resulting in a major-moderate or major adverse impact, albeit one which is short term. On completion of decommissioning the impact will be of low or very low magnitude, and the effect will be minor or negligible. Decommissioning effects are therefore scoped into the ES.
- 13.7.7 Therefore, there is the potential for a medium (and, as noted, potentially high) magnitude impact on land of high sensitivity, which would result in an effect of major or major-moderate adverse effect, which would be significant. This will reduce to minor or negligible on decommissioning, which is not significant.

Soils and Soil Type

- 13.7.8 The effect on soils is not expected to be significant. Most of the soil is of medium or low sensitivity, and the areas likely to be adversely affected, subject to good

practice and adherence to the SMP, are expected to be no greater than a medium magnitude. This would result in a moderate adverse effect, generally reversible therefore temporary, which is not considered to be significant. Effects on soils and soil type are therefore scoped into the ES.

13.7.9 Therefore, the effects on soils are likely to be:

- moderate adverse but temporary effects during construction (significant);
- a negligible effect during operation (not significant); and
- moderate adverse but temporary and reversible effect at decommissioning.

Local Agricultural Circumstances

13.7.10 The local effects on farm businesses are expected to be not significant. It is anticipated that most farms will be of low sensitivity, and most effects are likely to be of medium or low magnitude, leading to adverse effects of minor or negligible which are not considered to be significant. Nevertheless, given the scale of the Scheme, effects on local agricultural circumstances are scoped in.

13.7.11 The effects on local agricultural circumstances are likely to be:

- a short-term adverse economic effect due to disruption, which it is proposed be scoped-out of the assessment;
- an effect, potentially overall beneficial, for the farm businesses during the operation phase, likely to be of minor significance, which would not be significant;
- an effect overall on the wider agricultural economy is likely to be adverse and of low magnitude when considered in the regional and national context, which is likely to be not significant;
- short-term economic disruptions during decommissioning, which it is proposed are scoped out.

Cumulative Effects

13.7.12 The cumulative effects on the use of land, and the land quality of the wider area, will be considered. The cumulative effects on land quality, soils and local agricultural circumstances will be quantified and assessed within the ES.

13.8 Impacts Scoped Out of the Assessment

13.8.1 Temporary, economic effects during construction and decommissioning are scoped-out. These include crop loss and disturbance.

13.8.2 Panel and battery replacement may be required during the operational phase, but this is expected to have only localised and low or negligible magnitude impacts, such that the effects can be scoped out.

13.9 Proposed Approach to the ES

Land Quality

- 13.9.1 The land quality survey of the likely solar PV array areas is underway and will be completed with the conclusions presented in the ES.
- 13.9.2 No detailed surveys are planned to be undertaken for the CRC. The final CRC will be surveyed prior to submission of the draft DCO at an appropriate density of sampling to be agreed with Natural England and taking into account that the installation of underground cables is short-term and can be completed without likely significant effects on the quality of agricultural land and without impacting its future use for agriculture. The installation of the cable will require a narrow trench, typically no more than 2m wide, and short-term and reversible soil effects.

Soils

- 13.9.3 The soils are being examined as part of the ALC survey. The soil type and sensitivity will be determined and plotted.
- 13.9.4 An OSMP will be produced alongside the assessment and will be submitted with the DCO Application. This will consider mitigation to avoid or minimise adverse effects on soils. The OSMP will draw from advice in the Defra Construction Code of Practice²⁴⁶ and the Institute of Quarrying Good Practice Guide²⁴⁷. The OSMP will be developed into a final SMP, approved by the local planning authority and implemented by the Principal Contractor.

Local Agricultural Considerations

- 13.9.5 It is proposed to interview as many of the potentially affected landowners and farmers as possible, to ascertain cropping, land use, drainage, labour and other local information. Details of Countryside Stewardship schemes and other environmental land management schemes will also be sought during the interviews.
- 13.9.6 That information will be used to make an assessment of the order of magnitude of local economic and food production effects.
- 13.9.7 Regional land use and production data will be assessed across a wider area.

13.10 Summary

- 13.10.1 **Table 13.4** provides a summary of the proposed soils and agricultural scope.

²⁴⁶ Defra (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/716510/pb13298-code-of-practice-090910.pdf

²⁴⁷ The Institute of Quarrying. Available at: <https://www.quarrying.org/soils-guidance>

Table 13.4: Summary of Scope for Soils and Agriculture

Element	Scoping in/out	Explanation
Construction Phase		
Effect of construction works on agricultural land quality	Scoped in	The land quality is generally high so the potential effect on BMV needs to be assessed.
Effect of construction works on soils	Scoped in	The soils are expected to be fairly resilient to construction activity, but will require careful management as set out in the OSMP.
Effect on farm businesses of construction	Scoped out	The short-term economic effects during the construction process are economic effects only
Effects on soils and land use during installation of the cable connections	Scoped in	The impact will be temporary and short term. Nevertheless, soils will need to be assessed once the route is known. Measures to reduce effects will be set out in the OSRMP.
Operational Phase		
Effects on soils and land quality of ongoing management of the Site	Scoped in	The effects are expected to be negligible, subject to mitigation in the form of good practice to be set out in the OSMP. Long term soil benefits will be included.
Effects on soils from panel replacement	Scoped in	It is assumed that there will be panel replacement once during the life of the scheme. This activity will be considered, and the works covered in the OSMP.
Effects on farm businesses	Scoped in	The effects on farm businesses will be included and this will include the implications for the agricultural economy.
Decommissioning Phase		
Effects on soils and land quality	Scoped in	The physical works will, in places, involve disturbance of soils and will require vehicular travel, and so will be scoped in.

14 Cumulative and In-Combination Effects

14.1 Overview

14.1.1 The ES will consider the potential for likely significant cumulative effects on the environment. This will include:

- inter-project (cumulative) effects (those resulting from the Scheme combined with other relevant developments in the area); and
- intra-project (in-combination) effects, which are (those resulting from multiple impacts/aspects of the Scheme affecting a single receptor).

14.2 Cumulative Effects Assessment

14.2.1 The EIA Regulations, set out the information required for an ES, in relation to the assessment of cumulative effects, Schedule 4 paragraph 5 requires:

“A description of the likely significant effects of the development on the environment resulting from, inter alia: (e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources”.

14.2.2 Regulation 5(2) sets out the EIA process and states that:

“The EIA must identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the proposed development on the following factors—

(a) population and human health;

(b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;

(c) land, soil, water, air and climate;

(d) material assets, cultural heritage and the landscape;

(e) the interaction between the factors referred to in sub-paragraphs (a) to (d).”

14.2.3 Overarching National Policy Statement for Energy (EN-1), 2024 at Paragraph 4.1.5, states:

“In considering any proposed development, in particular when weighing its adverse impacts against its benefits, the Secretary of State should take into account: 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” Paragraph 4.2.12 “The

cumulative impacts of multiple developments with residual impacts should also be considered.”

14.2.4 National Policy Statement for Renewable Energy Infrastructure (EN-3), 2024, in relation to network connection, in paragraphs 2.10.25 – 26, states:

“To maximise existing grid infrastructure, minimise disruption to existing local community infrastructure or biodiversity and reduce overall costs, applicants may choose a site based on nearby available grid export capacity. Where this is the case, applicants should consider the cumulative impacts of situating a solar farm in proximity to other energy generating stations and infrastructure.”

14.2.5 The best practice approach to cumulative schemes requires inclusion of proportionate information relating to projects at varying stages of development. The Planning Inspectorate’s Guidance ‘Nationally Significant Infrastructure Project: Advice on Cumulative Effects Assessment’ published in September 2024²⁴⁸, is relevant to this Scoping Report. As per the guidance, a four-stage approach will be taken, as outlined in **Table 14.1**. The full methodology will be included within the ES Chapter.

Table 14.1: Cumulative Effects Assessment Approach

Stage	Key Activities
Stage 1: Establish the long list of other existing and / or approved development	Define and document the Zone of Influence (Zol) for each environmental aspect considered in the ES 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. Undertake a desk-based review of available environmental information for the identified cumulative developments to inform the baseline, and keep this under review.
Stage 2: Establish a short list of other existing and / or approved development	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. Discuss and agree thresholds with Norfolk County Council.
Stage 3: Information gathering	Information relating to each of the existing or approved developments on the short list is compiled (where available), including, but not limited to: • 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 Information will be summarised and presented in tabular format, utilising Matrix 2 of Annex 2 of the PINS advice on Cumulative Effects Assessment.

²⁴⁸ Available at: <https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-advice-on-cumulative-effects-assessment>

Stage	Key Activities
Stage 4: Assessment	A proportionate assessment of the cumulative effects of the Scheme with the other existing and / or proposed developments identified in Stage 1 to 3 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.

14.2.6 **Table 14.2** below details projects that have been identified to date for the assessment of likely significant cumulative effects on the environment for the purposes of the EIA. The information contained within **Table 14.2** is based upon information available on SNDC website²⁴⁹ (the list is inclusive of information up to November 2024, and up to 10km from the Site); the table is also based upon information available on the National Infrastructure Planning projects portal and contains identified NSIPs within 15km of the Scheme. However, it is acknowledged that this may change as the Scheme progresses. The final list of cumulative schemes will be monitored on an ongoing basis and agreed with SNDC prior to completion of the ES.

14.2.7 There are no other NSIPs within 15km of the Site that are registered on the PINS National Infrastructure Planning projects portal²⁵⁰.

Table 14.2: Cumulative Schemes

Scheme Address and Reference Number	Description	Distance	Status
Land to the North of Station Road Tivetshall St Margaret Norfolk 2023/3478	Screening opinion for temporary erection of multiple rows of Solar PV panels	Overlaps with National Grid Substation Site	EIA Not Required 05/02/2024 Application not yet submitted.
Land To The North Of Station Road Tivetshall St Margaret Norfolk 2024/3190	Request for Screening Opinion under the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 in relation to Proposed Solar Farm and Associated Cable Route	Overlaps with National Grid Substation Site	Pending Consideration (submitted 24/10/2024)
Land East of the A140 2018/0111	31.7 hectares of land to the east of the A140 seeking outline planning permission for 1275 no. dwellings, 8 hectares of employment land for uses within Classes B1, B2 and B8, 2-hectare primary school site, community facilities site, associated infrastructure and public open space. Together with application for full permission for a bypass including roundabouts and junctions.	Adjacent to southern boundary of sub-Site 4B	Approval with Conditions 15/09/2023
Land South Of Hall Farm Bungay Road Tasburgh Norfolk	Installation of a solar PV array plus ancillary development.	Adjacent to western boundary of sub-Site 4A	Approval with Conditions 24/10/2014

²⁴⁹ South Norfolk Council Find a Planning Application. Available from: <https://www.southnorfolkandbroadland.gov.uk/planning/planning-applications/find-planning-application>

²⁵⁰ National Infrastructure Planning (2024) Projects. Available from: <https://infrastructure.planninginspectorate.gov.uk/>

Scheme Address and Reference Number	Description	Distance	Status
2014/0562			
Land East of the A140 2018/0111	31.7 hectares of land to the east of the A140 seeking outline planning permission for 1275 no. dwellings, 8 hectares of employment land for uses within Classes B1, B2 and B8, 2-hectare primary school site, community facilities site, associated infrastructure and public open space. Together with application for full permission for a bypass including roundabouts and junctions.	Adjacent to southern boundary of sub-Site 4B	Approval with Conditions 15/09/2023
Spring Farm Spring Lane Hempnall Norfolk NR15 2NY 2018/0824	Erection of glasshouses, polytunnels, general purpose agricultural storage/coldstore building, biomass building, water storage tanks, thermal water tanks, drainage and landscaping.	Adjacent to the eastern boundary of sub-Site 3B, east of Spring Lane	Approval with Conditions 20/04/2023 Under Construction
Land West of the A140 2018/0112	Hybrid Application on 40.8 hectares of land to the west of the A140 seeking outline planning permission for 387 no. dwellings and 1.5 hectares of Class B1 employment land, associated infrastructure and public open space. Together with application for full planning permission for a western relief road.	Approximately 200m south of sub-Site 4A	Approval with Conditions 15/09/2023
Malt Kiln Cottage Norwich Road Stoke Holy Cross Norfolk NR14 8LN 2023/2657	Installation of a ground mounted 120 solar panel array.	Approximately 3.6km north of sub-Site 7D	Approval with Conditions 28/11/2023
Land North And South Of Brick Kiln Lane Swainsthorpe Norfolk 2021/2495	Installation of a solar farm comprising: ground mounted solar panels, access tracks; inverter/transformers, substation; storage, spare parts and welfare cabins, underground cables and conduits, perimeter fence; CCTV equipment, temporary new site entrance and access track, temporary construction compounds, and associated infrastructure and planting scheme.	Approximately 3.6km north-west of sub-Site 7A	Approval with Conditions 04/08/2022
Land South Of Brick Kiln Lane Mulbarton Norfolk 2015/1221	Installation and operation of a solar farm and associated infrastructure, including photovoltaic panels, mounting frames, inverters, transformers, substations, communications building, fence and pole mounted security cameras, for the life of the solar farm.	Approximately 4.2km north-west of sub-Site 7D	Approval with Conditions 03/09/2015 Constructed
Land Off Marsh Lane Bracon Ash Norfolk 2023/1055	Ground mounted solar panel array and ancillary equipment	Approximately 4.3km north-west of sub-Site 4A	Pending Decision – Validated 18/04/2023

Scheme Address and Reference Number	Description	Distance	Status
Land North Of George Lane Loddon Norfolk 2013/1647	Outline planning permission is sought with all matters reserved except access to the site for: Residential development up to 200 dwellings, with access from George Lane and associated infrastructure and open space, including new roundabout junction at A146/George Lane.	Approximately 4.3km north-west of sub-Site 4A	Approval with conditions 17/04/2014
Land off Hall Road & Pheasants Walk, Earsham, Bungay, Suffolk FUL/2019/0062	Extraction of sand and gravel from three separate extension areas with restoration to a nature conservation afteruse. Phased relocation of existing plant site (from Bath Hills Road) into Area 1, including a new site access onto Hall Road with service accesses onto Hall Road and Pheasants Walk and use of Conveyor to transport mineral to the Plant Site with culvert.	Approximately 4.8km east of sub-Site 10E	Approval with Conditions 09/11/2020
Land North Of Caistor Lane Caistor St Edmund Norfolk 2022/2148	Hybrid Application: Part 1. Detailed proposals for a 25.5 hectare country park together with associated infrastructure. Part 2. Outline proposals with all matters reserved, except for access, for a residential development of 178no. dwellings, serviced site for a new 420 place primary school, serviced site for a new community building.	Approximately 5.6km north-west of sub-Site 9	Pending Consideration – Validated 25/11/2023
Land North Of Hickling Lane Swainsthorpe Norfolk 2023/1095	Screening Opinion in for an Energy Storage System (ESS) and associated electrical infrastructure.	Approximately 5.7km north-west of sub-Site 7D	EIA not required 12/06/2023
Land East Of Cranes Road Hethel Norfolk 2021/0569	Proposed development for installation and operation of ground-mounted solar farm and energy storage system and associated infrastructure	Approximately 5.8km north-west of sub-Site 7A	Approval with Conditions 21/12/2021
Land East Of Beccles Road Loddon Norfolk 2021/2437	Outline planning permission for 9 self-build dwellings. Full planning permission for the erection of 171 dwellings with access, parking, open space and landscaping.	Approximately 5.8km north-east of sub-Site 10E	Approval with Conditions 31/07/2024
Land North Of Beccles Road Loddon Norfolk 2023/3506	Outline planning permission for up to 85 dwellings, creation of new vehicle access, public open space, associated infrastructure and landscaping with all matters reserved except for access	Approximately 5.9km north-east of sub-Site 10E	Pending Consideration – Validated 17/11/2023
Land North And South Of Norton Road Loddon Norfolk 2021/1569	Outline application for up to 130 open market and affordable dwellings, with all matters reserved except access.	Approximately 6km north-east of sub-Site 10E	Pending Consideration – Validated 02/07/2021
Norwich Main Substation Mangreen Hall Lane Dunston Norfolk NR14 8PG	Scoping Opinion for Dudgeon and Sheringham Shoal Offshore Wind Farm Extensions	Approximately 6km north-east of sub-Site 7D	Adopted 04/11/2019

Scheme Address and Reference Number	Description	Distance	Status
2019/2045			
Norwich Main Substation Mangreen Hall Lane Dunston Norfolk NR14 8PG	Extension of the existing Norwich Main 400 kV Substation to the west and includes associated temporary access roads.	Approximately 6km north-east of sub-Site 7D	Pending Decision – Validated 01/05/2024
2024/1336			
Norwich Main Substation Mangreen Hall Lane Dunston Norfolk NR14 8PG	Screening Opinion for a new national grid electricity transmission	Approximately 6km north-west of sub-Site 7D	EIA required 18/01/2024
2023/3075			
Land West Of Hethel Engineering Centre Chapman Way Hethel Norfolk 2023/2037	Hybrid Application: 1) Outline planning application (including access and scale) for the development of modern facilities to support Lotus' production requirements. 2) Full application for new road infrastructure to facilitate masterplan and improve access by mitigating width restrictions to Potash Lane.	Approximately 6.4km north-west of sub-Site 4A	Pending Decision – Validated 12/07/2023
Land To The East Of Mendham Lane Harleston Norfolk 2022/0067	Proposed planning application for 354 residential dwellings, 91 extra care apartments, 16 extra care bungalows, public open space, allotments and 1.61ha of land for community use together with associated site infrastructure, demolition of existing agricultural buildings.	Approximately 7.4km south of sub-Site 3A	Approval with Conditions 08/02/2023
Land At Crown Point Estate Kirby Road Trowse Norfolk 2018/1246	Commercial glasshouses, packing and welfare buildings, landscaping and associated infrastructure.	Approximately 8km north of Site 9	Approval with Conditions 02/11/2018
Land South of Spirketts Lane Hareston Norfolk 2023/3610	Residential development of 162 dwellings with associated access, parking, open space, landscaping and surface water attenuation	Approximately 8km south of sub-Site 3A	Pending Consideration – Validated 29/11/2023
Land South Of Cantley Lane Ketteringham Norfolk 2023/0009	240 MWp Battery Energy Storage System (EIA Screening Opinion)	Approximately 8.7km north-west of sub-Site 7A	EIA not required 04/02/2023
Crossways Farm Loddon Road Thurlton Norfolk NR14 6NZ 2022/0919	Proposed Solar Park and associated ancillary equipment	Approximately 10km east of sub-Site 10E	Approval with Conditions 28/10/2022

Table 14.3: NSIP Cumulative Schemes

Scheme Name and Reference Number	Description	Distance	Status
Norwich to Tilbury EN020027	Proposal to reinforce the 400kV high voltage power network in East Anglia to include a new 400kV connection substation in the Tendring district	Approximately 3.9km to the northwest of 7A	Pre Application. Application is expected to be submitted between June and August 2025.
Hornsea Project Three Offshore Windfarm EN010080	Development of the Hornsea Project Three offshore wind farm with an approximate capacity of up to 2,400MW off the coast of Norfolk. This is within the area known as Zone 4, under the Round 3 offshore wind licensing arrangements established by The Crown Estate	Connects to Norwich Main National Grid Substation approximately 5.7km north-west of 8B; 6.2km north of 7A	Granted 31/12/2020
Sheringham and Dudgeon Extension Projects EN010109	Sheringham Extension Project has a maximum installed capacity of 317MW, while Dudgeon Extension Project has a maximum installed capacity of 402MW. Joint export cable system, offshore and onshore, connecting to the national grid transmission network at Norwich Main substation.	Onshore elements approximately 6km from 7A at closest point	Granted 18/4/2024
A47 - A11 Thickthorn Junction TR010037	Improvement of the interchange between the A47 and A11, improving access into Norwich. The project consists of two new uni-directional slip roads connecting the A11 south to the A47 east with widening and full signalisation of Thickthorn Interchange the gyratory. The side road strategy will include mitigation measures for the severance issue caused to Cantley Lane South.	Approximately 9km north of 7A	Granted 14/10/2022
A47 Blofield to North Burlingham TR010040	Dualling of the A47 to fill a gap in the dual carriageway section between Norwich and Acle Straight Includes two junctions at the schemes extent and is approximately 4km in length.	Approximately 9km north of 9	Granted 22/06/2022. Preparatory works have started.
Progress Power Station EN010060	A gas-fired power station with a nominal generating capacity of up to 299 MW	Approximately 15km south of 2A	Granted 23/07/2015. Under construction.

14.3 Transboundary Effects

- 14.3.1 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).

14.4 In-Combination Effects

14.4.1 PINS Advice on Cumulative Effects Assessment states that

“Cumulative effects with ‘other existing and, or approved development’ are separate from an assessment of interrelationships between aspects for the proposed NSIP (such as between ecology and hydrology)...”.

14.4.2 In-combination effects require consideration of technical assessments of likely significant effects and therefore will be reported in the cumulative and in-combination chapter of the PEIR and ES. Assessment will be qualitative, based on professional judgment following review of the conclusions of the technical assessments taken together and in-combination.

15 Conclusions

- 15.1.1 This Scoping Report has been produced in accordance with the EIA Regulations and is submitted in support of a request pursuant to Regulation 10 of the EIA Regulations for a Scoping Opinion from the SoS on the scope, and level of detail, of the information to be provided in the ES. It includes the information required by Regulation 10(3) as follows:
- a plan sufficient to identify the land;
 - a description of the Scheme, including its location and technical capacity;
 - an explanation of the likely significant effects of the Scheme on the environment; and
 - such other information or representations as the Applicant may wish to provide or make.
- 15.1.2 An assessment of the technical topics proposed to be scoped out of the ES, informed by professional judgement, relevant guidance, such as the PINS Technical Advice page for Scoping Solar Development²⁵¹, site and other surveys and desk-based research, has been provided. The topics proposed to be scoped into and out of the ES are set out in **Table 15.1** below.

²⁵¹ Planning Inspectorate (2024) Nationally Significant Infrastructure Projects: Technical Advice Page for Scoping Solar Development.

Table 15.1: Proposed scope of the ES

Environmental Topic	Environmental Aspect	Scoped In (✓) or Out (X)			Approach
		Construction	Operation	Decommissioning	
Air Quality	Dust	X	X	X	Further details provided in Chapter 5 Section 5.2 . A standalone air quality assessment will be submitted alongside the ES, with pertinent information included within the Other Matters ES Chapter.
	PM10 Emissions	X	X	X	
	Traffic Emissions	X	X	X	
Water Environment	Water Quality	X	X	X	Further details in Chapter 5 Section 5.3 . A Flood Risk Assessment will be submitted alongside the ES.
	Local Water Supplies and Groundwater	X	X	X	
	Water Quantity	X	X	X	
	Flood Risk	X	X	X	
Major Accidents and Disasters	Sensitive Receptors	X	X	X	Further details provided in Chapter 5 Section 5.4 . An Outline Battery Safety Management Plan will be submitted alongside the ES, with pertinent information included within the Other Matters ES Chapter.
Electric, Magnetic and Electromagnetic Fields	Voltage	X	X	X	Further details provided in Chapter 5 Section 5.5 . Pertinent information will be included within the Other Matters ES Chapter.
Telecommunications, Television Reception and Utilities	Providers	X	X	X	Further details provided in Chapter 5 Section 5.6 . Pertinent information will be included within the Other Matters ES Chapter.
Glint and Glare	Road Users	X	X	X	Further details provided in Chapter 5 Section 5.7 . A Glint and Glare assessment will be submitted alongside the ES, with pertinent information included within the Other Matters ES Chapter.
	Residential Dwellings	X	X	X	
	Aerodromes	X	X	X	
Lighting	Dark Skies	X	X	X	Lighting is discussed in Chapter 5 Section 5.8 , in addition to Chapter 7 Landscape and Visual , Chapter 8 Ecology and
	Ecology	X	X	X	

Environmental Topic	Environmental Aspect	Scoped In (✓) or Out (X)			Approach
		Construction	Operation	Decommissioning	
					Biodiversity and Chapter 9 Cultural Heritage. Lighting is also scoped out of these chapters, however a stand-alone Lighting Strategy will be submitted alongside the DCO.
Minerals	Mineral Resources	X	X	X	Further details provided in Chapter 5 Section 5.9. A Preliminary Minerals Resource Assessment will be submitted alongside the ES, with pertinent information included within the Other Matters ES Chapter.
Waste and Materials	Waste Generation	X	X	X	Further details provided in Chapter 5 Section 5.10. A Site Waste Management Plan will be submitted alongside the ES, with pertinent information included within the Other Matters ES Chapter.
	Landfill Capacity	X	X	X	
Socio-economics	Farm Businesses	X	X	X	Further details provided in Chapter 5 Section 5.11. A standalone Socio-economics Statement will be submitted alongside the ES, with pertinent information included within the Other Matters ES Chapter.
	Employment and Skills	X	X	X	
	Economic Output	X	X	X	
	Tourist Accommodation	X	X	X	
	Tourism	X	X	X	
	Shops	X	X	X	
	PRoW	X	X	X	
	Resident Population	X	X	X	
Human Health	Physical activity	X	X	X	Further details provided in Chapter 5 Section 5.12. Pertinent information and sign-posting to health related matters covered in other 'scoped in' topics will be included within the Other Matters ES Chapter.
	Risk-taking behaviour (including use of alcohol, cigarettes, non-prescribed drugs, sexual activity and other risk-related activity)	X	X	X	
	Diet and nutrition	X	X	X	
	Housing	X	X	X	
	Relocation	X	X	X	

Environmental Topic	Environmental Aspect	Scoped In (✓) or Out (X)			Approach
		Construction	Operation	Decommissioning	
	Open space, leisure and play	X	X	X	
	Transport modes, access and connections	X	X	X	
	Community safety	X	X	X	
	Community, identity, culture, resilience and influence	X	X	X	
	Social participation, interaction and support	X	X	X	
	Education and training	X	X	X	
	Employment and income	X	X	X	
	Climate change and adaptation	X	X	X	
	Air quality	X	X	X	
	Water quality or availability	X	X	X	
	Land quality	X	X	X	
	Noise and vibration	X	X	X	
	Radiation	X	X	X	
	Health and social care services	X	X	X	
	Built environment	X	X	X	
Arboriculture	Damage to existing vegetation	X	X	X	Further details provided in Chapter 5 Section 5.13 . Results from targeted arboricultural surveys will be included within the ES where relevant, and will inform the design.
Ground Conditions	Human Health	X	X	X	Further details provided in Chapter 5 Section 5.14 . The Phase 1 Ground Conditions Assessment will be updated and appended to the ES.
	Buildings (on-Site)	X	X	X	
	Peat	X	X	X	
	Geomorphological Features	X	X	X	

Environmental Topic	Environmental Aspect	Scoped In (✓) or Out (X)			Approach
		Construction	Operation	Decommissioning	
Landscape and Visual	The Broads National Park	X	X	X	Further details in Chapter 7 . A Landscape and Visual Chapter will be included within the ES.
	National and District Character Areas	✓	✓	✓	
	Non-designated landscape features	✓	✓	✓	
	Listed Buildings and Scheduled Monuments	✓	✓	✓	
	Conservation Areas: Pulham Market, Shotesham, Seething, Hedenham, Howe	X	X	X	
	Conservation Areas: Wacton, Long Stratton, Fritton, Hempnall, Saxlingham Nethergate, Saxlingham Green, Brooke,	✓	✓	✓	
	Register of Parks and Gardens of Special Historic Interest ('RPG')	X	X	X	
	Recreational Routes (PRoWs)	✓	✓	✓	
	National Cycle Routes	X	X	X	
	Open Access Land	✓	✓	✓	
	People's Views and Visual Amenity within 2km study area including reference to glint and glare	✓	✓	✓	
	People's Views and Visual Amenity beyond the 2km study area	X	X	X	

Environmental Topic	Environmental Aspect	Scoped In (✓) or Out (X)			Approach
		Construction	Operation	Decommissioning	
	Night-time views and perception of the night sky	X	X	X	
Ecology and Biodiversity	Statutory Designated Sites within 2km of the Sites, or up to 5km if designated for mobile qualifying criteria	✓	✓	✓	Further details in Chapter 8 . An Ecology and Biodiversity Chapter will be included within the ES.
	Statutory Designated Sites (with qualifying bird species) greater than 5km from the Site and CRC	X	X	X	
	Statutory Designated Sites (without mobile qualifying criteria) greater than 2km from the Sites and CRC.	X	X	X	
	Non-Statutory Designated Sites within 1km of the Sites and CRC	✓	✓	✓	
	Non-Statutory Designated Sites greater than 1km from the Sites and CRC	X	X	X	
	Ancient Woodland sites within 1km of the Sites and grid connection route.	✓	✓	✓	
	Ancient Woodland sites greater than 1km from the Sites and CRC	X	X	X	

Environmental Topic	Environmental Aspect	Scoped In (✓) or Out (X)			Approach
		Construction	Operation	Decommissioning	
	Impacts to NERC S41 Priority Habitats (or other habitats of biodiversity importance) within and immediately adjacent to the Site and CRC.	✓	✓	✓	
	Common and widespread habitats of low sensitivity and/or conservation interest within the sites and CRC	X	X	X	
	Invertebrates within the Sites and CRC.	✓	X	✓	
	Great Crested Newt within the Sites and CRC and surrounding 250m.	✓	X	✓	
	Widespread Amphibians within the Sites and CRC.	X	X	X	
	Reptiles within the Sites and CRC.	X	X	X	
	Breeding Birds within the Sites only.	✓	X	✓	
	Breeding Birds within the CRC	X	X	X	
	Wintering/Passage Birds within the Sites and CRC.	X	X	X	

Environmental Topic	Environmental Aspect	Scoped In (✓) or Out (X)			Approach
		Construction	Operation	Decommissioning	
	Bats (roosting) within the Sites and CRC.	✓	X	✓	
	Bats (foraging & commuting) within the Sites and CRC.	✓	X	✓	
	Dormouse within the Sites and CRC.	X	X	X	
	Water vole and otter within the Sites and CRC.	X	X	X	
	Badger within the Sites and CRC	✓	✓	✓	
	Invasive Species within the Sites and CRC.	X	X	X	
	Air Quality Impacts upon sensitive ecological receptors (statutory and non-statutory designated sites, ancient woodland sites, and priority habitats)	X	X	X	
	Lighting Impacts upon sensitive ecological receptors (statutory and non-statutory designated sites, ancient woodland sites, priority habitats, roosting and foraging bats)	X	X	X	
	Other mammals Within the Sites and CRC.	X	X	X	

Environmental Topic	Environmental Aspect	Scoped In (✓) or Out (X)			Approach
		Construction	Operation	Decommissioning	
Cultural Heritage and Archaeology	Direct impacts to below ground archaeology	✓	✓	X	Further details in Chapter 9 . A Cultural Heritage and Archaeology Chapter will be included within the ES.
	Indirect impacts to designated heritage assets	X	✓	X	
	Indirect impacts to non-designated heritage assets	X	✓	X	
	Direct impacts to below ground archaeology	✓	✓	X	
	Indirect impacts to designated heritage assets	X	X	X	
	Indirect impacts to non-designated heritage assets	X	X	X	
Transport and Access	Traffic Volumes accessing the Sites	✓	X	✓	Further details in Chapter 10 . A Transport and Access Chapter will be included within the ES.
Noise and Vibration	Noise	✓	✓	X	Further details in Chapter 11 . A Noise Chapter will be included within the ES.
	Traffic noise	✓	✓	X	
	Traffic vibration	X	X	X	
	Vibration	✓	X	X	
Climate Change	Greenhouse Gas Emissions	✓	✓	X	Further details in Chapter 12 . A Climate Change Chapter will be included within the ES.
	In-Combination Assessment	X	X	X	
	Climate Change Risk Assessment (CCRA)	X	X	X	
Soils and Agricultural Land	Land Quality and (excluding CRC)	✓	✓	X	Further details in Chapter 13 . A Soils and Agricultural Land Chapter will be included within the ES.
	Soils	✓	✓	✓	
	Farm businesses	X	✓	X	

