



White Elm
Solar Farm

White Elm Solar Farm

A Nationally Significant Infrastructure Project in the Energy Sector

ENVIRONMENTAL IMPACT ASSESSMENT SCOPING REQUEST

On behalf of Elmya RPC UK Grange Road Limited

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1. INTRODUCTION

- 1.1. Elmya RPC UK Grange Road Limited (“The Applicant”) is intending to develop White Elm Solar Farm (WESF). This is a renewable energy scheme comprising the construction, operation and decommissioning of ground mounted solar photovoltaic electricity generating panels with a gross electrical output of more than 50 megawatts alternating current (AC). Associated development would include an electrical storage facility, electrical equipment, substations, and cabling, landscaping and biodiversity measures.
- 1.2. This Scoping Request has been coordinated by Pegasus Group, with input from the EIA project team. Due to its proposed generating capacity, the Project is classified as a Nationally Significant Infrastructure Project (NSIP) and will therefore require consent via a Development Consent Order (DCO) under the Planning Act 2008.
- 1.3. The current site extends to over 272 hectares (674 acres) and is located approximately 7.5km to the north east of Stowmarket and within the administrative area of Mid Suffolk District Council. At a local level, the site is situated west of the A140 and positions itself between the settlements of Wickham Skeith (north), Thwaite (east), Mendlesham (south) and Cotton (west).
- 1.4. The current draft order limits is illustrated below and is repeated at Figure 1.1 (presented at the end of this chapter).



- 1.5. Figures are either presented within or at the end of each chapter and technical appendices are presented at the end of the report.

The Applicant

- 1.6. Elmya RPC UK Grange Road Limited is a joint venture between Elmya Energy and Renewable Power Capital Ltd. Elmya Energy is a renewable energy developer that aims to connect over 5 GW of renewable energy projects over the next 5 years in Europe. They focus on solar energy and storage, and more recently green hydrogen. The experienced team at Elmya has successfully developed more than 10 GW since 2008 and is currently developing over 4GW in the UK. Elmya Energy's owner-operator investment partner, Renewable Power Capital (RPC) was established in 2020, with the backing of CPP Investments, one of the world's largest pension funds. It was launched to invest in onshore renewable energy and storage projects across Europe, providing unique finance solutions for different markets. Their mission is to accelerate the energy transition while delivering stable returns to investors and improving local communities.
- 1.7. The Applicant has the necessary knowledge and experience in renewable energy to develop the Project.

Consenting Regime and Need for Environmental Impact Assessment

- 1.8. The Project falls within the definition of a 'nationally significant infrastructure project' (NSIP) under Section 14(1)(a) and 15(2) of the Planning Act 2008 (the "Act") as the construction of a generating station with a capacity of more than 50MW.
- 1.9. The EIA requirement for NSIP developments is transposed into law through the EIA Regulations. The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the "EIA Regulations") specify which developments are required to undergo EIA and schemes relevant to the DCO planning process are listed as either 'Schedule 1' or 'Schedule 2' development. Those developments listed in Schedule 1 are always subject to an EIA, whilst developments listed in 'Schedule 2' must only be subject to an EIA if they are considered 'Likely to have significant effects on the environment by virtue of factors such as its nature, size or location'.¹ The criteria on which this judgement must be made are set out in Schedule 3 of the EIA Regulations.
- 1.10. The Project falls under Schedule 2 Part 3(a) of the EIA Regulations as it constitutes "industrial installations for the production of electricity, steam and hot water..."
- 1.11. The Applicant considers that due to the Project's nature, size and location that it has the potential to have significant effects on the environment and therefore constitutes EIA Development.
- 1.12. In accordance with Regulation 8(1)(b) of the EIA Regulations, the Applicant hereby provides notice that it will provide an Environmental Statement in support of the DCO

¹ The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, Reg 3

Application. In accordance with Regulation 8(3A) the information required under Regulation 8(3)(a) and (b) is provided in this Scoping Request.

The Purpose of the Scoping Report

- 1.13. This Scoping Request has been prepared to provide an overview of the likely significant environmental effects that have been considered in developing the proposed EIA scope for the Project. It sets out the intended scope and the methodologies for assessments of the likely significant environmental effects to be reported in the Environmental Statement, that will accompany the DCO application submission
- 1.14. This Scoping Request has been prepared in accordance with Regulation 10(1) of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Ref 1-2), as amended, hereafter referred to as the 'EIA Regulations'. In line with the requirements of Regulation 10(3) of the EIA Regulations, this request contains the following information to assist the Secretary of State (via the Planning Inspectorate (PINS)), as the relevant authority, in adopting a Scoping Opinion:

Information Required	Location within this Report
A plan sufficient to identify the land	Figure 1.1 ²
A description of the proposed development, including the location and technical capacity	Chapter 2 and Figure 2.1
An explanation of the likely significant effects of the Project on the environment	Chapters 6 to 15
Such other information or representations as the person making the request may wish to provide or make	Chapters 2 to 15 and appendices

- 1.15. This Scoping Request also provides the justification and rationale for scoping out environmental topics or receptors where it is considered that significant effects are unlikely to arise as a result of the Project.
- 1.16. The EIA Scoping Request has been prepared with reference to PINS Advice Note Seven: Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements (Ref 1-3) and Technical Advice Page for Scoping Solar Development (published September 2024) which contains guidance on EIA Scoping.

² A shapefile is available to statutory consultees upon request.

Relationship between Scoping Opinion & the Preliminary Environmental Information Report

- 1.17. The Applicant will also have regard to the Scoping Opinion when preparing the Preliminary Environmental Information Report, that will accompany the statutory consultation. Following the adoption of the Scoping opinion by the Planning Inspectorate, where further evidence has been collected which gives justification for a revised scope of works to be agreed with the relevant consultees, the Applicant will clearly demonstrate this within the Environmental Statement, giving a clear explanation to justify the approach taken. The Applicant will present a draft Preliminary Environmental Information Report for the informal consultation.
- 1.18. A first iteration of a Commitment Register will accompany draft PEIR for informal consultation. The Applicant would seek to update the Commitment Register for the formal consultation and again as part of the DCO application submission.

Structure of the Scoping Request

- 1.19. The following chapters of the Scoping Request are structured as follows: -
- Chapter 2 – The Project – provides a description of the project based upon current environmental, planning and design work, along with anticipated construction processes and timescales as is known at this stage
 - Chapter 3 – Site Description – provides a description of the site and its context as it is known at this stage
 - Chapter 4 – Environmental Impact Assessment Methodology
 - Chapter 5 – General Approach to EIA
- 1.20. Technical chapters -
- Chapter 6 – Landscape and Visual
 - Chapter 7 – Nature Conservation and Biodiversity
 - Chapter 8 – Cultural Heritage and Archaeology
 - Chapter 9 – Ground Conditions
 - Chapter 10 – Socio Economics
 - Chapter 11 – Transport and Access
 - Chapter 12 – Noise and Vibration
 - Chapter 13 – Air quality and greenhouse gases
 - Chapter 14 – Agriculture

- Chapter 15 – Other Environmental Topics (Glint & Glare; Major Accidents & Disasters; Heat & Radiation; Transboundary Effects; Electromagnetic Fields; Human Health; Utilities; Telecommunications; Waste; and, Hydrology & Flood Risk.

IEMA Quality Mark

- 1.21. Pegasus Group is an Institute of Environmental Management and Assessment (IEMA) Registered Impact Assessor and also holds the IEMA EIA Quality Mark as recognition of the quality EIA product and continuous training of our environmental consultants. A Statement of Competence will be included within the Environmental Statement, outlining the relevant expertise or qualifications of the experts who contributed to the preparation of the Environmental Statement.
- 1.22. The Applicant has appointed a team of specialist consultants to consider planning and environmental matters in relation to the Project and to provide input into the production of this Scoping Report. The technical assessment work undertaken by each of the consultants listed has directly informed the consideration of likely significant effects. The key consultants that have been involved with the project to date are: –
- Pegasus Group – lead planning consultant, also providing planning advice, technical assessments of potential impacts of the environment in terms of landscape, transport, flooding / drainage, heritage, socio economic and coordinating the EIA.
 - Elmya – network and network constraints
 - Clarkson and Woods Environmental Consultants – providing ecological and nature conservation advice
 - Kernon Countryside Consultants – providing technical input on agriculture and agricultural land
 - Hydrogeo – ground conditions and contamination
 - Ion Acoustics – noise and vibrations
 - Air Quality Consultants – air quality, greenhouse gases and carbon saving.
 - Barton Hyett Associates – arboriculture
 - Pager Power – glint & glare

FIGURE 1.1 DRAFT ORDER LIMITS



KEY
 DRAFT ORDER LIMITS (REV D)

A	22/03/24	MODIFIED DRAFT ORDER LIMITS
B	02/04/24	MODIFIED DRAFT ORDER LIMITS
C	05/04/24	MODIFIED DRAFT ORDER LIMITS
D	24/09/24	MODIFIED DRAFT ORDER LIMITS

REV	DATE	DESCRIPTION
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DRAFT ORDER LIMITS PLAN

WHITE ELM SOLAR FARM

Elmya RPC UK Grange Road Limited

DATE	SCALE	TEAM/DRAWN	APPROVED
24/09/2024	1:20,000@A3	PR/RL	GR

SHEET	REV	N	O	0.5KM
-	-	▲	└───┘	

DRAWING NUMBER
P23-0396_PR_0008_D



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2. THE PROJECT

Overview

- 2.1. The Applicant notes that at this current point in the evolution of the project, a final description of the development is not yet confirmed, and the draft order limits is likely to be refined. The Applicant is aware that the description of the Project provided in the Environmental Statement must be sufficiently certain to meet the requirements of the EIA Regulations. The description of the Project in the Environmental Statement will make reference to the design, size and locations of each element, including maximum heights, design parameters and limits of deviation. The description will be supported (as necessary) by figures, cross sections and drawings which should be clearly and appropriately referenced.

Need for Flexibility

- 2.2. The need for flexibility in design, layout and technology is identified in a number of National Policy Statements to address uncertainties inherent to the Project. The Planning Inspectorate's Advice Note 9 (Rochdale Envelope) clarifies in section 4 that at the Scoping stage, certain matters on the design might not yet be resolved due to an iterative design process. This is very pertinent to solar due to the rapid pace of change in technology. It is proposed that the Preliminary Environmental Information Report & subsequent Environmental Statement will employ a 'maximum design envelope' which reflects the Rochdale Envelope.
- 2.3. The parameter ranges would be defined in the project description chapter of the Preliminary Environmental Information Report / Environmental Statement. These parameters will be considered in detail by technical authors in the Environmental Statement to ensure the realistic worst-case effects of the Project are assessed for each potential receptor. This is of particular importance to maintain flexibility due to the rapid pace of change in solar PV and energy storage technology. The maximum design scenario assessed is therefore the scenario which would give rise to the greatest potential impact. For example, where several solar panel options are provided, then the assessment will be based on the solar panel type that would have the greatest impact. Where there is only a single design parameter put forward then this is deemed to be the worst-case scenario, for example (i) maximum development footprint and height of the substation compound; and (ii) the total area covered by the solar panels. As technology advances, it is possible that solar panels could become more efficient. This in turn could require the micro-siting of ancillary equipment to reflect such changes, i.e. the final locations of cabling and the number and location of inverters and transformers. This final detail may be secured by an appropriately worded requirement(s), that would: –
- Clarify the construction and operational sequencing of the Project;
 - Demonstrate compliance with the requirements included in the Development Consent Order; and
 - Demonstrate that the final detailed design remains within the parameters of the design principles and therefore the Rochdale Envelope standards considered by the forthcoming Environmental Statement.

- 2.4. A similar approach has been used for the Little Crow Solar Park Order 2022³ that was determined through the NSIP process. As a minimum, it is expected that the following aspects of the Project will require design flexibility when the EIA is being carried out:
- The maximum development envelope for the type of PV module including their mounting and foundation structures.
 - The maximum development envelope of supporting infrastructures such as inverters, transformers and switchgears.
 - The maximum development envelope for the type and arrangement of battery energy storage systems.
 - The maximum development envelope for the type and arrangements of biodiversity and green infrastructure.
 - The maximum development envelope for location and arrangements of temporary construction compounds and temporary construction tracks.
 - The maximum development envelope for the location and arrangements of cable routing to the point of connection to the National Grid
 - The maximum development envelope for the potential phasing of the Project.

Project Overview

- 2.5. The main element of the proposal is the construction, operation, maintenance and decommissioning of a ground mounted solar park with an export capacity of over 50MW with associated development. As identified in the Overarching National Policy Statement for Energy (EN-1), Government has concluded that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure.
- 2.6. The current proposed operational lifespan of 40 years would be sought to be linked to the first export date from the project. The Project will progress in accordance with a phasing plan. The project may be carried out thorough a single continuous phase or in multiple of phases. Detailed description of all the construction phase options will be set out in the Preliminary Environmental Information Report / Environmental Statement.
- 2.7. At this stage of the project, it is anticipated that the Project would comprise the following works:
- Arrays of Ground Mounted Solar Panels
 - Battery Energy Storage System (BESS)
 - Formation of Ecological Corridors and Green Infrastructure

³ SI 2022 No. 436.

- Substation Buildings and Compounds
 - Temporary works associated with the construction & commissioning works (such as construction compounds, construction tracks etc)
 - Open trench cabling works
 - Fencing and Security Measures
 - Site access & highway improvements
 - New & upgrade to existing culverts
- 2.8. The preliminary works area is set out below and this will be refined during the iterative design process taking into account the environmental constraints and opportunities of the site together with consultation with consultees and the community.
- 2.9. The current indicative layout plan is provided at Figure 2.1 (presented at the end of this chapter).
- 2.10. During the construction phase, one or more temporary construction compound(s) will be required as well as temporary roadways to facilitate access to all parts of the site.

Arrays of Ground Mounted Solar Panels

- 2.11. The solar panels would convert solar irradiance into direct current (DC) electricity. A solar panel consists of a layer of silicon cells, an anodised aluminium frame and various wiring to allow current to flow from the silicon cells. Silicon is a non-metal with conductive properties that allow it to absorb and convert sunlight into electricity. When light interacts with a silicon cell, it causes electrons to be set into motion, which initiates a flow of electric current. Two main options for panel design are fixed south facing or tracking. If the Applicant is not able to make a specific decision prior to the submission of the DEC, then the Environmental Statement would identify the worst-case scenario for applicable technical topics during operation (such as landscape and visual, residential amenity etc).
- 2.12. Currently, the Applicant is seeking to progress with fixed south facing panels. The solar panels would be connected in series and set out on south facing arrays. The arrays will be laid out in multiple parallel rows running east to west across the various field enclosures. The mounting structure and solar panels will be static. The distance between the arrays would respond to topography and typically be between 3.5 metres to 6 metres. Land between and beneath the arrays could be used for biodiversity mitigation and enhancement measures and / or seasonal sheep grazing. Within areas where sheep grazing is not proposed, then grassland will be managed through a grass cutting regime.
- 2.13. The maximum height of the arrays is not yet known and is expected to be up to 3.5m. The design parameters for the PV modules works area will be clearly set out within the Preliminary Environmental Information Report/ Environmental Statement. In areas around the solar array and on other parts of the order limits, opportunities for landscaping, biodiversity enhancements and habitat management will be explored. Currently, it is envisaged that the insulated DC cables from the solar panels will be

routed in channels fixed on the underside of the mounting structure. The DC string cables will run along the entire underside of each row. The electrical cabling from each array will be concealed through shallow trenches linking the solar panels to the inverters and transformers and then to the main substation. The cable trench will typically be between 0.5m to 1.1m in depth and up to 1.0m wide, their dimensions would vary depending on the number of cables they contain. The cable trench may also carry earthing and communications cables and will be backfilled with fine sands and excavated materials to the original ground level. Low voltage cabling would be required to connect solar PV modules to inverters and their transformer where the voltage is transformed from the lower voltage to 33 kV.

- 2.14. The inverters are responsible for converting the DC energy produced by the arrays into AC energy, while the 132 kV transformers step up the voltage for transmission, and the associated switchgear ensures the protection, control, and isolation of the electrical system. The AC cable will also be laid in trenches and would run from the arrays to the Applicant's substation compound.
- 2.15. Underground cables will connect the various land parcels, and this will predominantly involve an open trench. Where the crossing point relates to a local adopted highway or a water course then these may also be open trenched or undertaken by directional drilling depending on the circumstances. All works will be within the order limits. At this time, consideration is being given to whether all the onsite cables can be laid underground or if some sections will need to be above ground.
- 2.16. Data cables (typically fibre optic) will also be installed, typically alongside electrical cables in order to allow for the monitoring of the Project.

Applicant's Substation Compound and Electrical Cabling to National Grid Substation.

- 2.17. The Applicant acknowledges that whilst a section of the proposed National Grid's East Anglian Green Energy Enablement Project, commonly known as the Norwich to Tilbury line⁴, adjoins the project site, the grid connection for the White Elm Solar Farm is not contingent on the new Norwich to Tilbury line.
- 2.18. The grid connection offer secured for White Elm Solar Farm is independent of any other grid connection offer relating to other potential energy projects in the same region.
- 2.19. Substations & connections infrastructure required for the development include: -
- Applicant Substation Compound (with an indicative footprint of 200m by 100m)

⁴ The Norwich to Tilbury line is a DCO project proposed by National Grid and includes a 400 Kilovolt (kV) electricity transmission line over a distance of approximately 180 kilometers. National Grid are aiming to submit their DCO application in 2025. If successful, National Grid aim to begin construction in 2027 and conclude around 2030, to be fully operational by 2031.

- Electrical cabling connecting the Applicant substation compound to the National Grid substation compound. The relationship between the DCO and the National Grid substation is discussed at paragraphs 2.44 to 2.46 below.

2.20. The candidate design provides for one main Applicant's substation. The substation is necessary to step up the voltage of the electricity delivered by the solar from 33kv to 400kv for connection to the National Grid substation. Under normal conditions the compound would be unmanned. Whilst external lighting will be installed at the substation for emergency work during hours of darkness, the substation will not normally be lit. Infrastructure with the gated compound would include control room and welfare unit with WC; Customer Switchroom; Step-up and auxiliary transformers; Gantry with voltage and current transformers; Circuit breakers; Earthing circuits; Cable circuits; car parking; and cess pit.

Battery Energy Storage System

2.21. The battery energy storage system consists of containerised battery units that can store energy from the Solar Farm and are able to release or absorb energy from the power network. Being able to absorb and release energy from the power network, the battery energy storage system at White Elm Solar Farm could be used to contribute towards the frequency balancing services, where the power is being generated or absorbed statically or dynamically depending on the system frequency. When there is not enough power, batteries are discharged to balance under frequency preventing black and brown outs. To balance over frequency batteries are charged to prevent dangerous spikes across electricity infrastructure. The indicative development footprint of the battery energy storage system is 8 hectares. An appropriate drainage strategy will be developed for the battery compound which will include the safeguard of appropriate capacity of on-site containment of run-off.

2.22. The Applicant anticipates that lithium ferro phosphate battery technology would be used for the Project. All considered technologies would be considered within the ES.

Fencing and Security Measures

2.23. Fencing will enclose the operational areas of the project. It is currently envisaged that the fencing will incorporate: –

- Arrays – The arrays would be set within perimeter fencing up to 1.8m in height with supporting posts placed at intervals of c. 3.5m.
- Battery compound & substation compound – the compounds would be made secure by a 3m high gated palisade fence.

2.24. Pole mounted closed circuit television (CCTV) system, which will face towards the Project and away from any land outside of the order limits will also be deployed around the perimeter of the site. These cameras will be mounted on poles of around 4m height located within the perimeter fence.

2.25. It is likely that emergency lighting on sensors for security purposes will be deployed around the battery & substation compounds and other key infrastructure. No areas of

the Project are proposed to be continuously lit during the operational phase of this development.

Construction

- 2.26. The Environmental Statement will consider the options of the Project being constructed through either a single phase or a multiple of phases (i.e., phased approach to the construction of the solar arrays / development parcels). If all elements were constructed at the same time, then it is anticipated that the main construction phase would last around 16 months to 24 months. The Environmental Statement will provide a full description of the potential construction, operational and decommissioning variances. All variances will be assessed within the Environmental Statement.
- 2.27. A main temporary construction compound will likely be established close to the main construction site entrance. Smaller temporary compounds may be located across the site as the Project is built out. Depending on weather conditions during construction, temporary roadways (e.g., plastic matting) may be utilised to access parts of the Project.
- 2.28. The Environmental Statement will include a detailed description of the construction compound(s) including its/their size and duration required on site.
- 2.29. An Outline Construction Environmental Management Plan (Outline CEMP) will be submitted in support of the DCO application which will describe the framework of mitigation measures identified in the ES to be followed and to be carried forward to a detailed Construction Environmental Management Plan prior to the construction of White Elm Solar Farm. It is envisaged that the Outline CEMP would set out the principles to control and reduce nuisance impacts from
- Construction traffic (including parking and access requirements) and changes to access and temporary road or footpath closure (if required);
 - Noise and vibration;
 - Construction lighting;
 - Utilities diversion;
 - Dust generation;
 - Handling of soil resources;
 - Run off and drainage; and
 - Construction waste generation.

Commissioning

- 2.30. Following construction, White Elm Solar Farm would go through a stage of testing prior to being commissioned and the first electricity generated and supplied to the National

Grid. This is likely to involve visual inspection together with testing of all plant and electrical equipment.

Habitat Creation

- 2.31. The management of the landscape and ecological features will be undertaken in accordance with a Landscape and Ecological Management Plan that will be secured via a DCO requirement.
- 2.32. An Outline Landscape and Ecological Management Plan will be submitted in support of the DCO application. The Outline Landscape and Ecological Management Plan will outline mitigation and enhancement measures. A detailed Landscape and Ecological Management Plan would be produced following grant of the DCO and prior to the start of construction (secured by a DCO requirement), and would be in accordance with the Outline Landscape and Ecological Management Plan.
- 2.33. Landscape, ecological and biodiversity benefits could include the installation of barn owl boxes, bird nesting boxes, bee hives, log piles and other hibernacula such as small buried rubble piles suitable for reptile species, amphibians and insect life. Land between and beneath the panels could be used for biodiversity enhancements and agricultural use could continue through sheep grazing. Tree and hedgerow planting would be introduced along selected field boundaries,
- 2.34. The Applicant will also consider the potential options for allowing permissive public access to selected areas set aside for community uses, such as green infrastructure / space. The potential for this will be discussed with the community and local planning authorities as part of the iterative design process.

Operational Lifespan

- 2.35. An operational lifespan of 40 years would be sought. During the operational phase, the activities on site would amount to servicing, maintenance and replacement (where necessary) of plant and equipment associated with the Project, including solar panels, inverters, transformers, substation compound and vegetation and biodiversity management.
- 2.36. An Outline Landscape and Ecological Management Plan would be submitted as part of the Environmental Statement and this document would set out how soft landscaping and biodiversity mitigation and enhancement measures would be managed throughout the operational phase of development.
- 2.37. There may be a level of HGV activity required to replace equipment onsite. The Environmental Statement will include further details of the maintenance and replacement activities and appropriate controls will be developed as part of the DCO.

Decommissioning Phase

- 2.38. Following operation, White Elm Solar Farm would undergo decommissioning and then aftercare. Decommissioning is anticipated to take approximately 12 months. The process of decommissioning would involve the removal of all solar infrastructure, including the solar PV modules and on-site supporting equipment, from the Site to be

recycled or disposed of in accordance with industry best practices at that time. Any requirements to leave certain infrastructure, for example access tracks, would be discussed and agreed with landowners as part of the decommissioning process. It is anticipated at this stage that underground cabling would be left in situ to avoid unnecessary ground disturbance. It would not be in the Applicant's gift to decommission any infrastructure belonging to National Grid. All waste will be disposed of in accordance with the legislation at the time of decommissioning.

- 2.39. An Outline Decommissioning Environmental Management Plan, which will set out the general principles to be followed at the decommissioning stage. The document would be submitted in support of the DCO application. These measures, commitments and actions would be carried forward to a detailed Decommissioning Environmental Management Plan, taking account of good industry practice, its obligations to landowners under the relevant agreements and all relevant statutory requirements.
- 2.40. It is expected that the Outline Decommissioning Environmental Management Plan would likely include details regarding:
- Biodiversity management
 - Arboricultural management
 - Traffic management
 - Materials management
 - Waste management.

Public Rights of Way

- 2.41. Temporary diversions of Public Rights of Way that traverse the project site may be required during the construction and decommissioning periods.

Compulsory Purchase

- 2.42. The Applicant may seek powers of compulsory acquisition as part of the Development Consent Order in order to ensure the delivery of the project. This will cover all powers and rights necessary to develop, operate and decommission the proposal.

Statutory Undertakers

- 2.43. The provision of easements for the existing services that traverse the site, such as water pipes and overhead powerlines, will be incorporated into the layout design, where appropriate. The Preliminary Environmental Information Report / Environmental Statement will include a description of how statutory undertaker apparatus will be affected or maintained through the draft Development Consent Order.

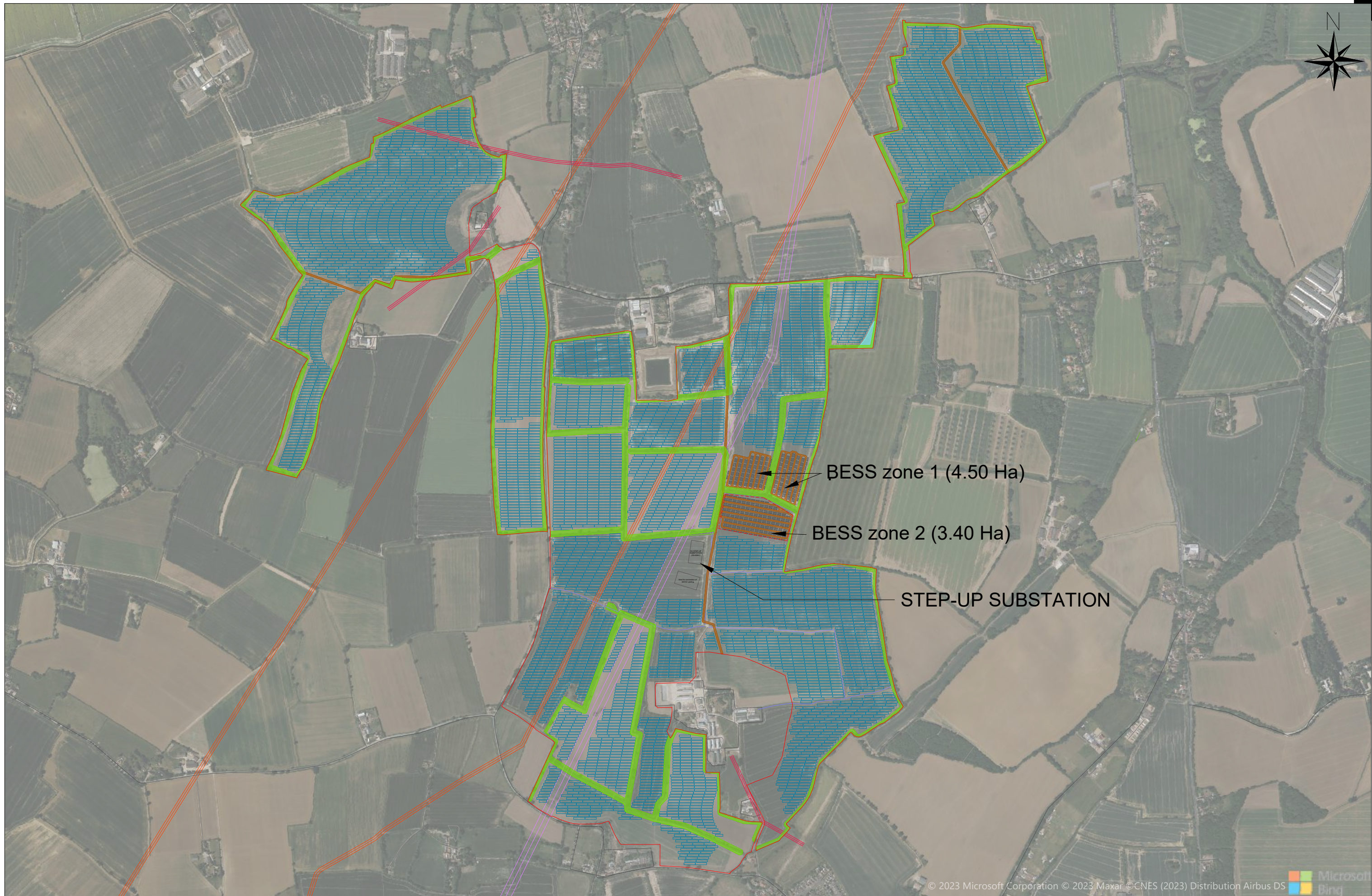
National Grid Substation

- 2.44. White Elm Solar Farm has a grid connection offer from National Grid. This provides that the White Elm Solar Farm will connect into the existing Norwich to Bramford circuit via a

new National Grid 400kV substation. This new National Grid substation will be known as “Elmya Grange”. The Elmya Grange substation is to support planned upgrade works to the Norwich to Bramford circuit, part of which crosses the site in a north-east to south-west direction. The Applicant considers that the Elmya Grange substation will be located within the Order Limits or adjacent to them. Accordingly, the current concept design allows for the Elmya Grange substation to be accommodated within the draft Order Limits, albeit it will be delivered separately by National Grid Electricity Transmission (NGET) and not by the Applicant under the DCO. The Applicant understands that National Grid will seek consent for the new Elmya Grange substation via the Town and Country Planning Act 1990 regime.

- 2.45. To facilitate the connection to the new Elmya Grange National Grid substation, the Applicant intends to seek consent in the DCO for the grid connection infrastructure that will be within its control i.e. on-site 400kV cabling to connect the solar farm and associated battery proposal to the new Elmya Grange substation. The EIA will consider the progress of the Elmya Grange substation and any known timelines for National Grid to deliver it, as well as describing the relationship between the White Elm Solar Farm and the Elmya Grange substation. This will include the likely routing, trench width, depth and working width for the on-site underground cabling.
- 2.46. For clarity, the White Elm Solar Farm will not connect into the new Norwich to Tilbury circuit, which is also being progressed as a NSIP. Part of the new overhead line for this scheme is proposed to cross a small area of the Site, located at the most south-west corner of the draft Order Limits. The Applicant and National Grid are in discussion regarding this interface.

FIGURE 2.1 INDICATIVE LAYOUT PLAN



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PV SUMMARY
 • Layout power 271 MWp x 0.93 = Expected power 252 MWp
 • 3P 20 (39.3kWp) and 3P 30 (58.95kWp) 15° tilted PV structures
 • Pitch: 9.95m || Inner space: 3m

STEP UP SUBSTATION 33/400 kV **Total land: 266 Ha**

NOTE: NG SS is not part of the development and land is only safeguarded for National Grid within the order limits.

LEGEND		EXISTING	
	BESS containers		Hedges - 10m preliminary buffer
	PV Structures		Woodland - 10m preliminary buffer
	Draft Order Limits		Public Right of Way - 6m preliminary buffer
			Observed vegetation - 6m preliminary buffer
		<i>Buffer distances on each side of the line axis</i>	
	Gas pipe line - 7m preliminary buffer		OHL - 32m preliminary buffer
	OHL minor - 8m preliminary buffer		Former water inf. - 2.5m preliminary buffer
	Public and service roads		



Version:	Date:	Drawn:	Approved:	Comments:
RA_V5	03.10.24	ICM	ICM-JHA	
Project: WHITE ELM PV AND BESS		Name: PRELIMINARY WORKING LAYOUT		Number: 1.03
				Sheet: 01/01
				Format & scale: A3 1:12.000
				Units: M

3. SITE DESCRIPTION

The Development Site

- 3.1. The site broadly lies between the settlements of Wickham Skeith, to the north, Thwaite to the east and Mendlesham to the south and Cotton to the west with a pattern of dispersed small villages and scattered farmsteads within and surrounding the site. It is split into several land parcels which are intersected by Oak Farm Lane, Wickham Road and Grange Road. In addition, there are a number of isolated residential dwellings and farmsteads within and around the site boundary.
- 3.2. The key characteristics of the site are 272 hectares of arable farmland with field boundary features primarily consisting of drainage ditches, hedgerows and deciduous trees.

Public Rights of Way

- 3.3. The Mid Suffolk Footpath, a 27 km linear route, crosses the north eastern field within the site and also, for a distance of approximately 350 m, lies adjacent to the south-eastern boundary close to the settlement of Mendlesham. Several other public rights of way provide walking connections between the surrounding settlements and scattered farmsteads. Those which extend within the site are as follows:
- Connected footpaths 5 (Mendlesham) and 16 (Wickham-Skeith);
 - Footpath 45 (Wickham Skeith); and
 - Footpath 3 (Thwaite) along which the Mid Suffolk Footpath follows a route.

Landform and Topography

- 3.4. The topography is generally very gently undulating, both across the site and the wider study area. The site is in agricultural use, with a pattern of dispersed small villages and scattered farmsteads within and surrounding it. Fields within the site are generally large in scale, mostly arable and with established field boundaries comprising native hedgerows with scattered trees. Some small-scale woodland copses are present within the landscape, although very few are located within the site, mainly located surrounding nearby farmsteads or surrounding villages.

Land Use, Buildings and Infrastructure

- 3.5. Lattice pylons and overhead lines extend within the site between Wickham Road and Mendlesham Road.
- 3.6. The nearest settlements include Mendlesham to the south, Wickham Skeith to the north, and Thwaite to the east. There are a number of individual residential properties that lie within proximity to the site.

- 3.7. The minor roads serving the local area includes Wickham Road and Mendlesham Road. These provide links between settlements, including Wickham Skeith, Mendlesham and Thwaite.

Agricultural Land

- 3.8. The site is largely agricultural land. Data provided on Natural England's interactive website shows no detailed survey data for the site. The site is shown on the 1:250,000 provisional Agricultural Land Classification Maps (reprinted by Natural England in 2010) as undifferentiated Grade 3 (good to moderate quality agricultural land). The site is shown on the 1:250,000 Likelihood of Best and Most Versatile Agricultural Land Maps published by Natural England in 2017 as falling mostly into the "moderate" likelihood of BMV (20 – 60% area BMV), with land at the eastern edge just falling into the high likelihood (>60% area BMV). These plans are for strategic purposes and are not suitable for site-specific use.

Biodiversity Features and Environmental Designations

- 3.9. The site comprises primarily agricultural habitats, with the majority of the site consisting of large open arable fields cultivated with a range of crop types. Few field margins are present at the boundaries of the arable fields with 1m wide or less grass margins being prevalent.
- 3.10. No international designated sites were identified within 10km of the site. However, eight international designated sites with qualifying mobile species (bats and/or migratory birds) were identified within the wider search radius of 30km.
- 3.11. Three national designated sites for nature conservation were identified within 5km of the site. These designated sites are Gipping Great Wood SSSI, Mickfield Meadow SSSI and Major Farm, Braiseworth SSSI.
- 3.12. Two local, non-statutory designated sites for nature conservation were identified within 2km of the site. These designated sites are Roadside Nature Reserve 116 and Thornham Estate Woods County Wildlife Site (CWS).
- 3.13. Habitats of Principal Importance (HPIs) and Local Priority Habitats identified in the Suffolk Local Biodiversity Action Plan (BAP) all occur either within the Site Boundary, or in areas within 2km of the Site Boundary.

Cultural Heritage

- 3.14. There are no designated heritage assets within the draft order limits.
- 3.15. Within the 3km study area from the order limits boundary, the following designated heritage assets are located:
- Five Grade I Listed Buildings;
 - 10 Grade II* Listed Buildings;
 - Four Conservation Areas; and

- 208 Grade II Listed Buildings.

3.16. No Scheduled Monuments, Registered Parks and Gardens, World Heritage Sites or Registered Battlefields are located within the 3km search area.

Hydrology

- 3.17. The Flood Map for Planning generally defines the site as Flood Zone 1, not predicted to be at risk of fluvial or tidal flooding during a 1 in 1,000 year flood event. There are small areas of Flood Zone 2/3 defined along the southern site boundary predicted to be at risk during a 1 in 1,000 year and 1 in 100 year fluvial flood event, respectively. This risk is associated with an unnamed tributary of the River Dove which flows along the southern site boundary and is defined as a Main River.
- 3.18. The Environment Agency's Risk of Flooding from Surface Water Dataset defines areas of Low to High risk of surface water flooding on site, predicted to be at risk during a 1 in 1,000 year and 1 in 30 year surface water flood event, respectively. Large areas of the site are at Very Low risk, not predicted to be impacted by a 1 in 1,000 year rainfall event.

Ground Conditions

- 3.19. The site is characterised by a bedrock geology predominantly composed of the "Crag Group - Sand," as indicated by the British Geological Survey (BGS) Geindex online mapping. Additionally, superficial deposits from the "Lowestoft Formation - Diamicton" are present throughout the area. This site is situated in a buried glacial valley, with borehole data suggesting these deposits could be over 40 meters thick. The site does not feature any artificial deposits, such as made ground or worked ground, according to BGS mapping. A significant geological fault runs through the area in a north-east to south-west direction. While there are no recorded boreholes within the site itself, there are several in close proximity.
- 3.20. The site falls within a Zone 3 Source Protection Zone (SPZ), an area critical for groundwater supply protection. The bedrock geology is classified as a Principal Aquifer, known for high permeability and significant water storage. The superficial deposits are categorized as Secondary Undifferentiated aquifers, which have minor water resource value due to their variable characteristics. The area has medium to medium-high groundwater vulnerability but is not located within a Groundwater Drinking Water Safeguarding Zone. It is, however, within a Nitrate Vulnerable Zone (NVZ).
- 3.21. No historical or current landfills are within 1 km of the site is not within a Coal Mining Reporting Area. There are no reported pollution incidents within the site's boundaries, with the nearest being approximately 950 meters away. Geohazards such as landslides and soluble bedrock issues are not a concern for this site. However, the underlying deposits may include collapsible and running sand, and clays with potential for shrinking and swelling.
- 3.22. According to the Zetica Online Risk Map Guidance, the site has a low risk of unexploded ordnance (UXO) incidents.

Air Quality

- 3.23. Mid Suffolk District Council (MSDC) monitors air quality throughout its area using two nitrogen dioxide (NO₂) diffusion tube monitoring sites in Stowmarket, located approximately 8 km south west of the Site. There were no measured exceedances of the annual mean NO₂ objective of 40 µg/m³ at any of the monitoring sites near to the Site within the last five years. Furthermore, concentrations were below 60 µg/m³ at both monitoring sites, which indicates that exceedances of the 1-hour mean objective are unlikely.

4. EIA Methodology

Introduction

- 4.1. This section sets out the approach that would be taken to complete the EIA for the project. The EIA Methodology Chapter of the Environmental Statement will explain the everchanging methodology that will be applied to all the technical chapters of the Environmental Statement.
- 4.2. The Environmental Statement will identify key changes in the parameters / options of the Project as presented in this Scoping Report, following a consultation process. The Environmental Statement will also contain a table demonstrating how the matters raised in the Scoping Opinion have been addressed within the Environmental Statement.
- 4.3. The content of the Environmental Statement will be based on the following:
- Review of the baseline situation through existing information, including data, reports, site surveys and desktop studies;
 - Consideration of the relevant National Policy Statement (NPSs), National Planning Policy Framework (NPPF) and accompanying National Planning Practice Guidance (NPPG), and the statutory extant and emerging development plan policies;
 - Consideration of potential sensitive receptors;
 - Identification of likely significant environmental effects and an evaluation of their duration and magnitude;
 - Expert opinion and local knowledge;
 - Modelling;
 - Use of relevant technical and good practice guidance; and
 - Specific consultations with appropriate bodies.
- 4.4. Environmental effects will be evaluated with reference to definitive standards and legislation where available. Where it has not been possible to quantify effects, assessments will be based on available knowledge and professional judgement.
- 4.5. The EIA will assess the effects of the following scenarios
- Construction Phase
 - Operational Phase
 - Decommissioning Phase
- 4.6. The ES will include within each of the environmental topics a description of the current baseline and the future baseline.

- 4.7. The 'future baseline' scenario will describe the changes from the baseline scenario as far as natural changes can be established.
- 4.8. The potential likely significant effects arising as a result of the Project will be assessed against these three baselines as follows:
- Construction Phase – Current and Future Baseline
 - Operational Phase – Future Baseline
 - Decommissioning Phase – Future Baseline

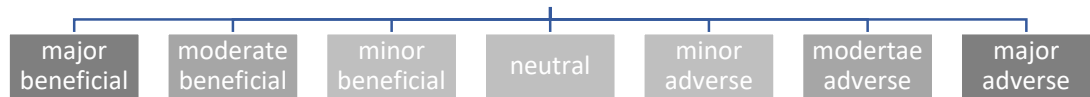
Prediction of Likely Effects

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

Determining Significance

- 4.11. The purpose of the EIA is to identify the likely 'significance' of environmental effects (beneficial or adverse) arising from a proposed development. In broad terms, environmental effects are described as:
- Adverse – detrimental or negative effects to an environmental resource or receptor;
 - Beneficial – advantageous or positive effect to an environmental resource or receptor; or
 - Negligible – a neutral effect to an environmental resource or receptor.
- 4.12. It is proposed that the significance of environmental effects (adverse, negligible/ neutral or beneficial) would be described in accordance with the following 7-point scale⁵:-

⁵ Unless specified by topic specific methodology



- 4.13. Significance reflects the relationship between two factors:
- The magnitude or severity of an effect (i.e., the actual change taking place to the environment); and
 - The sensitivity, importance or value of the resource or receptor.
- 4.14. The broad criteria for determining magnitude are set out in Table 3.1.
- 4.15. It is worth noting that the degrees of magnitude defined in the table below can be both positive and negative, as a development can result in a positive effect on the environment. The sensitivity of a receptor is based on the relative importance of the receptor using the scale in Table 3.1.

Table 3.1 Degrees of Magnitude and their Criteria

Magnitude of Effect	Criteria
High	Total loss or major/substantial alteration to 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 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 the underlying character/composition/attributes of the baseline condition will be similar to the pre-development.
Negligible	Very little change from baseline conditions. Change not material, barely distinguishable or indistinguishable, approximating to a 'no change' situation.

- 4.16. The sensitivity of a receptor is based on the relative importance of the receptor using the scale in Table 3.2.

Table 3.2: Degrees of Sensitivity and their Criteria

Sensitivity	Criteria
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 and more than local (but not national or international) importance.
Low	The receptor/resource is tolerant of change without detrimental effect, is of low or local importance.
Negligible	The receptor/resource can accommodate change without material effect, is of limited importance

- 4.17. Placement within the 7-point significance scale would be derived from the interaction of the receptor's sensitivity and the magnitude of change likely to be experienced (as above), assigned in accordance with Table 3.3 below, whereby effects assigned a rating of Major or Moderate would be considered as 'significant'. It is noted that not all environmental factors use the matrix based approach but instead use numerical values (such as noise impacts). The approach towards numerical values would be detailed within the relevant individual technical chapter.

Table 3.3: Levels of Effect Degrees of Significance

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

- 4.18. The above magnitude and significance criteria are provided as a guide for specialists to categorise the significance of effects within the ES. Where discipline-specific methodology has been applied that differs from the generic criteria above, this will be

clearly explained within the given technical chapter. As can be seen from Table 3.3 when an environmental effect is assessed as having a major or moderate degree of significance it is deemed to be “significant”. These are the shaded cells in Table 3.3. When such a significant effect occurs consideration of mitigation solutions or enhancements to minimise the effect (which can include design alterations) will be considered.

- 4.19. It should be noted at this point that mitigation can come in the form of embedded design through design alteration to resolve a significant effect and mitigation through additional measures. Once these mitigations and enhancements have been assessed, the degree of significance may decrease to minor/moderate, minor or negligible. If such a level of environmental effect occurs, the Project is no longer considered as creating a “significant effect”. If an environmental effect remains “significant” (i.e. major/moderate) the determining authority must weigh up the planning balance and determine if this significant, negative/positive environmental effect is outweighed by some other planning gain prior to determining the application.
- 4.20. A level of effects would be assigned both before and after mitigation.

Mitigation

- 4.21. All measures proposed to minimise likely significant effects will be consulted on with the relevant consultation body, these include the informal and formal pre-application consultation phases.
- 4.22. Standard measures and the adoption of construction best practice methods to avoid, minimise or manage adverse environmental effects, or to ensure realisation of beneficial effects, will be incorporated into the design and development of the Project. The assessment of the Project would include the mitigation measures where required noting any residual effects.
- 4.23. All mitigation measures would be specified as a requirement within the Draft Development Consent Order. Where the assessment of the Project would identify potential for adverse environmental effects, the scope for mitigation of those effects, for example by way of compensatory measures, will be considered and outlined in the appropriate technical chapter.
- 4.24. Where the effectiveness of the mitigation proposed will be considered to be uncertain, or where it depends upon assumptions of operating procedures, then data and/or professional judgement will be introduced to support these assumptions.

Residual Effects

- 4.25. The assessment process will conclude with an examination of the residual effects after mitigation has been applied, i.e., the overall predicted (likely) effects of the Project.

Cumulative and In-Combination Effects

- 4.26. In accordance with the EIA Regulations, the Environmental Statement will also give consideration to cumulative effects. Cumulative impacts are those effects of the Project that may interact in an additive or subtractive manner with the impacts of other

developments including those that are not currently in existence but may be by the time the Project is implemented. Examples of the kinds of effects that can be readily appreciated could include:

- Traffic generated from developments, affecting the surrounding road network;
- Air quality effects from developments; and
- Discharges to the water environment.

4.27. Other developments for inclusion within the cumulative effects assessment are yet to be determined and the Applicant will seek to agree the scope of the cumulative assessment with the relevant consultation body, including the Local Planning Authority and Environment Agency.

4.28. The assessment will consider all relevant project types, including other DCO projects registered with the Inspectorate's National Infrastructure Planning Team. Any operational schemes will be assessed as part of the relevant baseline study.

4.29. The cumulative effects assessment will adopt a staged approach, as follows: –

- Step 1 – The first step will be to prepare a long list of other developments with the potential to have in-combination effects with the Project. The long list will be developed based on the appropriate Zones of Influence (Zoi) for each topic discipline. The Zoi for each environmental topic area will be identified based on the extent of likely effects in line with industry specific guidance along with professional judgement and knowledge of the local area for each environmental topic area. The long list will be shared with the host Local Planning Authorities to ensure the list is comprehensive. It will be kept under review up until the point of submission to ensure that the information within is up to date at the point of submission.
- Stage 2 of the cumulative effects assessment approach will be to review and apply a threshold criteria to the long list, in order to establish a short list of other existing and/or approved development to ensure that the cumulative assessment is proportionate. The criteria will ensure that only other existing and/or approved development which is likely to result in significant cumulative effects is taken forward to the assessment stage. The shortlist of existing and/or approved development will be consulted upon with statutory and non-statutory consultees during the EIA process. The threshold criteria to be used will consider the following factors: Temporal Scope; Scale and Nature of the Development; Other factors such as, nature and capacity of the receiving environment, source-pathway-receptor approach; and, professional judgement
- Stage 3 – information will be collected for the short listed sites and assessment will be undertaken within the Environmental Statement. The assessment will be undertaken to an appropriate level of detail commensurate with the information available on other existing and/or approved developments and will set out measures envisaged to reduce or avoid any identified significant adverse cumulative effects and, where appropriate, any proposed monitoring arrangements.

Site selection and consideration of alternatives

- 4.30. The EIA Regulations (Schedule 4, Paragraph 2) require for inclusion in an Environmental Statement:

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

- 4.31. Section 9.3 of the Planning Inspectorate's Advice Note 7 (2020) states that a good ES is one that "*explains the reasonable alternatives considered and the reasons for the chosen option taking into account the effects of the Proposed Development on the environment*". The ES will include a description of the reasonable alternatives that have been considered, including a clear narrative on the main reasons for selecting the chosen option, including an explanation of how environmental effects have been taken into account. The reasonable alternatives assessment will focus on: the site selection process, design layouts/opportunities within the Site, the sizing and scale of infrastructure, and alternative technologies.
- 4.32. Alternative technologies will only be considered from the perspective of alternative solar technologies. The ES will not consider alternative forms of renewable energy, for example wind. The recent Sizewell C judgement (2023) reinforced the case that the Applicant does not need to compare different generating technologies such as solar vs. wind vs. nuclear. This is covered in paragraph 131 of High Court Judgement where the judge said promoters need only consider alternatives within the relevant technology type and it would be an absurdity to suggest otherwise.
- 4.33. A 'no development' alternative would not deliver the additional electricity generation capacity associated with the project and therefore will not be considered further.
- 4.34. The consideration of alternatives and design evolution will be undertaken with the aim of avoiding and/or reducing significant adverse environmental effects, maintaining operational efficiency and cost-effective design solutions, and with consideration of other relevant matters such as available land and planning policy.
- 4.35. The Applicant's initial site selection strategy focused on determining opportunities and constraints within an initial search area. This comprised a number of practical, technical and environmental considerations which are recognised within NPS EN-3. These include: -
- Existence of sufficient land, offered by willing landowners, to deliver the project.
 - Availability, proximity and capacity of a suitable Point of Connection to the National Electricity Transmission System (NETS)

- Solar irradiation levels to support the Project's potential to produce an efficient and economic energy yield.
- Designated international and national ecological and geological sites
- Scheduled Monuments
- Nationally designated landscapes
- Greenbelt
- Flooding
- Proximity to human receptors
- Agricultural land

4.36. A site selection report would accompany the DCO application.

5. APPROACH TO ENVIRONMENTAL IMPACT ASSESSMENT

- 5.1. This chapter sets out the overall approach that would be taken in the EIA for White Elm Solar Farm. The proposed scope of information and assessment to be supplied within the Environmental Statement is set out below. It is anticipated that the proposed scope would provide a clear understanding of the potential significant effects of the Project upon its environment and the mitigation measures proposed to avoid or ameliorate those effects. The Applicant will keep the scope of works under review during the development of the Environmental Statement, for example, to ensure that it remains relevant if there are any changes in the parameters of the Project as originally presented in the Scoping Report. The application will consider the need to revisit the scope of works if there are any material changes to the draft order limits as set out at Appendix 1.
- 5.2. An overview of guidance and methodology for each environmental topic is presented within the subsequent chapters of this report.
- 5.3. Following a review of the environmental survey and preliminary appraisal work undertaken to date, it is proposed that the scope of the environmental parameters to be considered within the Environmental Statement are set out below. The scope takes into account the factors influencing the siting of a solar farm as set out in the National Policy Statement for Renewable Energy Infrastructure (EN-3).
- 5.4. The topics takes into account of the environmental factors listed under Regulation 5(2) of the EIA Regulations.
- Landscape and Visual
 - Nature Conservation and Biodiversity
 - Cultural Heritage and Archaeology
 - Ground Conditions
 - Hydrology and Flood Risk
 - Socio Economics
 - Transport and Access
 - Noise and Vibration
 - Air Quality and Carbon Saving
 - Agricultural Circumstances and Agricultural Land
 - Glint & Glare
 - Major accidents & Emergency
 - Electrical, magnetic and electromagnetic fields.

- 5.5. The proposed structure of the Environmental Statement would follow the structure of the Preliminary Environmental Information Report. The Environmental Statement will comprise studies on each of the aspects of the environment identified as likely to be significantly affected by the Project (the 'technical chapters').
- 5.6. It is anticipated that the Environmental Statement will be structured into three volumes:
- Non-Technical Summary (NTS) [Volume 1] – this would provide a concise summary of the Environmental Statement identifying the likely significant environmental effects and the measures proposed to mitigate or to avoid adverse effects of the Project.
 - Main Report [Volume 2] – Comprising the main volume of the Environmental Statement, including 'general chapters' that describe the EIA context, provide a description of the order limits and project, and set out the scope of the Environmental Statement, followed by the 'technical chapters' for each environmental theme. Figures will be provided with or at the end of each chapter. Each chapter will conclude with a summary.
 - Technical Appendices [Volume 3] – this would provide the technical appendices supporting the Main Report.
- 5.7. The organisational presentation of the Environmental Statement for final submission will accord with the Planning Inspectorate's Nationally Significant Infrastructure Projects: Advice on the Preparation and Submission of Application Documents⁶. For example, each chapter will be submitted as a separate paper / document. This will be clearly set out within the Application Index whereby, each chapter will have its own document reference number. Each technical appendix would also have its own document reference number.
- 5.8. For continuity, the figures and appendices will be arranged and presented using the same reference numbers as the chapters as a means of providing supportive background and technical information.

Table 3.5 Proposed Structure of Environmental Statement

Chapter	Topic
<i>Introductory Chapters</i>	
Chapter 1	Introduction
Chapter 2	Project Description, Site Selection, Alternatives, the iterative design process and draft DCO Requirements

⁶ [Nationally Significant Infrastructure Projects: Advice on the Preparation and Submission of Application Documents – GOV.UK \(www.gov.uk\)](http://www.gov.uk)

Chapter 3	Site Description
Chapter 4	EIA Methodology
Chapter 5	Legislative & Policy Context
<i>Technical Chapters</i>	
Chapter 6	Landscape and Visual (with technical appendices to include Residential Visual Amenity Assessment)
Chapter 7	Nature Conservation and Biodiversity
Chapter 8	Cultural Heritage and Archaeology
Chapter 9	Ground Conditions
Chapter 10	Socio Economics
Chapter 11	Transport and Access
Chapter 12	Acoustics Considerations
Chapter 13	Air Quality and Carbon Saving
Chapter 14	Agricultural Circumstances and Agricultural Land
Chapter 15	Other Environmental Topics - to include accident and emergency, waste and climate change.
<i>Summary chapters</i>	
Chapter 16	Summary of Environmental Effects & Mitigation Measures
Chapter 17	Glossary

Structure of Technical Chapters

- 5.9. Throughout the EIA process, the likely significant environmental effects of the Project will be assessed. Within each of the technical chapters the information which will inform the EIA process will generally follow the structure below:

- Introduction – to introduce the topic under consideration, state the purpose of undertaking the assessment and set out those aspects of the Project material to the topic assessment, and provide a summary of the relevant consultation responses;
- Assessment Approach – to describe the method and scope of the assessment undertaken and responses to consultation in relation to method and scope in each case pertinent to the topic under consideration;
- Baseline Conditions – a description of the baseline conditions pertinent to the topic under consideration including baseline survey information;
- Assessment of Likely Significant Effects – identifying the likely effects, evaluation of those effects and assessment of their significance, considering both construction and operational and direct and indirect effects;
- Mitigation and Enhancement – describing the mitigation strategies for the significant effects identified and noting any residual effects of the proposals;
- Cumulative and In-combination Effects – consideration of potential cumulative and in-combination effects with those of other developments; and
- Summary – a non-technical summary of the chapter, including baseline conditions, likely significant effects, mitigation and conclusion.

Confidential Information

- 5.10. In some circumstances it will be appropriate for information to be kept confidential.
- 5.11. Where documents are intended to remain confidential, the Applicant will provide these as separate papers with their confidential nature clearly indicated on the document⁷ and Application Index.

Limitations and Uncertainties

- 5.12. The key general limitations and uncertainties apply to a number of environmental assessments are listed below: –
- The detailed design of White Elm Solar Farm is still emerging as are the environmental surveys and assessments required to support the design and EIA process. As stated elsewhere in this chapter, the Applicant will keep the scope of works under review during the development of the Environmental Statement, for example, to ensure that it remains relevant if there are any changes in the parameters or design of the Project as originally presented in the Scoping Report.

⁷ And watermarked as such on each page.

- The location of components are not yet fixed and the PEIR & ES would assess the 'worst case' scenario to ensure that the maximum level of significant effects is considered.
- Data sourced from third parties as part of the baseline review could potentially be out of date or inaccurate. However, any such data will be procured from reputational and industry standard sources. It will be reviewed and used by competent and experienced professional experts. The combination of appropriate data sources being used by competent and experienced experts should ensure that the data is suitable for its purpose and will therefore provide an appropriate evidence base on which the existing environmental baseline will be informed.

Defining the Study Area

- 5.13. The proposed study areas for each environmental factor are individually set out within the subsequent corresponding technical chapters.

Legislative Process

- 5.14. The main legislative and procedural requirements relating to NSIPs are set out within the following:

- The Planning Act 2008;
- The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (as amended) (the APFP Regulations); and
- The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the 2017 EIA Regulations).

- 5.15. The Planning Act is the principal legislation governing the examination of an application for a Nationally Significant Infrastructure Project (NSIP) and the decision whether to grant development consent.

- 5.16. The development consists of a solar photovoltaic (PV) generating station with an output in excess of 50 megawatts (MW) and this currently comprises an NSIP to which sections s14(1)(a) and s15(2) of the Act apply. Section 104(1) of the Act applies if 'any National Policy Statement (NPS) has effect in relation to development of the description to which the application relates' (a 'relevant National Policy Statement'). In such a case, the SoS would have to determine an application in accordance with the relevant NPS, subject to where specific exceptions apply (s104(3)), in this instance the relevant National Policy Statement include: -

- Overarching National policy Statement for Energy (EN-1) published in November 2023 and came into force on 17 January 2024
- National Policy Statement for Renewable Energy Infrastructure (EN-3) published in November 2023 and came into force on 17 January 2024.

5.17. The legal requirement under s38(6) of the Planning and Compulsory Purchase Act 2004 to determine applications for development consent in accordance with development plan documents does not apply to NSIP applications submitted pursuant to the Planning Act 2008. The Development Plan can be a matter that is both important and relevant to the determination of the Project. The development plan for the site comprises a number of documents and the pertinent parts are:

- Babergh and Mid Suffolk Joint Local Plan Part 1 2018 to 2037 – adopted by Mid Suffolk District Council on 20 November 2023
- Suffolk Minerals and Waste Local Plan – adopted 9 July 2020.

6. Landscape and Visual

Introduction

- 6.1. The landscape and visual chapter of the ES will review the Project, order limits and its surrounding context in order to describe and identify the relative level of effects arising as a result of the Project, in relation to the landscape features, the character of the local landscape and the visual amenity of people who view the site and surrounding landscape. The scoping report has been informed by desktop study and site visits to the site and surrounding area.
- 6.2. This chapter is supported by the following figures (all provided at the end of this chapter).
- Figure 6.1 – Site Location Plan
 - Figure 6.2 – Environmental Designations
 - Figure 6.3 – Landscape Character
 - Figure 6.4 – Screened Zone of Theoretical Visibility
 - Figure 6.5 – Viewpoint Location Plan
 - Figure 6.6 – Residential Properties

Consultation

- 6.3. No formal consultation in relation to landscape or visual aspects of the proposed development has been undertaken to date. This does not preclude any such opportunities to engage with relative consultees during or following the scoping stage.

Baseline Conditions

Site Context

- 6.4. The site broadly lies between the settlements of Wickham Skeith, to the north, Thwaite to the east and Mendlesham to the south and with a pattern of dispersed small villages and scattered farmsteads within and surrounding the site.

Landscape Designations

- 6.5. The site, as identified on the Site Location Plan at Figure 6.1, is not covered by any designation at a national, regional, or local level that recognises a specific landscape importance, as shown at Figure 6.2.
- 6.6. The Mid Suffolk Footpath, a 27 km linear route, crosses the north eastern field within the site and also, for a distance of approximately 350 m, lies adjacent to the south-eastern boundary close to the settlement of Mendlesham. Several other public rights of way

provide walking connections between the surrounding settlements and scattered farmsteads. Those which extend within the site are as follows:

- Connected footpaths 5 (Mendlesham) and 16 (Wickham–Skeith);
- Footpath 45 (Wickham Skeith); and
- Footpath 3 (Thwaite) along which the Mid Suffolk Footpath follows a route.

6.7. A number of listed buildings are located close to the site boundary, including Thwaite Lodge Farmhouse, Elm Farm, Great Oak Farm, Allfield Farmhouse, Walnut Farmhouse, Hunter’s Moon, Poplar Farmhouse and Barn at Thwaite Hall (all of which are Grade II Listed). Parts of Mendlesham and Wickham Skeith are also covered by conservation areas. Listed buildings and Conservation Areas are also shown at Figure 6.2.

Landscape Character

6.8. The site lies centrally within National Character Area (NCA) 83: South Norfolk and High Suffolk Claylands. The key characteristics of most relevance to the site and its surroundings are set out below:

- Large plateau area of chalk glacial till that is generally flat or only gently undulating, but can be locally concave. The edges of the plateau have been dissected by watercourses that form greater slopes, especially along the tributaries of the Waveney;
- 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;
- A dispersed settlement pattern on small nucleated market towns with architectural variety and colour, loosely clustered villages and scattered hamlets. Settlement is often focused around large medieval greens. Many of the market towns have modern extensions; and
- The Mendlesham and Tacolneston masts (tall communications masts), wind turbines at Eye Airfield and high-tension overhead powerlines are prominent modern features in the landscape.

6.9. The Suffolk Landscape Character Assessment (SLCA) 7 (online resource) has been carried out jointly by Suffolk County Council and all district councils, including Mid Suffolk District Council.

- 6.10. Most of the site is located within the Plateau Claylands landscape character type (LCT 10), with some areas to the north-eastern and eastern edges of the site located within the Rolling Valley Claylands Landscape Character Type (LCT 17), as shown at Figure 6.3.
- 6.11. A summary of the key characteristics of LCT10: Plateau Claylands are described as “A gently rolling heavy clay plateau with sparse woodland cover and some extensive areas of post WWII field boundary loss – This landscape character covers a large area in central north Suffolk from Great Ashfield and Walsham-le-Willows across the district border into Suffolk Coastal and extending down to the edge of the Gipping valley. This landscape type covers the majority of the district and is the core landscape of the High Suffolk and south Norfolk National Character Area⁸”.
- 6.12. The key characteristics of LCT10 that are of most relevance to the site and its local landscape are set out below:
- Plateau of heavy clay soil very gently undulating or flat dissected by small streams;
 - Substantial hedges of hawthorn blackthorn and elm with oak and ash predominant hedgerow trees;
 - Extensive areas of hedgerow loss creating “arable prairies”;
 - Dispersed settlement, villages with multiple nuclei, landscape scattered with farmsteads and hamlets;
 - Large modern agricultural buildings a recurrent feature;
 - Redundant WWII airfields;
 - Almost no woodland;
 - Small copses in villages and around farmsteads; and
 - A working landscape on which suburbanisation is only beginning to make an impact compared with other parts of the country.
- 6.13. A summary of the key characteristics of LCT17: Rolling Valley Claylands are described as “The Rolling Valley Clayland is found in the upper reaches of most of the east Suffolk rivers including: the Rattlesden River and other western tributaries of the Gipping, from Stowmarket upstream to Felsham, Little Finborough, Combs and Ringshall; the River Dove upstream from Wetheringsett to Eye and Hoxne, together with its tributaries the Gold Brook (from Denham) and the Chickering Beck (from Horham); the River Waveney from Hoxne eastward and out of the district and River Deben and its tributaries including one that stretches from Monk Soham and out across the district border”.
- 6.14. The characteristics of LCT 17 that are of most relevance to the site and its local landscape are set out below:
- Gently sloping valleys on medium clay soils;

- Fields often smaller than on surrounding plateaux;
- Ancient woodland on the upper fringes of the valley sides.

6.15. The following additional descriptions are contained within the Joint Landscape Guidance document and are considered to also be relevant to the sites landscape context:

- This Landscape is found on the sides of the valleys that cut through the central clay plateau of Suffolk. Whilst most slopes are generally moderate there are some places, in particular the tributaries of the Waveney at Fressingfield and Mendham where the slopes are very steep and unexpected within the East Anglian landscape;
- Field sizes are generally small and natural in character, with substantial and long-established hedges of hawthorn, blackthorn and dogwood;
- Although woodland cover is fragmented the small pockets of woodland have a considerable visual impact such as Combs Wood and Muckinger Wood near Ringshall; and
- The hedges are of a typical mix of clayland species, most prominently ash and oak and the established network of hedges have a significant visual impact within this landscape of valleys.

Landscape Features

6.16. The topography is generally very gently undulating, both across the site and the wider study area. The site is in agricultural use, with a pattern of dispersed small villages and scattered farmsteads within and surrounding it. Fields within the site are generally large in scale, mostly arable and with established field boundaries comprising native hedgerows with scattered trees. Some small-scale woodland copses are present within the landscape, although very few are located within the site, mainly located surrounding nearby farmsteads or surrounding villages.

6.17. Lattice pylons and overhead line extend within the site between Wickham Road and Mendlesham Road.

6.18. In relation to landscape features, it is envisaged that most existing features of value (trees, hedgerows) could be retained and enhanced within a proposed layout, with opportunities for new landscape features to be added for both landscape and ecological benefits.

Residential Properties and Settlements

6.19. The nearest settlements include Mendlesham to the south, Wickham Skeith to the north, and Thwaite to the east. There are a number of individual residential properties that lie within proximity to the site.

Roads and Rights of Way

- 6.20. The minor roads of Wickham Road and Mendlesham Road are located adjacent to the site and which are linked by an unnamed road to which the site is located to both or one side. These provide links between settlements, including Wickham Skeith, Mendlesham and Thwaite and individual properties.
- 6.21. For a short distance at the southern boundary near Mendlesham, footpath 5 (Mendlesham) extends within the site. This connects with footpath 16 (Wickham-Skeith) which extends entirely within the site. Footpath 45 (Wickham-Skeith) crosses within the western part of the site and Footpath 3 (Thwaite), along which the Mid Suffolk Footpath is located, extends within the north eastern field within the site for approximately 570 m.

Relevant Policy Context

- 6.22. Sections 4.7 and 5.10 of the Overarching National Policy Statement for Energy (EN-1⁸) and Paragraphs 2.5.2 and 2.10.93–2.10.101 of National Policy Statement for Renewable Energy Infrastructure (EN-3)⁹ are of relevance to landscape and visual matters.

National Planning Policy

- 6.23. The government revised the National Planning Policy Framework (NPPF) in December 2023. This document sets out a general presumption in favour of sustainable development (paragraph 11) and guides the Local Planning Authorities in the production of Local Plans and in decision making.
- 6.24. Paragraph 174 of the NPPF in relation to valued landscapes, states:
- 6.25. 'Planning policies and decisions should contribute to and enhance the natural and local environment by:
- 6.26. a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);
- 6.27. b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland...'

⁸ Department for Energy Security & Net Zero (November 2023) Overarching National Policy Statement for Energy (EN-1). Available at:

<https://assets.publishing.service.gov.uk/media/65bbf6dc709fe1000f637052/overarching-nps-for-energy-en1.pdf>

⁹ Department for Energy Security & Net Zero (November 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>

The Babergh and Mid Suffolk Joint Local Plan

6.28. The Babergh and Mid Suffolk Joint Local Plan Part 1 was adopted in November 2023. Policies of relevance to landscape and visual matters include the following:

- Policy SPO9 Enhancement and Management of the Environment
- Policy LP17 Landscape
- Policy LP24 Design and Residential Amenity

6.29. The Councils are currently consulting on draft Supplementary Planning Documents (SPDs) one of which relates to Biodiversity and Trees and will be of relevance to the Project.

Parish of Mendlesham Neighbourhood Development Plan

6.30. The southern part of the site falls in the Parish of Mendlesham Neighbourhood Development Plan, which was adopted 2018–2037, version 4.8.2 (Referendum Version), Revised Autumn 2022.

- Policy MP10: Open Spaces
- Policy MP11: Public Rights of Way and Countryside Access

Likely Significant Effects (construction, operation and decommissioning)

6.31. It is proposed that the chapter will consider the potential effects of the Project upon:

- Individual landscape features and elements;
- Landscape character; and
- Visual amenity and the people who view the landscape.

6.32. The chapter will address all phases of the Project and effects will be considered both during the construction phase, when the Project is being built (temporary effects) and following completion of the Project (long term effects) but noting that these are temporary and reversible, given that permission is sought for a time-limited period of 40 years. Landscape and visual effects would be assessed both in the winter of year 1 (the year in which the construction is completed, and the Project becomes operational) and also in the summer of year 15 (15 years of operation). In the Year 15 scenario it is assumed that vegetation planted as part of the Project will have established and exhibit a degree of maturity. In addition, consideration to the decommissioning would also be undertaken.

6.33. Consideration shall be given to seasonal variations in the visibility of the Project, and these will be described where necessary.

- 6.34. Both beneficial and adverse effects shall be identified in the assessment and reported as appropriate. Effects shall be described as 'neutral' where beneficial effects are deemed to balance the adverse effects. The adverse and beneficial effects shall be communicated in each case so that the judgement is clear.
- 6.35. The type of receptors which would be considered include residential, recreational and road users.

Study Area

- 6.36. In order to assist with defining the study area a Screened Zone of Theoretical Visibility (SZTV) was initially produced at a range of up to 10 km and which identified potential locations from which the Project may be visible. The SZTV has been produced using Digital Terrain Modelling (DTM) and LIDAR data. Existing built development (8 m tall) and larger blocks of woodland have also been modelled (15 m tall) to take account of the screening effect that these would provide. The potential screening effects provided by smaller blocks of woodland and hedgerows/hedgerow trees, particularly those within and surrounding the site, are reflected through the use of LiDAR data which reflects the varied heights of screening features at the time of the LiDAR survey.
- 6.37. The SZTV has been run at an average height of 3 m across the site for the elements which form the Project.
- 6.38. The SZTV is a useful tool used to provide a focus on the area and receptors that are most likely to be affected by a proposed development but should always be subject to verification in the field. In this regard, site visits were undertaken in 2022 to understand the actual likely visibility of development at the site.
- 6.39. Following a review of the initial 10 km SZTV and following further on-site analysis, it is proposed that an appropriate study area for the assessment is 3 km, as indicated on the SZTV at Figure 6.4. In locations beyond 3 km, where the site and any development on it would be visible, the Project is unlikely to result in any visual effects greater than minor. This is due to the minimal degree to which the Project would alter the overall view, which at these distances, and when considering the local topography, would be more heavily influenced by other features and characteristics of the view.

Receptors/elements to be scoped out of the assessment

- 6.40. Based on the desk study, field work, the professional judgement of the LVIA team and experience of delivering other solar energy projects, the following elements are proposed to be scoped out of detailed assessment.
- Effects on receptors located outside of the Screened Zone of Theoretical Visibility (SZTV);
 - Effects on landscape character areas outside of the study areas where it is judged that potential significant effects are unlikely to occur;
 - Chapter 4 sets out the methodology for identification of development which will be included within the Cumulative Landscape and Visual Impact Assessment (CLVIA). Where an approved development does not meet all of the criteria, or is

located beyond 3 km from the site boundary, it will not be taken forward for further consideration in the CLVIA; and

- Potential effects during the decommissioning phase of the Project.

Assessment Viewpoints

- 6.41. The assessment of visual effects will be undertaken with reference to viewpoint analysis as recommended by best practice guidelines. It is however acknowledged that viewpoints are simply snap shots of the view from a small number of the potential locations where the proposals would be visible. The visual assessment will therefore provide a broader discussion of visual effects on a range of visual receptors throughout the study area with reference made to the views represented by the selected viewpoints.
- 6.42. Based on initial site work, a provisional list of viewpoints has been developed which it is considered would be appropriate for the assessment. The proposed locations are set out in Table 6.1 below and are illustrated on the 3 km SZTV plan at Figure 6.5. The list of viewpoints has been selected to represent a range of views and viewer types. The viewpoints cover a variety of different landscape character types and different visual receptor groups.

Table 6.1 Proposed Viewpoint Locations

Viewpoint No.	Approximate Coordinates	Viewpoint Description
1	610190, 267730	Public Right of Way 16 within Site
2	609913, 268117	Wickham Road at Elm Farmhouse
3	610459, 268192	Wickham Road (View North)
4	610698, 268198	Wickham Road (View South)
5	611254, 268289	Mid Suffolk Footpath (Thwaite 3) North of Thwaite
6	611008, 269253	Mid Suffolk Footpath (Stoke Ash 19) West of Colsey Wood
7	611581, 268858	A140 Layby
8	610840, 266725	Mid Suffolk Footpath (Mendlesham 6) South West of Brockford Hall

9	610478, 266195	Mid Suffolk Footpath (Mendlesham 6) North of Mendlesham
10	612710, 265949	Junction of Hockley Hill and Hall Lane at War Memorial
11	265949, 266653	Mendlesham Road to the west of Chantry Corner
12	608022, 266507	Mendlesham Road west of Holly Tree Cottages
13	608946, 268176	Public Right of Way 45 (Wickham Skeith) within Site
14	608626, 269279	Public Right of Way 7 north west of Wickham Skeith
15	609947, 269117	Public Right of Way 15 (Wickham Skeith)

Supporting Visual Material

6.43. It is proposed that the LVIA be accompanied by visualisations of the Project proposals to illustrate the view from five of the viewpoints in the area surrounding the site. The proposed locations are set out below:

- Viewpoint 1 – Public Right of Way (Wickham Skeith No. 16);
- Viewpoint 5 – Mid Suffolk Footpath (Thwaite 3) North of Thwaite;
- Viewpoint 6 – Mid Suffolk Footpath (Stoke Ash 19) West of Colsey Wood;
- Viewpoint 9 – Mid Suffolk Footpath (Stoke Ash 19) West of Colsey Wood; and
- Viewpoint 11 – Mendlesham Road to the west of Chantry Corner.

6.44. The visualisations would be undertaken using landscape institute guidance, namely 'Visual Representation of Development Proposals, Technical Guidance Note 06/19, September 2019'. Visualisations would be produced during two different time periods at both Year 1 and at Year 15 with the benefit of maturing vegetation.

Mitigation and Enhancement

6.45. As part of the Project, areas of new planting would be introduced. Newly planted vegetation takes a number of years to mature and average growth rates shall be taken into consideration in the assessment. The effectiveness of vegetation would improve over time (both in terms of integrating the Project into the surrounding landscape and in

providing visual screening) and this shall be considered appropriately. Consideration to local landscape character and vernacular would be taken account of, to avoid creating landscape features which are discordant with local character.

- 6.46. Proposals for landscape mitigation and / or enhancement would be embedded as part of the Project parameters.

Assessment Methodology

- 6.47. It is acknowledged from the outset that, in common with almost all commercial solar energy development proposals, some landscape and visual effects would occur as a result of the Project.
- 6.48. A key principle of the European Landscape Convention is that all landscapes matter and should be managed appropriately. It is also acknowledged that landscapes provide the surroundings for people's daily lives and often contribute positively to the quality of life and economic performance of an area.
- 6.49. The LVIA undertaken as part of the Environmental Statement (ES) will be undertaken by Chartered Landscape Architects at Pegasus Group who are experienced in the assessment of landscape and visual effects of solar energy developments and are familiar with the local landscape.

Overview of Approach and Methodology

- 6.50. It is proposed that the main objectives of the LVIA will be as follows:
- To identify, evaluate and describe the current landscape character of the site and its surroundings and also any notable individual or groups of landscape features within the site;
 - To determine the sensitivity of the landscape to the type of development proposed;
 - To identify potential visual receptors (i.e. people that would be able to see the development) and evaluate their sensitivity to the type of changes proposed;
 - To identify and describe any impacts of the development in so far as they affect the landscape and/or views of it and evaluate the magnitude of change due to these impacts;
 - To identify and describe mitigation measures that have been adopted to avoid, reduce and compensate for landscape and visual effects;
 - To identify and assess any cumulative landscape and visual effects; and
 - To evaluate the level of residual landscape and visual effects.

Published LVIA Guidance

- 6.51. The LVIA shall be undertaken in accordance with the principles of best practice, as outlined in published guidance documents, notably the third edition of the Guidelines

for Landscape and Visual Assessment (GLVIA3), (Landscape Institute and the Institute for Environmental Management and Assessment, 2013).

- 6.52. The methodology and assessment criteria for the assessment shall be developed in accordance with the principles established in this best practice document. It should be acknowledged that GLVIA3 establishes guidelines, not a specific methodology. The preface to GLVIA3 states:
- 6.53. 'This edition concentrates on principles and processes. It does not provide a detailed or formulaic 'recipe' that can be followed in every situation – it remains the responsibility of the professional to ensure that the approach and methodology adopted are appropriate to the task in hand.'
- 6.54. The approach shall therefore be developed specifically for this assessment to ensure that the methodology is fit for purpose.

Distinction between Landscape and Visual Effects

- 6.55. In accordance with the published guidance, landscape and visual effects shall be assessed separately, although the procedure for assessing each of these is closely linked. A clear distinction has been drawn between landscape and visual effects as described below:
- 6.56. Landscape effects relate to the effects of the proposals on the physical and perceptual characteristics of the landscape and its resulting character and quality; and
- 6.57. Visual effects relate to the effects on specific views experienced by visual receptors and on visual amenity more generally.

Residential Visual Amenity Assessment

- 6.58. A general consideration with regard to the visual amenity of residential properties will be included within in the LVIA. Residential properties within the Study Area are shown at Figure 6.6.
- 6.59. For uninvolved residential properties located within 250 m of the Project, a separate standalone Residential Visual Amenity Assessment (RVAA) will be prepared as an Appendix to the chapter. The RVAA will be prepared in line with the principles set out in best practice guidance 'Residential Visual Amenity Assessment (RVAA) –Technical Guidance Note O2/19, Landscape Institute (2019). This sets out that 'there are no standard criteria for defining the RVAA study area nor for the scope of the RVAA, which should be determined on a case-by-case basis taking both the type and scale of proposed development, as well as the landscape and visual context, into account'. In this case, it is considered that a detailed 250 m RVAA study area should be an appropriate basis on which to consider the potential for any overbearing effects on residential properties to arise.

Significance Criteria

- 6.60. The level (relative significance) of landscape and visual effects is determined by combining judgements regarding the sensitivity of the landscape or view, magnitude of

change, duration of effect and the reversibility of the effect. In determining the level of residual effects, all mitigation measures are taken into account.

- 6.61. The relative level of effect is described as major, moderate/major, moderate, moderate/minor, minor or minor/no effect. No effect may also be recorded as appropriate where the effect is so negligible it is not even noteworthy. Those effects described as major, major/moderate and in some cases moderate, may be regarded as significant effects as required by the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, however, the final conclusions are as a result of professional judgement.

Assessment of Cumulative Effects

- 6.62. The assessment of cumulative landscape or visual effects of the Project with other existing solar development will be set out in the LVIA. Cumulative Landscape and visual effects of the Project with any consented but unbuilt, or in planning energy-based development within 3 km of the site boundary will also be assessed within the LVIA.

Conclusions on Scoping

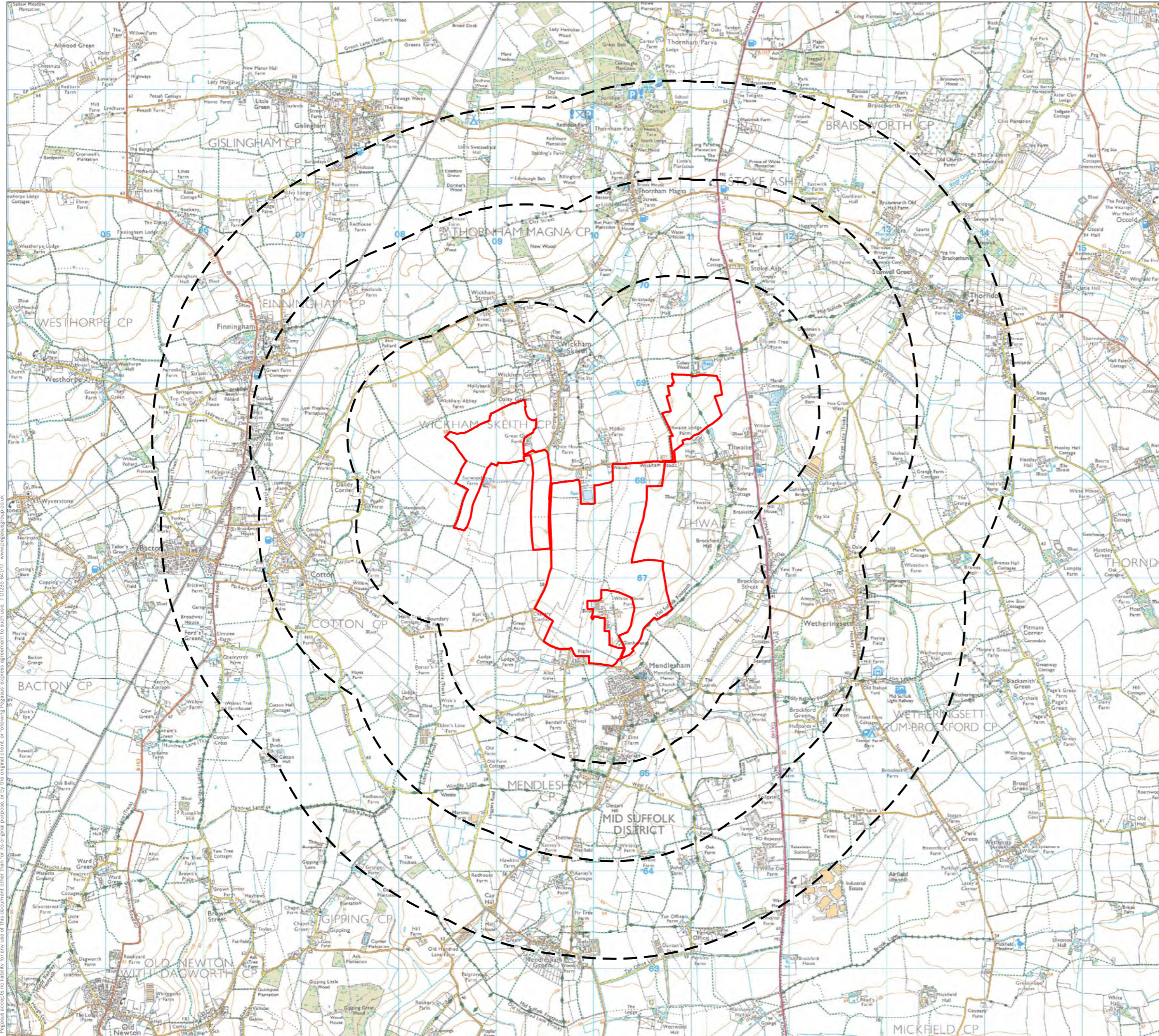
- 6.63. Table 6.2 below summarises the results, in our considered opinion, of the scoping assessment. Please note, while the final assessment within the ES will deal with each likely impact and landscape or visual receptor individually, this table gives a broad indication of the overall residual effects considered likely.

Table 6.2 Landscape and Visual Aspects to be Scoped In / Out

Landscape or Visual Receptor	Scoped In / Out
Effects arising during the construction and operational phases, except for those which are scoped out.	In
Landscape features within the site and at its boundaries (such as trees, hedgerows, land use, topography).	In
Effects on national, regional and local landscape character within the SZTV and within 3 km of the site boundary.	In
Effects on national, regional and local landscape character outside the SZTV or beyond 3 km of the site boundary.	Out
Effects on visual receptors within the 3 km study area and within the SZTV	In

Effects on visual receptors outside the SZTV or beyond the 3 km study area.	Out
Cumulative development meeting the criteria set out and located within the 3 km study area	In
Cumulative development not meeting the criteria set out or located beyond 3 km of the site boundary	Out
Effects arising during the decommissioning phase	Out

Figure 6.1 – Site Location Plan



KEY

- Draft Order Limits
- 1km, 2km & 3km Buffers

FIGURE 6.1 - SITE LOCATION PLAN

White Elm Solar Farm

CLIENT Elmya RPC UK Grange Road Limited 0 1.5 km

DATE	SCALE	TEAM	APPROVED
16/10/2024	1:40,000@A3	CS	DT

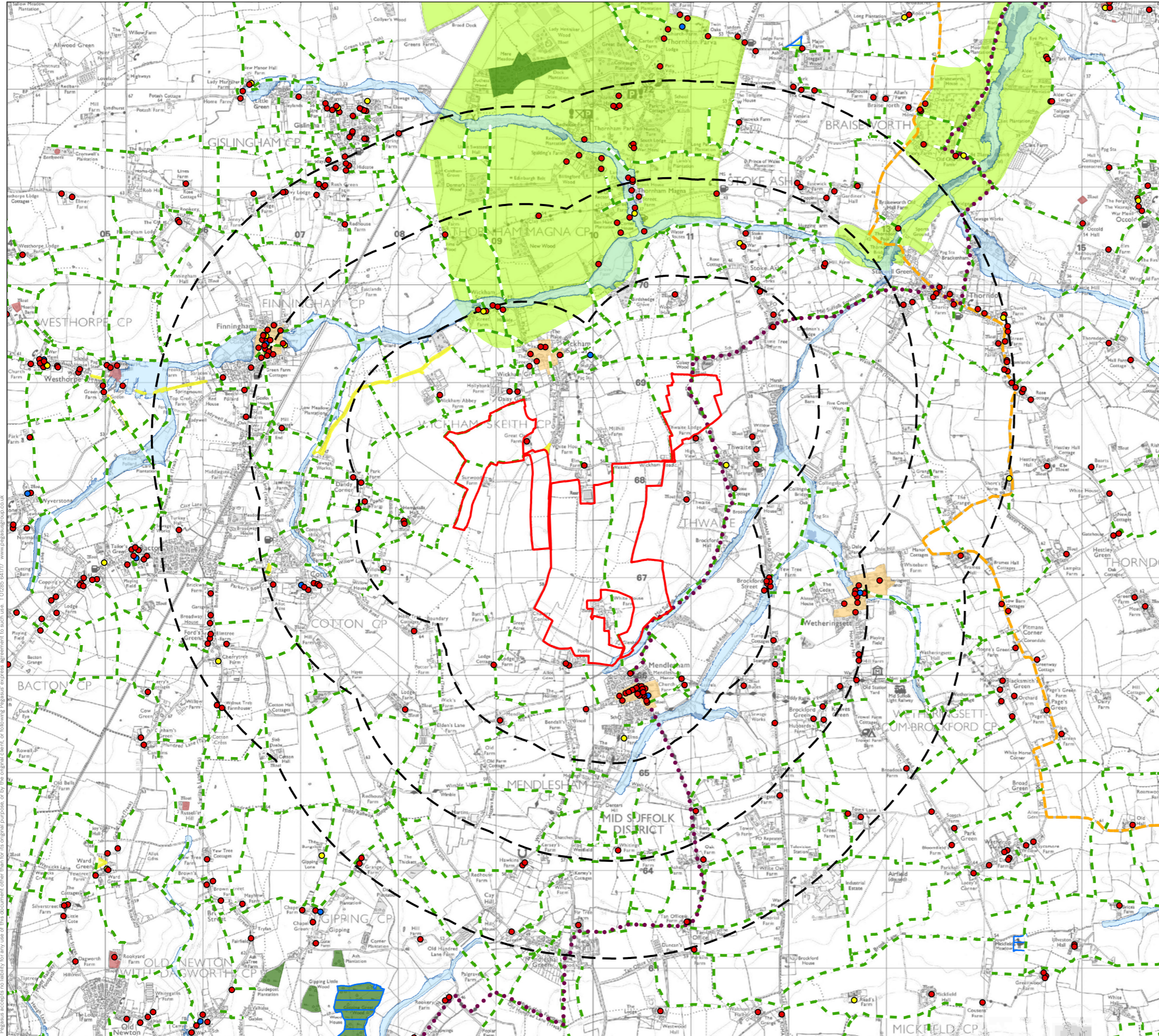
SHEET	REVISION
-	B

DRAWING NUMBER
P23-0396_EN_04



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Figure 6.2 – Environmental Designations



- KEY**
- Draft Order Limits
 - 1km, 2km & 3km Buffers
 - Mid Suffolk Long Distance Route
 - Public Rights of Way
 - National Cycle Network
 - Grade I Listed Building
 - Grade II* Listed Building
 - Grade II Listed Building
 - CRoW Access Land
 - Scheduled Monuments
 - Conservation Area
 - Sites of Special Scientific Interest
 - Ancient Woodland
 - EA Flood Zone 3
 - EA Flood Zone 2
 - Former Special Landscape Area (Mid Suffolk Local Plan 1998)

FIGURE 6.2 - ENVIRONMENTAL DESIGNATIONS PLAN

White Elm Solar Farm

CLIENT Elmya RPC UK Grange Road Limited 0 1.5 km

DATE	SCALE	TEAM	APPROVED
16/10/2024	1:40,000@A3	CS/NC	DT

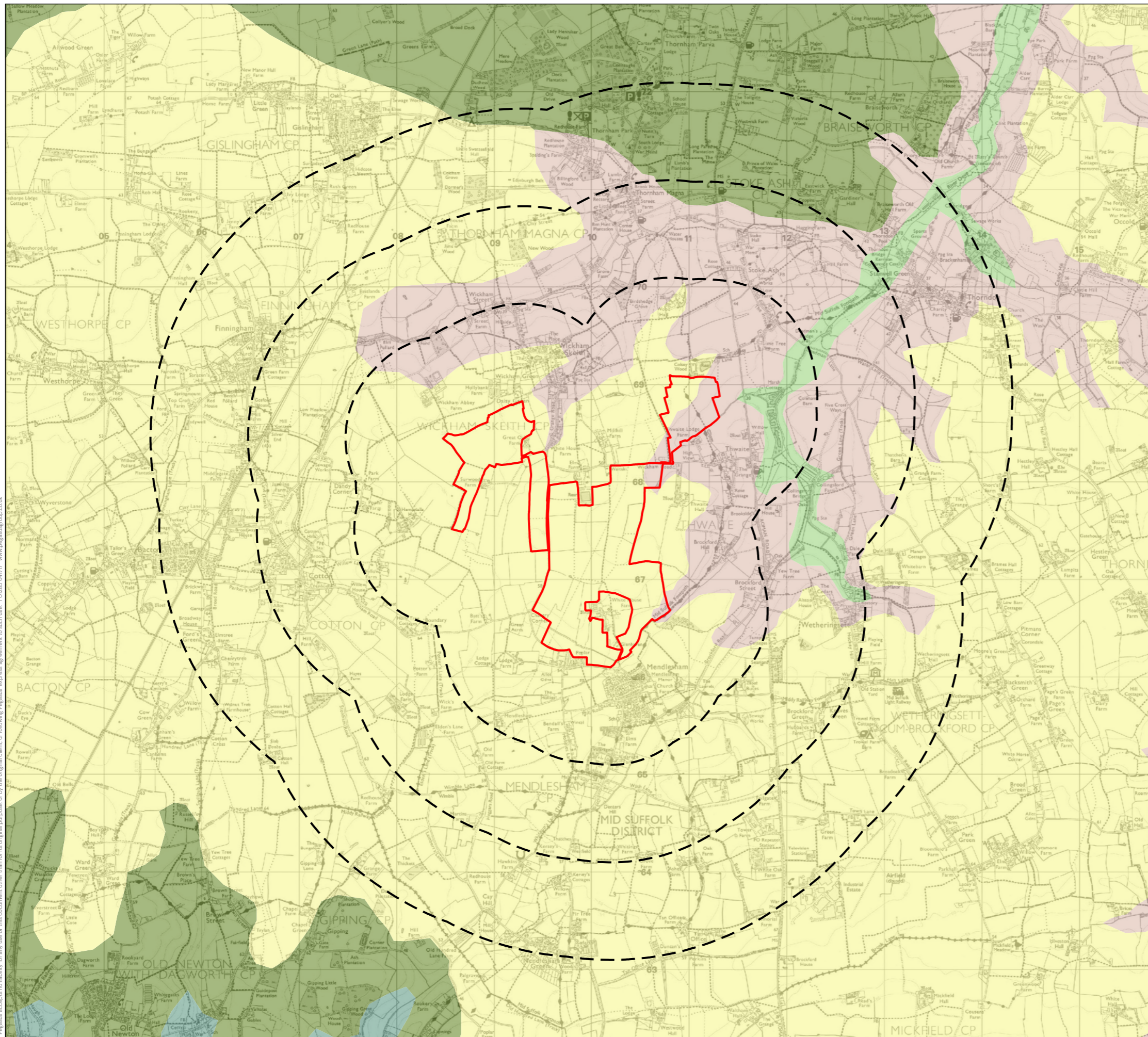
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DRAWING NUMBER P23-0396_EN_05 **PEGASUS GROUP**

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Figure 6.3 – Landscape Character

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KEY

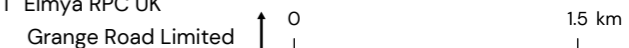
- Draft Order Limits
- 1km, 2km & 3km Buffers
- Suffolk Landscape Assessment (2020) - Landscape Character Types
- Ancient Plateau Claylands
- Plateau Claylands
- Rolling Valley Claylands
- Rolling Valley Farmlands and Furze
- Wooded Valley Meadowlands
- Wooded Valley Meadowlands and Fens

FIGURE 6.3 - LANDSCAPE CHARACTER PLAN

White Elm Solar Farm

CLIENT Elmya RPC UK

Grange Road Limited



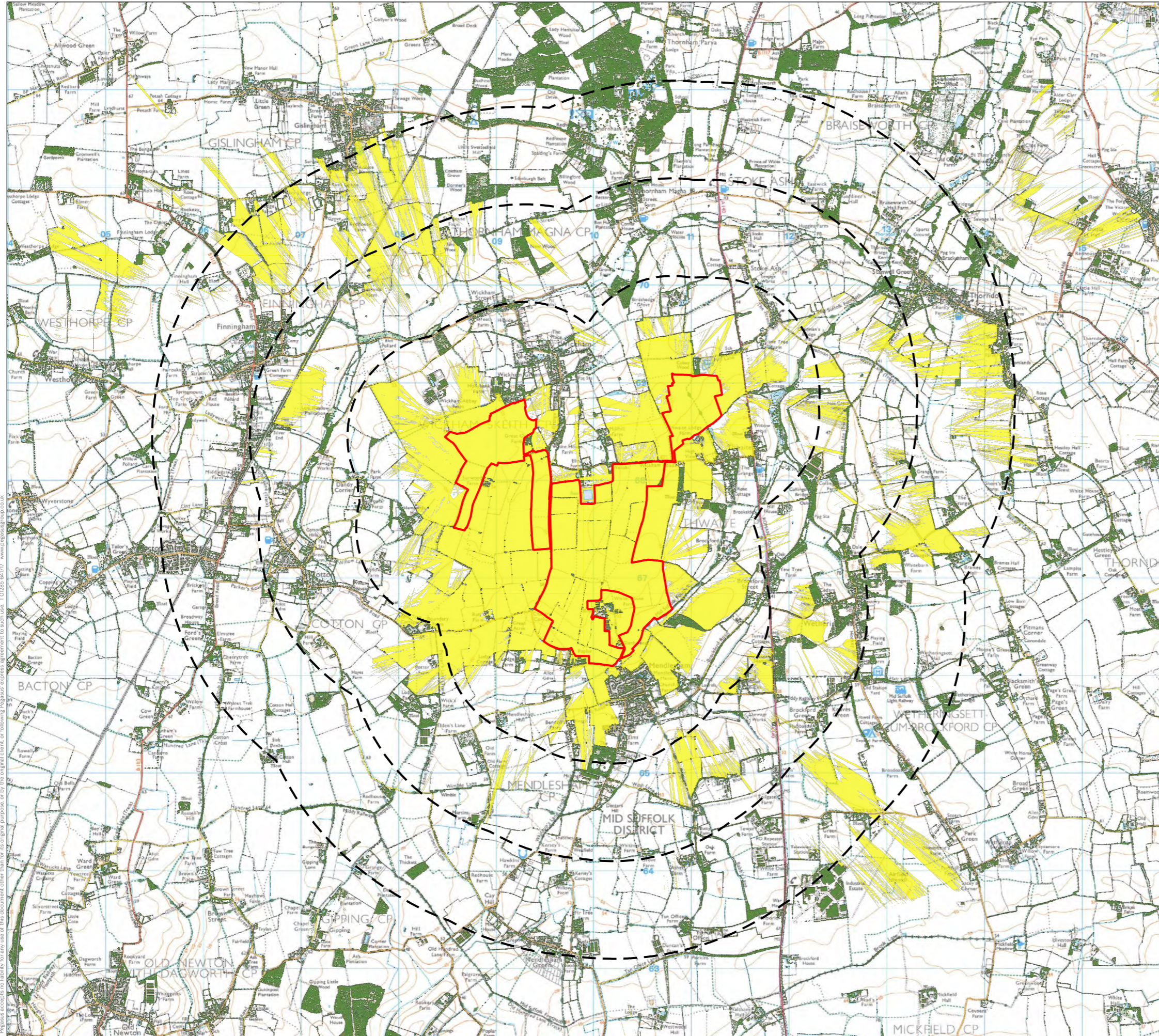
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Figure 6.4 – Screened Zone of Theoretical Visibility



KEY

- Draft Order Limits
- 1km, 2km & 3km Buffers
- Surface Features Extracted from LiDAR > 1.5m
- Zone of Theoretical Visibility - 3m Development Height

EA LiDAR Screened ZTV Production Information -
 - EA LiDAR Data (Environment Agency Open Data Release) has been utilised; combining the Digital Terrain Model (DTM) and Digital Surface Model (DSM) to derive screening features.

This method of ZTV takes into account the varied heights of screening features as derived from historic LiDAR surveys, and is therefore representative of the time of survey for that area. Any changes in vegetation cover or building addition/removal will not be taken into account after this date.

- Viewer height set at 1.7m (in accordance with para 6.11 of GLVIA Third edition)
- Calculations include earth curvature and light refraction

N.B. This Zone of Theoretical Visibility (ZTV) image illustrates the theoretical extent of where the development may be visible from, assuming 100% atmospheric visibility.

Date of LiDAR survey data: 2022

FIGURE 6.4 - SCREENED ZONE OF THEORETICAL VISIBILITY

White Elm Solar Farm

CLIENT Elmyra RPC UK Grange Road Limited 0 1.5 km

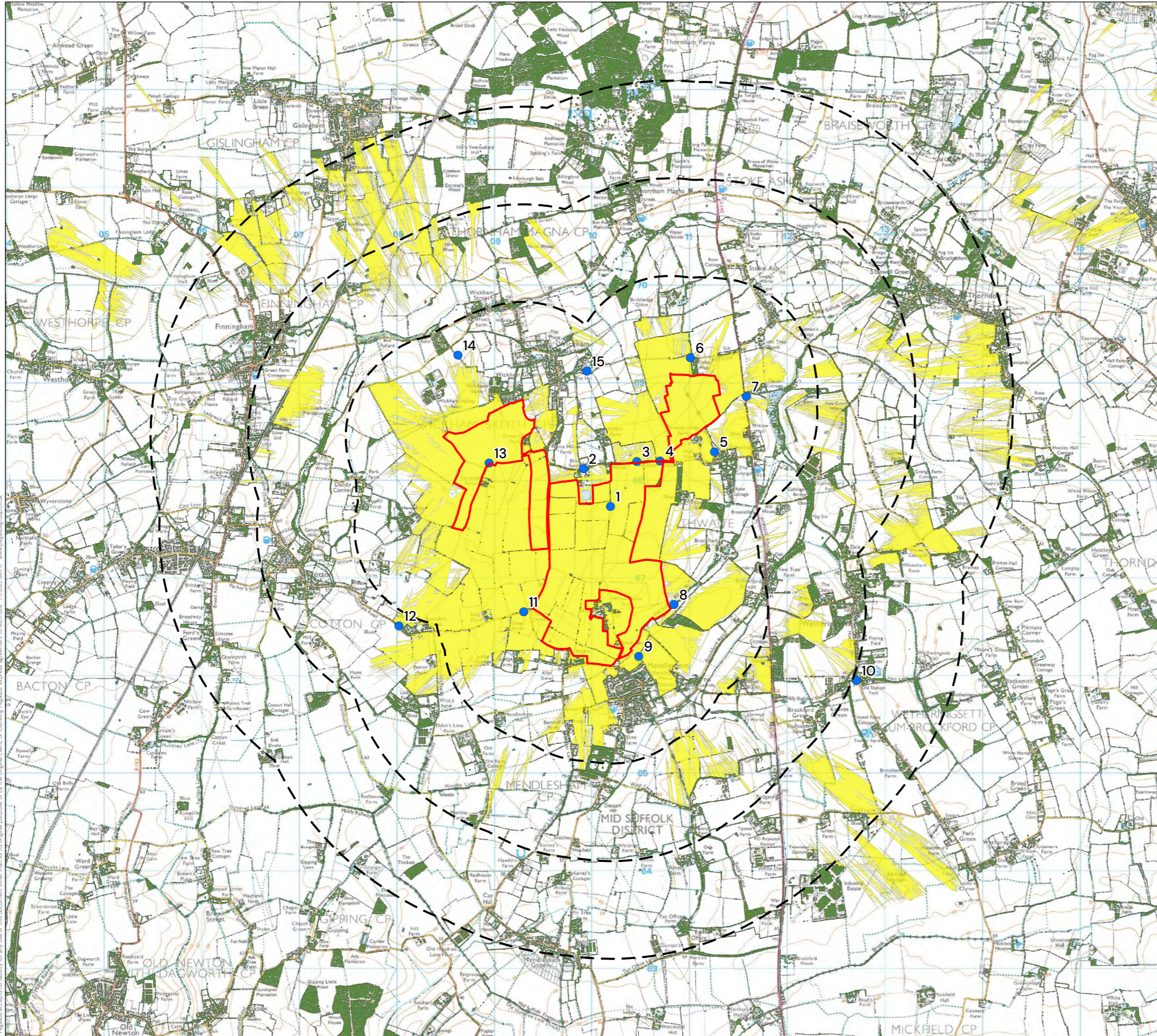
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Figure 6.5 – Viewpoint Location Plan



KEY

- Draft Order Limits
- 1km, 2km & 3km Buffers
- Surface Features Extracted from LiDAR > 1.5m
- Zone of Theoretical Visibility - 3m Development Height
- Viewpoint Location

EA LiDAR Screened ZTV Production Information –
 – EA LiDAR Data (Environment Agency Open Data Release) has been utilised; combining the Digital Terrain Model (DTM) and Digital Surface Model (DSM) to derive screening features.

This method of ZTV takes into account the varied heights of screening features as derived from historic LiDAR surveys, and is therefore representative of the time of survey for that area. Any changes in vegetation cover or building addition/removal will not be taken into account after this date.

- Viewer height set at 1.7m (in accordance with para 6.11 of GLVIA Third edition)
- Calculations include earth curvature and light refraction

N.B. This Zone of Theoretical Visibility (ZTV) image illustrates the theoretical extent of where the development may be visible from, assuming 100% atmospheric visibility.

Date of LiDAR survey data: 2022

FIGURE 6.5 - VIEWPOINT LOCATON PLAN

White Elm Solar Farm

CLIENT Elmya RPC UK Grange Road Limited 0 1.5 km

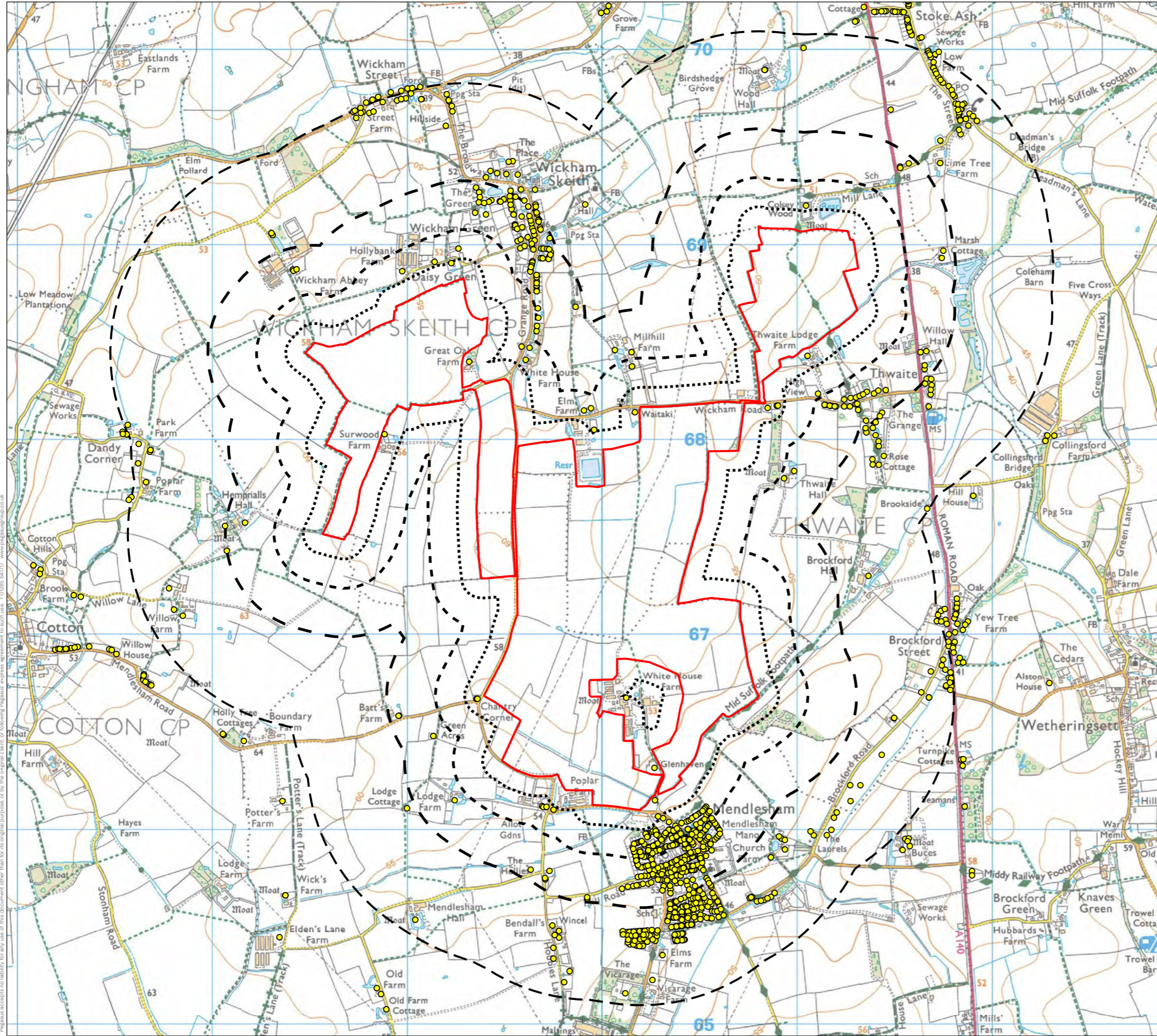
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Figure 6.6 – Residential Properties



- KEY**
- Draft Order Limits
 - 1km Buffer
 - 250m Buffer
 - 500m Buffer
 - 100m Buffer
 - Residential Properties

FIGURE 6.6 - RESIDENTIAL PROPERTIES

White Elm Solar Farm

CLIENT Elmya RPC UK

Grange Road Limited

DATE	SCALE	TEAM	APPROVED
16/10/2024	1:20,000@A3	CS/NC	DT

SHEET	REVISION
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DRAWING NUMBER
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7. Nature Conservation and Biodiversity

Introduction

- 7.1. The Nature Conservation and Biodiversity Chapter of the Environmental Statement will assess the potential effects of the Project on important ecological features and will detail any proposed mitigation and/or compensation measures required to avoid, minimise, restore or offset adverse effects.
- 7.2. This section of the EIA Scoping Report details the approach to baseline information gathering and to the assessment of potential effects on ecology, in accordance with current best practice. An overview of likely significant effects proposed to be assessed within the Environmental Statement chapter is also provided.
- 7.3. Ecological features which will form the basis of the assessment will include:
- Statutory and non-statutory sites designated for nature conservation at international, national and local levels;
 - Habitats and Species of Principal Importance for the conservation of biodiversity; and
 - Other legally protected, red-listed or notable species of conservation interest.
- 7.4. The chapter will describe an ecological baseline derived from extensive site and desk-based surveys and assess the relative level of effects likely to arise, together with any avoidance, mitigation and compensation measures necessary to reduce these effects in accordance with nature conservation legislation and planning policy. Proposals for ecological enhancement to contribute to local conservation priorities and delivery of Biodiversity Net Gain (BNG) in line with the Environment Act 2021¹⁰ and national and local policies will also be presented.

Figures

- 7.5. This chapter is supported by the following figures:
- Figure 7.1: International Statutorily Designated Sites within 30km of the Site Boundary with mobile quantifying Species
 - Figure 7.2: Nationally Statutorily Designated Sites within 5km of the Site Boundary
 - Figure 7.3: Non-Statutorily Designated Sites within 2km of the Site Boundary
 - Figure 7.4: Priority Habitats within 2km of the Site Boundary

¹⁰ Environment Act 2021, c.30. Available at: <https://www.legislation.gov.uk/ukpga/2021/30/contents>

Consultation

- 7.6. Natural England has been contacted via the organisation's Discretionary Advice Service (DAS) for consultation relating to survey scope, although no formal advice has been received to date. Further consultation will be undertaken with Natural England, relevant local authorities and their nature conservation consultees, the Environment Agency and other interested parties such as Suffolk Wildlife Trust.

The Site and Ecological Context

- 7.7. The Site is situated in central-north Suffolk, on land north of Mendlesham; south of Wickham Skeith; and west of Thwaite and Brockford Street. The Site is located either side of Grange Road and Wickham Road, west of the A140 and covers approximately 272ha.
- 7.8. The Site comprises primarily agricultural habitats, with the majority of the Site consisting of large open arable fields cultivated with a range of crop types. Few field margins are present at the boundaries of the arable fields with 1m wide or less grass margins being prevalent. Arable margin habitats recorded included two areas categorised as wild bird seed mix managed to provide benefits to biodiversity. A relatively small number of grassland areas were recorded within the Site, along with one small block of broadleaved woodland and three small patches of scrub habitat. Fields within the Site are bounded by a network of hedgerows. These are a mixture of species-rich and species-poor features, and often include mature standard trees or are associated with ditches. Within the hedgerows and woodlands, a small number of trees were noted as having veteran characteristics. Several individual trees were also recorded that were not associated with hedgerows.
- 7.9. A network of wet and dry drainage ditches were recorded alongside hedgerow features. Some open ditches were also recorded. Three larger watercourses classified as streams were noted within the Site, these provide connectivity to watercourses in the surrounding area. Several ponds are present within the Site and constitute part of a wider pond network, with a relatively high number of ponds within the surrounding landscape.
- 7.10. The habitats within the Site are generally similar to those found in the wider local landscape, which is dominated by agricultural land use.

Baseline Survey Effort and Scope

Desk Study

- 7.11. A desk study and data search was undertaken as follows:
- 7.12. A search for 'International' designated sites for nature conservation within 10km of the Site Boundary using the Multi-Agency Geographic Information for the Countryside (MAGIC) website¹¹. International sites included Species Areas of Conservation (SACs),

¹¹ Available at: <https://magic.defra.gov.uk/magicmap.aspx>

Special Protection Areas (SPAs), and Ramsar sites, as well as proposed or potential SACs, SPAs and Ramsar sites. The search area was extended to 30km for International designated sites for which migratory birds or bats are listed as a quantifying feature.

- 7.13. A search for 'National' designated sites for nature conservation within 5km of the Site Boundary using the MAGIC website. National designated sites included Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs) and Local Nature Reserves (LNRs).
- 7.14. Information on 'Local' designated sites for nature conservation within 2km of the Site Boundary was obtained from the Suffolk Biodiversity Information Service (SBIS). Locally designated sites included County Wildlife Sites (CWSs) and Roadside Nature Reserves.
- 7.15. A search for Habitats of Principal Importance (also known as Priority Habitats) and registered Ancient Woodland within 2km of the Site Boundary was undertaken using the Natural England 'Priority Habitats Inventory'¹² and 'Ancient Woodland Inventory'¹³ datasets respectively.
- 7.16. Information pertaining to existing records on legally protected species and species of conservation concern within 2km of Site Boundary was obtained from SBIS.
- 7.17. The MAGIC website was consulted for records of European Protected Species (EPS) licences issued for mitigation projects concerning EPS within 2km of the Site Boundary.
- 7.18. The National Fish Populations Database (NFPD), held by the Environment Agency (EA) and accessed through the EA's Ecology & Fish Data Explorer¹⁴, was consulted for freshwater fish monitoring data within the relevant river catchment (Waveney).
- 7.19. The distances used in the search radii outlined above are considered proportionate to the scale of protection and likely sensitivity of the features listed above, as well as typical home ranges of wildlife species supported by them. It is considered unlikely that the project would give rise to impacts on designated sites beyond these ranges and so are considered to include the Zone of Influence of the Project. The chosen, standard, search radii are considered to remain appropriate when considering the potential for cumulative impacts from other solar development proposals.

Field Surveys

- 7.20. A suite of baseline ecological surveys have been undertaken since November 2023 and will continue throughout 2024. The field survey effort and scope presented in Table 7.1 below reflects what is believed at the time of writing to be appropriate and proportionate to inform the evaluation of baseline conditions for this Project based on our professional judgement. As Ecological Impact Assessment and scoping are iterative processes, the scope may be extended or modified in due course as influenced by

¹² Available at: <https://naturalengland-defra.opendata.arcgis.com/datasets/Defra::priority-habitats-inventory-england/about>

¹³ Available at: <https://naturalengland-defra.opendata.arcgis.com/datasets/ancient-woodland-england/explore>

¹⁴ Available at: <https://environment.data.gov.uk/ecology/explorer/>

emerging survey results, as well as through consultation with stakeholders, local planning authorities and nature conservation organisations.

Table 7.1 Field Survey Scope and Surveys Completed to Date

Survey Type	Methodology	Date	Overall Status
Extended UK Habitat Classification (UKHab) Survey	Habitat survey and condition assessment of the Site. Follows JNCC (2010) ¹⁵ , IEA (1995) ¹⁶ , UKHab ¹⁷ and Natural England ¹⁸ guidance. Surveys recorded habitats of low to medium distinctiveness, primarily agricultural habitats associated with arable production.	November 2023	Completed
Badger Walkover Survey	Walkover survey to search for badger setts and field signs, conducted in conjunction with the Extended UKHab Survey.	November 2023	Completed (no further survey proposed)
Ground Level Tree Assessments for Roosting Bats	Daytime ground-based assessments of all trees within the Site Boundary for potential to support roosting bats. Follows Bat Conservation Trust (BCT) Good Practice Guidelines ¹⁹ as informed by the Bat Tree Habitat Key.	November 2023	Completed (No further survey proposed)
Building Inspections for Roosting Bats	Daytime inspections of buildings within Site Boundary to assess their suitability to support roosting bats. Only required if adequate corridors and offsets cannot be provided in the design. To follow Bat Conservation Trust Good Practice Guidelines if necessary.	March–November 2024	Not required as all farmstead buildings are excluded

¹⁵ JNCC (2010) Handbook for Phase 1 Habitat Survey – a technique for environmental audit. Joint Nature Conservation Committee, Peterborough

¹⁶ Institute of Environmental Assessment (1995). Guidelines for Baseline Ecological Assessment. E & FN Spon, London

¹⁷ UKHab Ltd (2023). UK Habitat Classification Version 2.0 (at www.ukhab.org)

¹⁸ Natural England (2023) The Statutory Biodiversity Metric: Technical Annexe 1 – Condition Assessment Sheets and Methodology

¹⁹ Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). The Bat Conservation trust, London

			from the order limits
Wintering Bird Surveys	Five wintering bird survey visits. Method follows British Trust for Ornithology (BTO) Common Bird Census techniques ²⁰ as informed by http://birdsurveyguidelines.org .	November 2023 – March 2024 (1 survey season)	Completed
Breeding Bird Surveys	Six breeding bird survey visits. Method follows British Trust for Ornithology (BTO) Common Bird Census techniques as informed by http://birdsurveyguidelines.org .	March – June 2024 (1 survey season)	Completed
Automated Bat Activity Surveys	Monthly static bat detector surveys utilising 16 detector locations per month between April – October inclusive. Follows Bat Conservation Trust Good Practice Guidelines.	Scheduled April – October 2024 (1 survey season)	Ongoing
Otter and Water Vole Surveys	Spring and autumn walkover surveys of all watercourses and ditches to search for evidence of otters and water voles, and to assess the suitability of these features to support these species. Follows Water Vole Field Signs and Habitat Assessment guidance by Mike Dean and The Water Vole Mitigation Handbook by The Mammal Society. Follows Mammal Society survey guidance ²¹ .	Scheduled Spring survey April 2024 Autumn survey August – September 2024 (1 survey season)	Completed
Great Crested Newt	Environmental DNA (eDNA) surveys of all accessible ponds within the Site and	Scheduled	Ongoing

²⁰ Bibby, C.J., Burgess, N.D., Hill, D.A. and Mustoe, S.H. (2000). Bird Census Techniques. Academic Press, London

²¹ Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016) The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series). The Mammal Society, London

eDNA Surveys	surrounding 250m. Follows Freshwater Habitats Trust eDNA survey guidance ²² .	April 2024– June 2025 (Second survey season required in 2025 for off-Site ponds)	
Modular River Physical (MoRPH) Survey and River Condition Assessments	MoRPh surveys to be completed on all applicable watercourses within the Site Boundary to inform Biodiversity Net Gain Assessment. Follows MoRPh field survey methodology and the River Type desk-based exercise ^{23,24} .	Scheduled September 2024	Completed
Rare Arable Weed Surveys	A rare arable weed survey will be undertaken of the arable fields in the mid-summer in conjunction with the UKHab condition assessment for grasslands. A further late season visit may be undertaken in August or early September if the initial survey finds significant diversity or rare species.	July 2024 (1 survey season)	Completed

Baseline Conditions

- 7.21. This section aims to provide a summary of desk study and preliminary survey information, to identify ecological features within and relevant to the Site.

²² Biggs J, Ewald N, Valentini A, Gaboriaud C, Griffiths RA, Foster J, Wilkinson J, Arnett A, Williams P and Dunn F (2014). Analytical and methodological development for improved surveillance of the Great Crested Newt. Defra Project WC1067. Freshwater Habitats Trust: Oxford.

²³ Shuker, L.J et al (2017) MoRPh: a citizen science tool for monitoring and appraising physical habitat changes in rivers. *Water and Environment Journal*, 31(3): 418–424

²⁴ Gurnell et al (August 2021) A Guide to Assessing River Condition – Part of the River and Streams Component of the Biodiversity Net Gain Metric

Designated Sites

- 7.22. Statutory and non-statutory designated sites for nature conservation identified within the data search are summarised below, and in Figures 7.1 – 7.3, which also provide maps showing the locations of the designated sites in relation to the Project Boundary.

Statutory

- 7.23. No international designated sites were identified within 10km of the Site. However, eight international designated sites with qualifying mobile species (bats and/or migratory birds) were identified within the wider search radius of 30km. The search radius was extended for these features due to the highly mobile nature and larger home ranges of these species which can extend beyond 10km. Details of these sites are provided in Table 7.2 below, and the locations are shown in Figure 7.1.

Table 7.2 Internationally Designated Sites within 30km of the Site

Site Name	Size (ha)	Distance and Direction from Site	Reason for Designation
Breckland SPA	39432.75	17.2km north-west	During the breeding season the area regularly supports 60.1% of the GB breeding population of Eurasian stone curlew, 12.2% of the GB breeding population of nightjar and 28.7% of the GB breeding population of woodlark.
Deben Estuaries SPA	981.08	24.1km south-east	Over winter the area regularly supports 7.5% of the GB population of avocet and 0.8% of the population of brent geese.
Deben Estuary Ramsar	978.93	24.1 south-east	Supports nationally and internationally important flora and fauna including internationally important assemblage of dark-bellied brent geese (1.9% of GB population) and nationally important assemblages of black-tailed godwit, common greenshank, bean goose, shelduck, avocet, spotted redshank and common redshank.
Stour & Orwell Estuaries Ramsar	3676.92	24.8km south	A wetland of international importance, comprising extensive mudflats, low cliffs, saltmarsh and small areas of vegetated shingle. It provides habitats for important assemblage of wetland birds in the non-breeding season & internationally important number of wintering and

			passage wildfowl and waders including dark-bellied brent goose, northern pintail, grey plover, red knot, dunlin, black-tailed godwit and common redshank.
Stour & Orwell Estuaries SPA	3667.37	24.8km south	During the breeding season the area regularly supports 3.6% of the GB population of avocet and the site supports an internationally important assemblage of birds over winter including northern pintail, black-bellied brent geese, dunlin, red knot, black-tailed godwit, grey plover and common redshank.
Sandlings Special Protection Area (SPA)	3405.72	26.6km south-east	During the breeding season the area regularly supports 3.2% of the GB breeding population of nightjar and 10.3% of the GB breeding population of woodlark.
Aide-Ore Estuary Ramsar	2546.99	30km south-east	The site comprises the estuary complex of the rivers Aide, Butley and Ore and includes a variety of habitats including intertidal mudflats, saltmarsh, vegetated shingle, saline lagoons and grazing marsh. The site supports notable assemblages of breeding and wintering wetland birds including avocet, redshank and lesser black-backed gull.
Aide-Ore Estuary SPA	2403.5	30km south-east	During the breeding season the area regularly supports at least 1.9% of the GB breeding population of marsh harrier 23.1% GB breeding population of avocet, 2% GB breeding population of little tern and 1.2% GB breeding population of sandwich tern. Over winter the site regularly supports 0.4% of the GB population of ruff and 60.3% of the GB population of avocet.

7.24. Three national designated sites for nature conservation were identified within 5km of the Site. These designated sites were Gipping Great Wood SSSI, Mickfield Meadow SSSI and Major Farm, Braiseworth SSSI. Details of these sites are presented in Table 7.3 below, and the locations are shown in Figure 7.2.

Table 7.3 Nationally Designated Sites within 5km of the Site

Site Name	Size (ha)	Distance and Direction from Site	Reason for Designation
Mickfield Meadow SSSI	1.72	4.8km South-west	This site consists of a small meadow managed on traditional lines which supports a species-rich unimproved neutral grassland flora of a type formerly widespread in Suffolk before the advent of modern farming methods. There is a good variety of grasses and herbs, including <i>Fritillaries Fritillaria meleagris</i> .
Gipping Great Wood SSSI	25.2	3.9km South-south-east	<p>Gipping Great Wood is an ancient coppice-with-standards wood on a plateau site situated close to the headwaters of the River Gipping. The wood is a good example of the North East Suffolk type of hornbeam wood with several giant coppice stools. A complex mosaic of standtypes is present including extensive areas of acid pedunculate oak-hazel-ash woodland and pedunculate oak-hornbeam woodland with patches of wet ash-maple woodland and invasive elm. The ground flora is characteristic of an ancient woodland site on slightly calcareous boulder clay and includes two uncommon species.</p> <p>Ground flora includes the uncommon Thin-spiked Wood Sedge <i>Carex strigosa</i> and the site is considered to hold the greatest concentration of this species in Eastern England. A small population of Oxlip <i>Primula elatior</i>, a scarce species here at the limit of its distribution, is also present.</p>
Major Farm, Braiseworth SSSI	1.2	3.4km North-north-east	Major Farm Meadow is damp and species-rich, one of the few remaining unimproved hay meadows in Suffolk. The meadow is shallow-sloping, on boulder clay of low soil fertility, and characterised by an abundance of mole-hills.

7.25. Two local, non-statutory designated sites for nature conservation were identified within 2km of the Site, the details for which are provided in Table 7.4 below, and the locations are shown in Figure 7.3.

Table 7.4 Locally Designated Sites within 2km of the Site

Site Name	Size (ha)	Distance and Direction from Site	Reason for Designation
Roadside Nature Reserve 116	0.06ha	1.56km east	A Roadside Nature Reserve designated for containing sulphur clover and early purple orchid.
Thornham Estate Woods County Wildlife Site (CWS)	105.18ha	845m north	The Thornham Estate contains a number of woodlands including View Wood and Birdshedge Grove which are within 2km of the site. The woodlands support species rich flora and a good range of butterflies and moths. Birdshedge Grove is of particular conservation value, situated between grazing meadows in the Dove valley and arable land to the south. The waterlogged areas at the base of the slope support a particularly diverse range of plants and birds. Three rare moss species have also been recorded. Surveys of the estate ponds show a number of them provide valuable refuge for wetland plants and aquatic invertebrates and great crested newts have been recorded in a number of ponds.

Priority Habitats

7.26. The following Habitats of Principal Importance (HPIs) and Local Priority Habitats identified in the Suffolk Local Biodiversity Action Plan (BAP) all occur either within the Site Boundary, or in areas within 2km of the Site Boundary and are therefore considered capable of being impacted by the proposals.

On-Site

- Hedgerows: fields were bounded by a network of hedgerows, that were a mixture of species-rich and species-poor in composition with mature trees noted frequently within. Hedgerows were often recorded in associated with dry and wet ditches.

- Veteran trees: a small number of trees were noted as having veteran characteristics within the hedgerows and woodland blocks.
- Rivers and streams: three sections of watercourses were identified within the Site Boundary.
- Ponds: a total of 14 ponds were recorded within the Site Boundary, with the majority connected to the ditch network bounding the Site. A further 38 ponds were identified within 250m of the Site Boundary.
- Arable field margins: a couple of arable field margins managed for the benefit of wildlife were recorded within the Site, containing wild bird seed mixtures.

Off-Site

- 7.27. Deciduous Woodland, Woodpasture and Parkland BAP and Coastal and Floodplain Grazing Marsh were all present within 2km of the Site. Deciduous Woodland was identified immediately adjacent to the red line boundary. The locations are shown in Figure 7.4.

Protected and Priority Species

- 7.28. This section outlines the results of species-specific surveys relating to the Site as well as the desk study, for which species records within 2km of the Site were obtained.

Badgers

- 7.29. No records of badger *Meles meles* were returned within the desk study, however fifteen badger setts were recorded within and adjacent to the Site Boundary including one main sett, three subsidiary setts and eight outlier setts. Signs of badger activity were also noted within the Site. The margins of fields, grassland, woodland and scrub habitats are considered to represent suitable foraging habitat for local badger groups.

Bats

- 7.30. Numerous records of at least eleven bat species were returned during the desk study, including twenty-five roost records and two granted European Protected Species (EPS) licences within 2km. A large number of mature trees on Site were identified as having potential to support roosting bats during preliminary ground-based assessment, however the arable habitats were considered to be of limited suitability for foraging bats. All of these were present in the boundary habitats. A small number of agricultural buildings were present adjacent to or partially enclosed by the Site Boundary, with varying levels of suitability for roosting bats. Automated bat activity surveys completed to date have identified at least seven bat species including common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, Nathusius' pipistrelle *Pipistrellus nathusii*, *Myotis sp.*, *Nyctalus sp.*, barbastelle *barbastelle barbastellus*, and *Plecotus sp.*

Otters and Water Voles

- 7.31. Four records of otter *Lutra lutra* and ten records of water vole *Arvicola amphibius* were returned during the desk study. The watercourses within the Site were considered

suitable habitat for otter while the ditches were considered suboptimal for this species. No evidence of otter was recorded during the survey undertaken in April 2024. The watercourses and ditch network within the Site were considered suitable habitat for water vole. The presence of water vole was confirmed within the south of the Site during the survey in April 2024.

Hazel Dormice

- 7.32. No records of hazel dormice *Muscardinus avellanarius* were returned within the desk study. Hazel dormice are known to be present in Suffolk, however the majority of the records are located in the south of the county, within the Stour Valley, with the closest known population of dormice identified approximately 18km south-west of the Site Boundary within Bradfield Woods. The hedgerow network across the Site provides suboptimal habitat for dormice, due to a number of hedgerows being largely defunct. The local area also lacks significant areas of woodland in close proximity to the Site which would help support a viable population. It is highly unlikely that the Site could be functionally linked to any populations of dormice, therefore this species should be scoped out of future assessment.

Other Mammals

- 7.33. Other mammals of principal importance for conservation will be considered in the ecological assessment. Based on current statuses and known distributions, this will be restricted to brown hare *Lepus europaeus*, harvest mice *Micromys minutus* and hedgehog *Erinaceus europaeus*.
- 7.34. Eight records of brown hare were returned during the desk study, and several sightings of brown hare have been recorded within the Site Boundary during ecological surveys. The large fields and open farmland habitats represent suitable habitat for this species, including field margins and woodland edge habitat.
- 7.35. No records of harvest mice were returned during the desk study, however tussocky grassland, arable field margins and hedgerows provide suitable habitat for this species.
- 7.36. A large number of West European hedgehog records were returned during the desk study. Arable habitats on Site are largely sub-optimal for hedgehog, however boundary habitat and woodland/scrub edges provide suitable habitat for the species.

Amphibians

- 7.37. Four records of great crested newt (GCN) *Triturus cristatus* and three class licence returns for GCN were returned during the desk study. Two records of common toad *Bufo bufo*, and a single record of a smooth newt *Lissotriton vulgaris* and common frog *Rana temporaria* were also returned during the desk study. Fourteen ponds were recorded within the Site and a further thirty-eight ponds were recorded within 250m. eDNA surveys completed to date have recorded presence of GCN in one pond within the Site, with further ponds off-Site to be sampled in 2025. Terrestrial habitats on Site are generally limited in quality and extent, comprising hedgerow bases, tussocky grassland, field margins and woodland edges.

Reptiles

- 7.38. No records of reptiles were returned during the desk study and habitats within the Site are largely sub-optimal for reptiles, with suitable habitat restricted to hedgerow bases, watercourses, tussocky grassland and woodland edges. No targeted surveys for reptiles are proposed within the scope of works, however their presence on-site has been assumed for the purpose of this assessment.

Birds

- 7.39. Records of 77 bird species were returned during the desk study, of which 23 are Species of Principal Importance²⁵, 15 are Schedule 1 species under the Wildlife and Countryside Act²⁶, and 11 are Annex 1 species under the Birds Directive²⁷. A total of 56 species are also listed as red and amber Birds of Conservation Concern by the BTO²⁸. Woodland, hedgerows, scrub and trees offer suitable nesting and foraging opportunities for a range of bird species, and arable habitats within the Site provide suitable habitat for farmland birds, including ground-nesting species such as skylark *Alauda arvensis*. Wintering bird surveys have recorded a moderate diversity of birds, including several notable species. Breeding bird surveys have recorded skylark territories within the Site. Notable species including turtle dove have also been recorded using the Site, individuals have been recorded singing in scrub and hedgerows in the northern portion of the Site on several occasions.

Invertebrates

- 7.40. A small number of records of notable invertebrate species, including nine records of moths and seven records of butterflies were returned during the desk study. The majority of habitat within the Site, comprising intensively managed arable fields, are not considered to be of high intrinsic value for invertebrates or likely to support notable communities of invertebrate species. Hedgerows, field margins, trees, ditches and watercourses provide suitable habitat for a range of species. It is anticipated that habitat of higher value for invertebrates will be predominantly retained and protected during construction as part of the detailed Project design, and thus potential for detrimental impacts on invertebrates are consequently low. In light of this, it is not considered necessary to conduct detailed field survey for terrestrial or aquatic invertebrates. However, given the potential for benefits to invertebrate fauna within these habitats and beyond from the cessation of intensive agriculture and habitat enhancement measures, invertebrates should remain within the scope of the assessment.

Plants

- 7.41. A small number of records of rare or notable plants were returned by the desk study. The most pertinent records related to arable weeds and included Shepherds needle

²⁵ Natural Environment and Rural Communities Act 2006, Section 41. Available at:

<https://www.legislation.gov.uk/ukpga/2006/16/section/41>

²⁶ Wildlife and Countryside Act (1981) Available at: <https://www.legislation.gov.uk/ukpga/1981/69/schedule/1>

²⁷ Directive 2009/147/EC of the European Parliament and of the Council (2009) Available at:

<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0147>

²⁸ Available at: <https://www.bto.org/sites/default/files/publications/bocc-5-a5-4pp-single-pages.pdf>

Scandix pecten-veneris (endangered Red list critically endangered, Section 41 species, UKBAP), stinking chamomile *Anthemis cotula* (Red-list vulnerable) rye brome *Bromus secalinus* (Red list lower risk near threatened), dwarf spurge *Euphorbia exigua* (Red list Vulnerable), Welsh poppy *Meconopsis cambrica* (Nationally scarce non-red list), cornfield knotgrass *Polygonum rurivagum* and wild pansy *Viola tricolor* (Red list- lower risk near threatened).

- 7.42. Records relating notable trees included those of Scots pine *Pinus sylvestris* (nationally scarce – non red listed) from the Mendlesham area and Black poplar *Populus nigra* subsp. *Betulifolia* (present 2km to the west).
- 7.43. A small number of rare or protected grassland species were also returned which including Pyramidal orchid *Anacamptis pyramidalis* (CITES Annexe B), early purple orchid *Orchis mascula* (CITES Annexe B), hounds-tongue *Cynoglossum officinale* (Red-listed lower risk near threatened), crosswort *Cruciata laevipes* (Red-listed lower risk near threatened) and galingale *Cyperus longus* (Red-listed lower risk near threatened).
- 7.44. Habitats within the Site were generally typical of heavily managed agricultural land, with limited opportunities for notable botanical communities to thrive however given the presence of critically endangered arable species such as Shepherds needle having been recorded as present in the vicinity a rare arable weed survey is proposed. Notable trees have been identified in the initial UKHab survey. In terms of notable grassland species or assemblages the grasslands within the Site will be subject to detailed botanical quadrat surveys and grassland condition assessments between June – July 2024 to ensure that an accurate assessment of their floristic diversity and quality can be made.

Fish

- 7.45. No records of fish were returned during the desk study.
- 7.46. No specific surveys for this group are being undertaken, however fish will be considered at the impact assessment stage to ensure that any potential impacts, such as risk of watercourse pollution and incursion, are taken into account.

Invasive and Non-native Species

- 7.47. Records of four invasive and non-native species were returned during the desk study, including American mink *Neovison vison*, Himalayan balsam *Impatiens glandulifera*, Japanese knotweed *Fallopia japonica* and Nuttall's waterweed *Elodea nuttallii*. No invasive plant or animal species have been recorded within the Site, to date.

Potential Sources of Impact

- 7.48. The following sources of impacts, given here to provide context in the scoping assessment, may affect the various ecological features identified within the Site and give rise to significant effects. The examples given are not exhaustive.
- 7.49. Chartered Institute of Ecology and Environmental Management (CIEEM) guidance draws a necessary distinction in Ecological Impact Assessment between 'impacts' and 'effects'. An 'impact' is an action resulting in changes to an ecological feature, whereas an 'effect' is the outcome to an ecological feature from an impact. Impacts are

discussed here while potential effects and potential options for mitigation are discussed later in this chapter.

Construction Phase

- **Habitat Loss and Habitat Change:** Limited habitat loss (for example within hedgerows) may occur where access for construction and operation is required where existing field accesses cannot be used or need to be widened. Other examples include clearance to facilitate any permanent hard standing such as foundations or footings. Habitat change will principally be associated with the reversion of arable fields to grassland and other habitats through management, as well as habitat creation where valuable habitat creation opportunities are identified.
- **Killing and Injury:** Habitat clearance and construction operations have the potential to cause direct harm to a range of species.
- **Fragmentation:** Described by CIEEM as, “The breaking up of a habitat, ecosystem or land-use type into smaller parcels with a consequent impairment of ecological function”. Potentially in combination with habitat loss and habitat change, fragmentation can reduce the function of a habitat as well as impede the ability of a species to disperse and maintain a viable population. Installation of fencing or culverting streams may also cause fragmentation, as well as through excessive light and/or noise disturbance.
- **Disturbance:** Pressures or changes in the environment acting on individuals of a species so as to alter their behaviour may arise through noise, movement and vibration during construction operations, as well as increased human presence.
- **Pollution and Habitat Degradation:** Release of chemical, sediment or dust pollution can interfere with the normal function of habitats and directly harm species, while processes such as erosion, compaction and alteration of soil/water chemical composition cause the degradation of habitat quality. The construction phase risks the release of pollutants through vehicle and plant movement/operation, as well the introduction of new materials onto and into the soil.
- **Habitat Creation and Enhancement:** Beneficial effects are likely to arise from the creation of new habitats, such as grassland, woodland, hedgerow and wetland habitats, as well as the enhancement of retained habitats through sensitive management, maintenance of development-free buffer zones and increased habitat connectivity. Beneficial effects may also be derived from the cessation of cultivation, chemical treatments and soil inputs.

Operational Phase

- **Habitat Loss and Habitat Change:** As the operational phase will be largely benign, significant impacts on habitats are not anticipated, unless major, unexpected maintenance or repair events are required. The replacement of electrical components, including panels and batteries, may take place during the operational phase. Impacts of replacing components are likely to be less extensive in comparison to the construction phase. Ongoing habitat maintenance will seek to ensure favourable condition and enhancement of all newly created

and retained habitat for the lifetime of the development. Ecological monitoring will be key to realising this.

- **Killing and Injury:** Routine operational works are unlikely to give rise to these effects although there is the risk of direct harm to species from the movement of vehicles around the Site, or the trapping of certain species within the fencing or fenced area.
- **Fragmentation:** The presence of a solar project is anticipated to be habituated to by most species, especially with the creation of new, and enhancement of retained, habitats. Typical perimeter fencing is not considered to impede the movement of most mammals, although movement of deer is likely to be impacted. Migrating birds and bats may interact with or be perturbed by the surfaces of the solar array, so this should be considered.
- **Disturbance:** Operational disturbance may occur through the routine movement of vehicles and personnel on Site, as well as the presence of low-level noise associated with electrical equipment. Light reflection may be another factor.
- **Electro-Magnetic Fields (EMFs):** The potential for effects of anthropogenic EMFs on ecology is an emerging and poorly-researched issue. It is feasible the EMFs emanating from electrical cables could impact certain species which utilise naturally generated EMFs (for instance for navigation) although to date there is very little evidence of significant behavioural changes from EMFs generated by electric cables. The size of generated fields are highly contingent on geometry, voltage and current, and it is considered that EMFs associated with low voltage interconnecting cables across the Site are unlikely to risk impacts. All electrical cables associated with the Project are expected to be buried underground; buried cables typically have their electric fields fully attenuated by cable sheathing and the substrate under which they are buried. However, magnetic fields and induced electric fields are not attenuated in this way, and there lies a risk of effects on receptive wildlife species, particularly on a number of fish species which are known to have evolved sensitively to electric and/or magnetic fields. As at present the grid connection point is proposed to be located within the Site, and therefore no high voltage export cable will be present, it is considered that the risk of EMFs affecting fish in the watercourses within the Site is highly unlikely. In terms of terrestrial species, it is important to note that there is no evidence to suggest that typical solar array infrastructure can cause impacts and, due to the burial, sheathing and relatively low voltage of cabling within generating stations, the overall risk of EMFs resulting in significant effects on terrestrial wildlife is considered highly unlikely. As such, impacts of EMFs should be scoped out of future assessment.
- **Pollution and Habitat Degradation:** The risk of these impacts during operation are very low. Good maintenance practice will be key to avoid further pollution events or degradation of adjacent habitats.
- **Habitat Creation and Enhancement:** Ecological benefits can be maximised through the implementation of a habitat management and monitoring project for the lifetime of the development. Beneficial effects may also be derived from the cessation of cultivation, chemical treatments and soil inputs.

Decommissioning Phase

- 7.50. Considering the anticipated 40 year lifespan of the project, the accurate prediction of decommissioning effects is challenging and can only be informed by the legal, policy and conservation constraints and priorities at the time of application.
- **Habitat Loss and Habitat Change:** It is assumed that the fields will be able to be returned to agricultural use upon decommissioning, therefore this habitat change will need to be considered, including impacts on any newly created habitats.
 - **Killing and Injury:** As per the construction phase, risks for direct harm to species should be considered.
 - **Fragmentation:** While the removal of development infrastructure as a reversal of the construction phase is unlikely to result in habitat fragmentation, the reversion to agriculture may impact the habitats and species which have arisen as a result of the project.
 - **Disturbance:** Disturbance impacts are likely to be the same as the construction phase.
 - **Pollution and Habitat Degradation:** Pollution and habitat degradation risks are likely to be as per the construction phase.

Summary

7.51. Table 7.5 below identifies the ecological receptors present within the Zone of Influence of the Project that are considered likely to be sensitive to sources of impact described above across the construction, operational and decommissioning phases. This provides a summary of the impact context within which each receptor will be assessed in the Environmental Statement. Please refer to Table 7.6 in Section 7.54 for details on items to be scoped out.

Table 7.5 Ecological Receptors Likely to be Sensitive to Construction, Operational and Decommissioning Phase Impacts

Source of Impact	Sensitive Ecological Receptors
Construction Phase	
Habitat Loss and Habitat Change	Priority habitats, bats, otter, water vole, other mammals, reptiles, amphibians, birds (notably farmland specialists and ground nesting species).
Killing and Injury	Badger, bats, otter, water vole, other mammals, reptiles, amphibians, birds.

Fragmentation	Badger, bats, otter, water vole, other mammals, reptiles, amphibians, birds, invertebrates.
Disturbance	Badger, bats, otter, water vole, other mammals, great crested newt, Schedule 1 birds.
Pollution and Habitat Degradation	Designated sites, priority habitats (including watercourses), badger, bats, otter, water vole, other mammals, reptiles, amphibians, birds, invertebrates, fish.
Habitat Creation and Enhancement	Designated sites, priority habitats, badger, bats, otter, water vole, other mammals, reptiles, amphibians, birds, invertebrates.
Operational Phase	
Habitat Loss and Habitat Change	None.
Killing and Injury	Badger, bats, otter, water vole, other mammals, reptiles, amphibians, birds.
Fragmentation	Bats, other mammals, birds.
Disturbance	Badger, bats, other mammals, Schedule 1 birds.
Electro-Magnetic Fields (EMF)	None.
Pollution and Habitat Degradation	None.
Habitat Creation and Enhancement	Designated sites, priority habitats, badger, bats, otter, water vole, other mammals, reptiles, amphibians, birds, invertebrates.
Decommissioning Phase	
Habitat Loss and Habitat Change	Priority habitats, badger, bats, otter, water vole, other mammals, reptiles, amphibians, birds, invertebrates.
Killing and Injury	Badger, bats, otter, water vole, other mammals, reptiles, amphibians, birds.

Fragmentation	Badger, bats, otter, water vole, other mammals, reptiles, amphibians, birds, invertebrates.
Disturbance	Badger, bats, otter, water vole, other mammals, reptiles, amphibians, birds.
Pollution and Habitat Degradation	Designated sites, priority habitats, badger, bats, otter, water vole, other mammals, reptiles, amphibians, birds, invertebrates, fish.

Potential Beneficial Effects

- 7.52. There is potential for a number of beneficial effects on biodiversity to arise from the Project, further to the ecological enhancement measures to be included within the Project design, such as habitat creation and enhancement, detailed in the relevant sections above. More general effects inherently arising from cessation of intensive agricultural practices within the Site may result in benefits to wildlife, including:
- Halting the application of chemical herbicides and pesticides on previously arable areas is likely to result in increased botanical and invertebrate diversity within the Site;
 - Limiting the application of fertilisers may reduce the build-up of nutrients within the soils;
 - Limited fertiliser application may also reduce the possibility for additional run-off into watercourses within and connected to the Site;
 - Reduced movement of agricultural machinery within the Site may result in reduced levels of disturbance to certain protected species throughout the lifetime of the Project; and
 - Reduced movement of agricultural machinery within the Site may result in reduced soil compaction and/or damage to root systems associated with individual trees, hedgerows and woodland blocks.

Assessment Methodology

- 7.53. The standard approach applied in the UK to Ecological Impact Assessment is that developed by the Chartered Institute of Ecology and Environmental Management (CIEEM) in 2018 and revised in 2019²⁹. This methodology will be used to evaluate existing conditions, and to assess the significance of likely effects on ecological features that may arise during construction, operation and decommissioning of the project. This

²⁹ CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. CIEEM, Winchester.

involves determining the relative importance of each ecological feature and undertaking an impact assessment pre- and post-implementation of mitigation measures. From this, any residual effects likely to occur can be identified, along with an appreciation of their significance.

Impacts and Receptors to be Scoped Out

- 7.54. The following source of impact and ecological receptors will be scoped out of the assessment, with justification provided in Table 7.6 below.

Table 7.6 Ecological Aspects to be Scoped Out

Ecological Receptor Scoped Out	Justification
Potential Source of Impact	
<p>Impacts on EMFs on terrestrial and aquatic species resulting from cables within the Site</p>	<p>Electric fields emanating from all cables associated with the Project will be fully attenuated by cable sheathing and will therefore have no resulting impacts on ecological receptors. Magnetic fields and resulting induced electric fields, are not attenuated in this way, however.</p> <p>There is a lack of evidence on the effects of magnetic and induced electrical fields on wildlife. However, it is considered that EMFs associated with low voltage interconnecting cables across the Site are highly unlikely to result in significant impacts.</p> <p>There is no evidence to suggest that typical solar array infrastructure can cause impacts on terrestrial wildlife and impacts on aquatic wildlife which are known to have evolved sensitively to electric and/or magnetic fields, are more likely to be subject to disturbance from high voltage (400kV) primary export cables, rather than the low voltage cabling within the Site.</p> <p>Given that there will be very limited 400kV high voltage export cable and the voltage of cables to be used within the Site will be mainly 33kV, and also due to the burial, sheathing and relatively low voltage of cabling within generating stations, the overall risk of EMFs resulting in significant effects on terrestrial and aquatic wildlife from cables is considered unlikely. However the 400/33kV substation</p>

	located in the Site, includes high voltage assets with voltage up to 400kV (such as transformers, busbar etc) and as such an overall EMF risk assessment might be advisable.
Ecological Receptors	
Dormice	Hazel dormice are considered likely absent from the Site due to their national distribution, with the closest known population identified approximately 18km south-west of the Site. The hedgerow network across the Site provides suboptimal habitat for dormice and the local area also lacks significant areas of woodland in close proximity to the Site which would help support a viable population.

Baseline Evaluation

- 7.55. When evaluating the baseline biodiversity importance of natural features found within the Site, the following characteristics are considered:
- Animal or plant species which are rare or uncommon, either internationally, nationally or more locally;
 - Ecosystems which provide the habitats required by the above species;
 - Species that are afforded legal protection;
 - Endemic or locally distinct sub-populations of a species;
 - Habitat diversity, connectivity and/ or other synergistic associations;
 - Priority Species and Habitats under the Natural Environmental and Rural Communities (NERC) Act 2006 – Section 41 (as amended);
 - Notably large populations or concentrations of animals considered uncommon or threatened in a wider context;
 - Plant communities that are considered to be typical of valued natural/ semi-natural vegetation types;
 - Species at the edge of their range; and
 - Species-rich assemblages of plants or animals.
- 7.56. Habitats, species and designated sites identified in the baseline conditions will all be attributed with an ecological importance. The importance or potential importance of an

ecological feature will be described in a geographical context (i.e. International, National, Regional, County, District and Local importance). Furthermore, a category of 'Site' importance will be applied to a feature which is present or potentially present within the Site, but where the importance to nature conservation of the feature is of relatively low value in the context of the wider landscape. A further 'Negligible' category will be assigned to features of no particular intrinsic nature conservation importance.

- 7.57. In line with the guidelines set out by CIEEM, the impacts of the project will only be assessed on those Important Ecological Features (IEFs) with importance equal to, or higher than Local level, or where mitigation is required for non-IEFs where it is necessary to ensure legal compliance. Habitats or species which are present for which there may be a potential breach of legislation will be considered to be IEFs, even if the feature itself is not considered to be of significant intrinsic nature conservation importance. Non-statutory designated sites will also be identified as IEFs where these lie within the Zone of Influence of the project.
- 7.58. Published selection criteria, contained within the selection of Biological SSSIs, can also be referred to aid the assessment of importance. Where significant habitats, such as Ancient Woodland, do not carry a designation, these are nevertheless considered at a specified geographic level.

Characterisation of Impacts

- 7.59. When assessing the impact of the development and impacts on baseline conditions, predictions will be made which focus solely on the Zone of Influence for each IEF in the context of the lifetime of the development. The Zone of Influence will be assessed separately for each individual feature. Features considered when defining the Zone of Influence of the Project on each IEF include the vulnerability of sites and habitats to the effects of construction and operation of the array, the mobility of species both on and surrounding the Site, the sensitivity of species to noise and disturbance, the impacts on transient or migratory species and the importance of any particular species or habitats as keystone features within local ecological networks.
- 7.60. Each potential impact on an IEF will be assessed at its respective geographical scale. Where appropriate, the following parameters will be used in characterising effects:
- Positive or Negative (whether the impact will have a Positive or Negative effect);
 - Magnitude (the size of the impact);
 - Extent (area over which impact occurs);
 - Duration (time impact expected to last before recovery);
 - Reversibility (an impact may be permanent or temporary); and
 - Timing and frequency (impact may be seasonal e.g. bird nesting season).

Application of The Mitigation Hierarchy and Biodiversity Net Gain

- 7.61. The stepwise approach of avoidance, mitigation and compensation will be followed when reducing potential impacts.

- 7.62. Negative impacts can be avoided through fundamental project design choices, such as which fields to include within the final Project and the extent of the final development Site Boundary. Avoidance of impacts can also be part of the mitigation package, such as the imposition of protective buffer zones from sensitive features kept free of all development activity. A distinction is made between avoidance undertaken in deciding the fundamental size and location of the Project and avoidance undertaken in the mitigation process when designing the detailed Project (such as fencing and buffer zones). Mitigation and avoidance measures incorporated at the design state of the Project are referred to as 'embedded mitigation' and are included in the characterisation of impacts 'pre-mitigation', while all other measures (referred to as secondary mitigation) are taken into consideration when characterising impacts in the light of proposed mitigation.
- 7.63. Mitigation measures are typically given where likely adverse impacts are identified upon the IEFs. The mitigation measures will aim to reduce the overall impact value, typically at the location at which the impact occurs. An assessment of residual effects which takes account of the proposed mitigation is then made. Due consideration is given to the reliability of mitigation measures and the likelihood that they will achieve their stated goals, using the terms defined above.
- 7.64. Mitigation measures are also identified for species which did not qualify as an IEF but which are afforded legal protection under the Wildlife and Countryside Act (1981) or other legislation, and as such will require certain precautionary methodologies to avoid offences being committed.
- 7.65. Compensation measures may be appropriate for IEFs which are likely to experience significant effects once mitigation options have been exhausted. Compensation measures seek to offset these residual effects, for example through the provision of alternative habitat either elsewhere within or outside of the Project boundary. An examination of the uncertainty in achieving successful compensation will take place. Finally, any remaining residual effects can then be assessed.
- 7.66. Ecological monitoring is likely to form a key role in the success of any proposed mitigation or compensation measures.
- 7.67. Ecological enhancement measures are those which are not expressly required in order to deliver mitigation or compensation but are included to provide further benefits for nature conservation.
- 7.68. The Environment Act 2021 contains provisions that require that at least a 10% net gain for biodiversity be demonstrated through a Biodiversity Net Gain assessment (using the Natural England Statutory Metric or later). It is noted that these provisions are not currently in force for NSIPs, however, a Biodiversity Net Gain assessment will form part of the ES chapter. Additionality rules around Biodiversity net Gain will be followed to ensure that at least 10% of the net gain is derived from habitat enhancement, rather than from species-specific mitigation requirements.

Assessment of Residual Effects and Significance

- 7.69. Following the methodology described by CIEEM, an ecologically significant effect is defined as "an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general. Conservation

objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local”.

- 7.70. In line with CIEEM guidance, significance of residual effects will be described as being ‘significant’ or ‘not significant’. As CIEEM guidance discourages the use of the matrix approaches to assign categories (e.g. minor, moderate, major) to residual effects, ‘significant’ residual effects will be qualified with reference to the appropriate geographical scale at which the effect is considered to be felt.

Cumulative and In-Combination Effects

- 7.71. In-construction, consented or emerging proposals of sufficient size, scale and development nature to cause or increase effects upon IEFs in combination with the project will be examined. Cumulative effects may be additive or synergistic and result from individually non-significant but collectively significant impacts. Implications for further mitigation or compensation will be considered, as well as changes to any likely residual effects.
- 7.72. The cumulative impacts arising from the Project will be assessed in combination with other relevant development. The list of cumulative developments to be considered will be compiled in consultation with stakeholders.

Legislation, Policy and Guidance

Legislation

- 7.73. Key national legislation relevant to biodiversity and nature conservation which will inform the assessment process includes:
- The Environment Act 2021;
 - The Conservation of Habitats and Species Regulations 2017 (as amended)³⁰;
 - The Wildlife and Countryside Act 1981 (as amended);
 - The Natural Environment and Rural Communities (NERC) Act 2006;
 - The Countryside Rights of Way Act 2000³¹;
 - The Protection of Badgers Act 1992³²; and
 - The Hedgerows Regulations 1997³³.

³⁰ Conservation of Habitats and Species Regulations (2017) Available at:

<https://www.legislation.gov.uk/uksi/2017/1012/contents/made>

³¹ Countryside and Rights of Way Act (2000) Available at:

<https://www.legislation.gov.uk/ukpga/2000/37/contents>

³² Protection of Badgers Act (1992) Available at: <https://www.legislation.gov.uk/ukpga/1992/51/contents>

³³ The Hedgerows Regulations (1997) Available at: <https://www.legislation.gov.uk/uksi/1997/1160/contents/made>

National Planning Policy

7.74. Key national planning policies relevant to biodiversity and nature conservation which will inform the assessment process includes:

- Overarching National Policy Statement for Energy (EN-1) Sections 4.2, 4.5 and 5.4³⁴;
- National Policy Statement for Renewable Energy Infrastructure (EN-3) Section 3.10³⁵; and
- The National Planning Policy Framework Section 15³⁶.

Local Planning Policy

7.75. Local planning policies relevant to biodiversity and nature conservation which will inform the assessment process include:

- Babergh and Mid Suffolk Joint Local Plan – Part 1 (Nov 2023)³⁷.

Other Guidance

7.76. Other key guidance documents relevant to biodiversity and nature conservation which will inform the assessment process includes:

- Natural England Standing Advice regarding Protected Species³⁸;
- Suffolk Local Biodiversity Action Plan 2012³⁹;
- Natural England Biodiversity Net Gain Statutory Metric (and associated documents).

7.77. Biodiversity and Trees SPD Consultation Document – May 2024

³⁴ Department for Energy Security & Net Zero (November 2023) Overarching National Policy Statement for Energy (EN-1). Available at:

<https://assets.publishing.service.gov.uk/media/65bbfbd709fe1000f637052/overarching-nps-for-energy-en1.pdf>

³⁵ Department for Energy Security & Net Zero (November 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>

³⁶ National Planning Policy Framework (2012) Section 15: Conserving and enhancing the natural environment. Available at: <https://www.gov.uk/guidance/national-planning-policy-framework/15-conserving-and-enhancing-the-natural-environment>

³⁷ Babergh and Mid Suffolk Joint Local Plan – Part 1 (adopted November 2023) Available at:

<https://www.midsuffolk.gov.uk/documents/d/asset-library-54706/draft-babergh-and-mid-suffolk-joint-local-plan-part-1-nov-2023>

³⁸ Natural England (October 2023) Protected species and development: advice for local planning authorities. Available at: <https://www.gov.uk/guidance/protected-species-how-to-review-planning-applications>

³⁹ Suffolk Local Biodiversity Action Plan (May 2012) Available at:

https://www.suffolkbis.org.uk/sites/default/files/PDFs/Planning_BAP_Final%2018%20May%202012.pdf

Conclusions on Scoping

7.78. Table 7.7 below summarises the results, in our considered opinion, of the scoping assessment. Please note, while the final assessment within the ES will deal with each likely impact and Important Ecological Feature individually, this table gives a broad indication of the overall residual effects considered likely. The impact context within which each receptor will be assessed in the ES will be as given in Table 7.5.

Table 7.7 Ecological Aspects to be Scoped Out

Ecological Impact Pathway/Receptor	Scoped In/Out
Potential Impact Pathways	
Impacts on EMFs on terrestrial and aquatic species resulting from cables within the Site	Out
Ecological Receptors	
International Statutorily Designated Sites within 30km of the Site Boundary (designated for migratory bats/birds)	In
National Statutorily Designated Sites within 5km of the Site Boundary	In
Local Statutory and Non-Statutory Designated Sites within 2km of the Site Boundary	In
Habitats of Principal Importance and Local Priority Habitats	In
Badgers	In
Bats	In
Otters and Water Voles	In
Hazel Dormice	Out
Other Mammals (Brown Hare, Harvest Mice and Hedgehog only)	In
Amphibians (including Great Crested Newts)	In

Reptiles	In
Birds	In
Invertebrates	In
Plants	In
Fish	In
Invasive and Non-Native Species	In

Figure 7.1: International Statutorily Designated Sites within 30km of the Site Boundary with mobile quantifying Species

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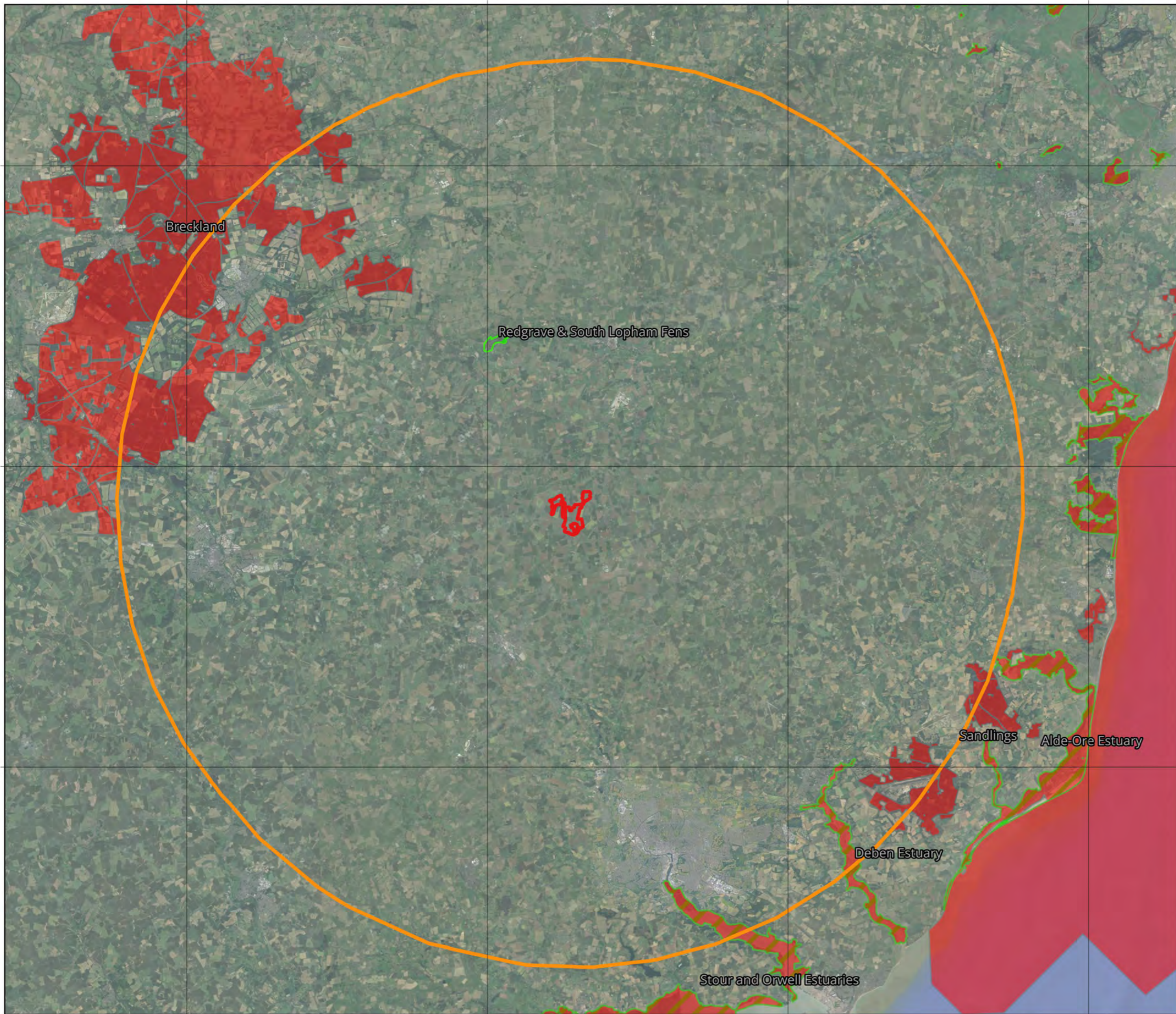
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250000



Title:
International Statutory Designated Sites within 30km of the Site

Document:
White Elm Solar Farm

- Legend:**
- Red Line Boundary
 - 30km buffer
 - Special Protection Areas (England) © Natural England
 - Ramsar (England) © Natural England

Data:
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Drawing no.: v2
Co-ordinate system: OSGB36 / British National Grid
Scale: 1:250000 @ A3

Figure 7.2: Nationally Statutorily Designated Sites within 5km of the Site Boundary

607500

609750

612000

614250

270000






267750

265500

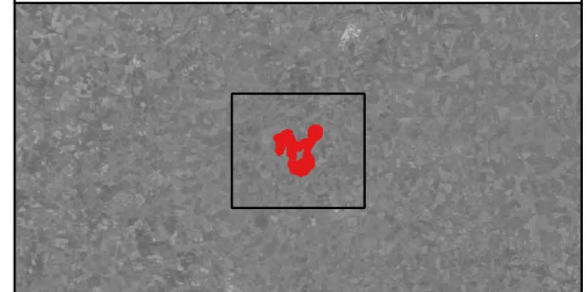


Title:
Locally Designated Sites within 2km of the Site

Document:
White Elm Solar Farm

- Legend:**
-  Red Line Boundary
 -  2km buffer
 -  Birdshedge Grove County Wildlife Site
 -  Roadside Nature Reserve
 -  View Wood County Wildlife Site

Data:
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Drawing no.: v2
 Co-ordinate system: OSGB36 / British National Grid
 Scale: 1:27000 @ A3

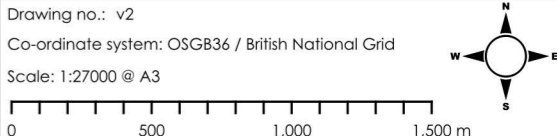


Figure 7.3: Non-Statutorily Designated Sites within 2km of the Site Boundary

605000

609583

614167

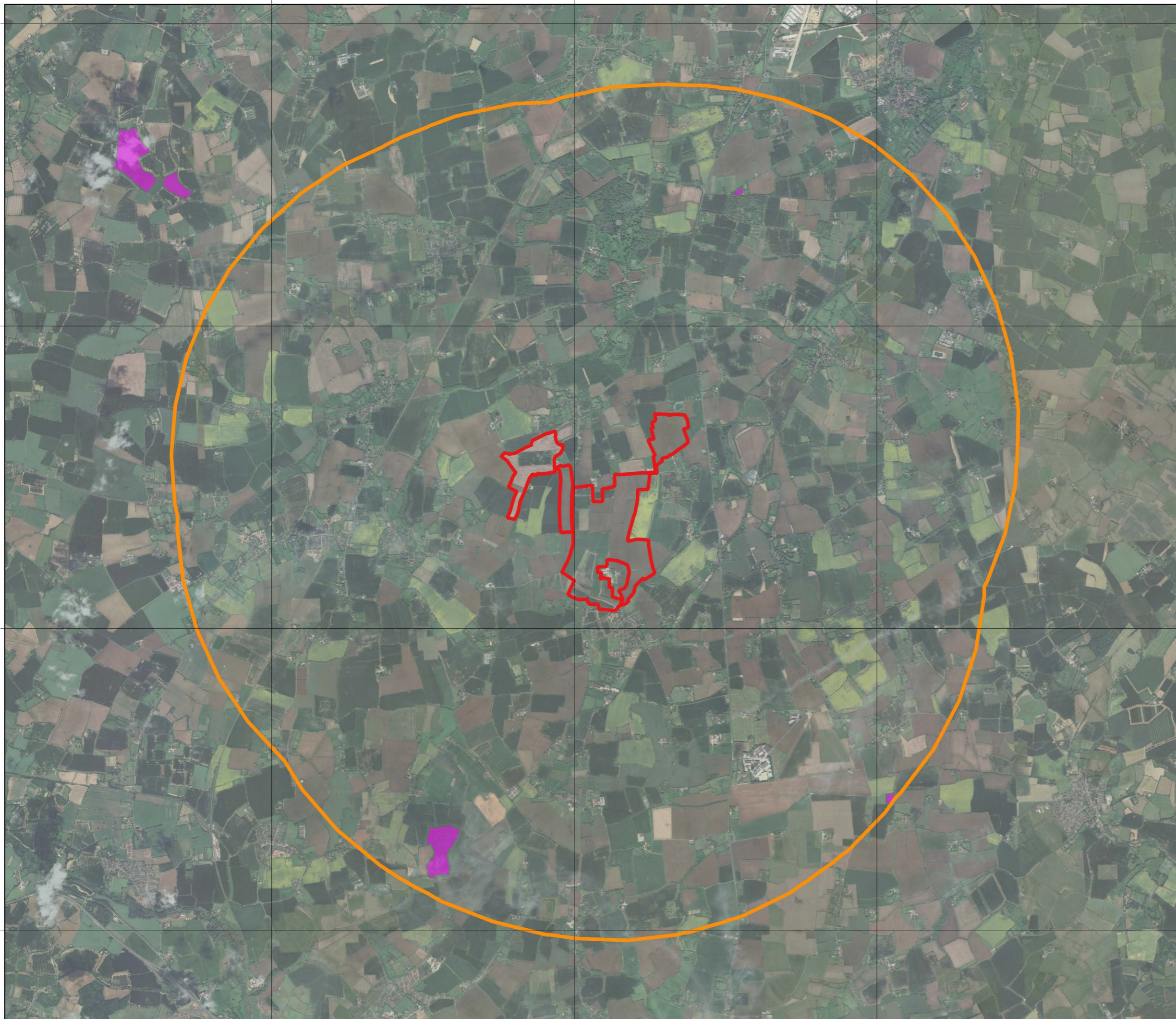
618750

275000

270417




265833

261250

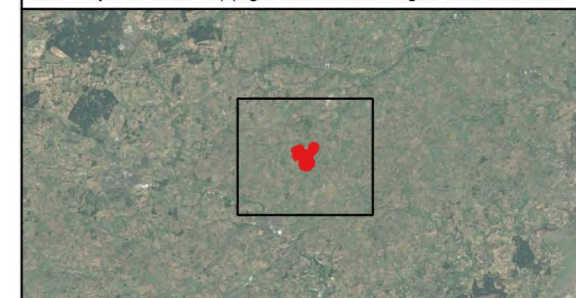


Title:
National Statutory Designated Sites within 5km of the Site

Document:
White Elm Solar Farm

- Legend:**
-  Red Line Boundary
 -  5km buffer
 -  Sites of Special Scientific Interest

Data:
Base Maps: © Crown copyright and database rights 2024 Ordnance



Drawing no.: v2
Co-ordinate system: OSGB36 / British National Grid
Scale: 1:55000 @ A3

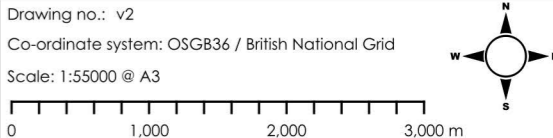


Figure 7.4: Priority Habitats within 2km of the Site Boundary

607500

609750

612000

614250

270000










267750

265500

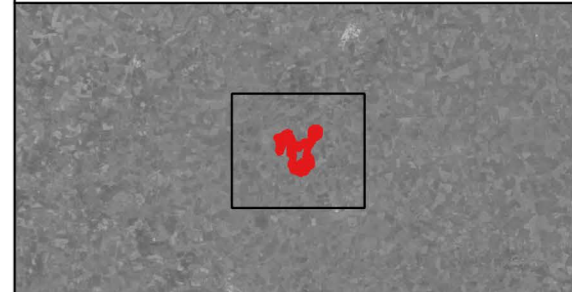


Title:
Priority Habitats within 2km of the Site

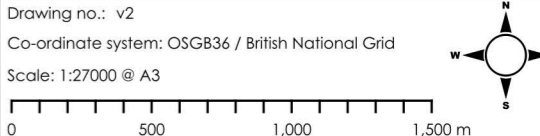
Document:
White Elm Solar Farm

- Legend:**
-  Red Line Boundary
 -  2km buffer
 -  Traditional Orchards HAP
 -  Wood Pasture and Parkland
 -  Coastal and floodplain grazing marsh
 -  Deciduous woodland
 -  Lowland meadows
 -  No main habitat but additional habitats present
 -  Traditional orchard

Data:
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Drawing no.: v2
Co-ordinate system: OSGB36 / British National Grid
Scale: 1:27000 @ A3




8. Cultural Heritage

Introduction

- 8.1. An assessment of the likely significant effects of the Project with respect to cultural heritage will be undertaken.
- 8.2. The Cultural Heritage chapter and Heritage Statement will consider all aspects of the historic environment, comprising archaeology, built heritage and the historic landscape, both designated and non-designated. The chapter will identify heritage assets with the potential to experience effects from the Project and will assess their importance, the magnitude of the impact and conclude with the resultant residual effect.
- 8.3. The assessments will be prepared by a member of the Chartered Institute for Archaeologists (ACIfA) under the management of a full Member of the Chartered Institute for Archaeologists (MCIfA).

Study Area

- 8.4. Best practice guidance does not suggest a specific radius for assessing the effects resulting from a Project on the historic environment, and therefore professional judgement and experience of undertaking assessments of solar schemes of a similar scale has been used. Two study areas are proposed to assess the likely significant effects of the Project upon the historic environment resource.
- 8.5. For designated heritage assets (comprising scheduled monuments, listed buildings, conservation areas, registered parks and gardens, registered battlefields and World Heritage Sites), a study area of 3km from the Site will be used. The 3km study area has been measured from the Site boundary. Given the scale and height of the Project's solar arrays, at a height of approximately 3.6m above existing ground levels, it is considered that a radius of 3km from the Site boundary is proportionate and provides a sufficient extent to identify any designated assets for which the Site might form part of the setting of, and therefore contribute to the significance of, either through visual aspects, or historic association. The designated heritage assets within the 3km study area are shown on Figures 8.1-8.2.
- 8.6. For non-designated heritage assets (comprising archaeological Sites and findspots, locally listed buildings, locally important parks and gardens or other historic landscapes), a study area of 1km from the Site boundary will be used. It is considered that this is an appropriate and proportionate scale of study area to establish the below-ground archaeological context of the Site in its surroundings, particularly given the size of the Site at 272.62ha and the scale of the Project.
- 8.7. In addition to the study area, the preliminary Screened Zone of Theoretical Visibility ('SZTV') has been referenced to identify areas where the Project may be theoretically visible within the surrounding landscape. The preliminary SZTV produced at this scoping stage is a screened' ZTV, using the topography of the landscape to provide an indication of visibility, with existing blocks of vegetation and built form taken into account. The SZTV has been produced using Digital Terrain Modelling (DTM) and

LIDAR data. Existing built development (8 m tall) and larger blocks of woodland have also been modelled (15 m tall) to take account of the screening effect that these would provide. It should be noted the SZTV does not take into account roadside hedgerows or smaller blocks of vegetation, such as garden planting.

- 8.8. The preliminary SZTV indicated that the level of visibility of the Project would be greater north-south with more limited views to the east and particularly to the west. At this stage, the SZTV has been used to provide an indication of which assets would not have visibility of the Project- though it is recognised that the setting of an asset does not rely solely on visibility. Other historic and functional associations mean that although an asset may not have sight of a Project, there may be other factors which require consideration in terms of assessment of effect.
- 8.9. As the assessment continues, the SZTV will be used to exclude assets from assessment once they have been assessed to check that there are no other factors contributing to their significance other than visibility which could experience effects.
- 8.10. At this scoping stage, assets beyond the 3km study area but within the preliminary SZTV have also been considered for their potential to experience significant effects resulting from the Project. It has been assessed that there are no heritage assets beyond the 3km study area, within the SZTV which have the potential to experience significant adverse effects from the Project.

Preliminary Baseline Conditions

Designated Heritage Assets

- 8.11. There are no designated heritage assets within the Site boundary.
- 8.12. Within the 3km study area from the Site boundary, the following designated heritage assets are located (shown on Figures 8.1):
- Five Grade I Listed Buildings;
 - 10 Grade II* Listed Buildings;
 - Four Conservation Areas; and
 - 208 Grade II Listed Buildings.
- 8.13. Once the SZTV was applied this reduced the numbers of designated assets within 3km to:
- Two Grade II* Listed Buildings;
 - Four Conservation Areas; and
 - 71 Grade II Listed Buildings.
- 8.14. No Scheduled Monuments, Registered Parks and Gardens, World Heritage Sites or Registered Battlefields are located within the 3km search area and therefore there will be no effects upon these assets.

- 8.15. In accordance with paragraphs 5.9.30 and 5.9.31 of the Overarching National Policy Statement for Energy (EN-1)⁴⁰, Grade I and II* Listed Buildings are considered to be designated heritage assets of the highest significance. Grade II Listed Buildings are considered to be designated heritage assets of less than the highest significance. Conservation Areas are considered to hold heritage significance of a level proportionate to their special historic and architectural interest.

Listed Buildings

- 8.16. There are a number of Listed Buildings in proximity to the Site boundary. The following Listed Buildings are located within the vicinity of the Site:
- The Grade II Listed Great Oak Farmhouse c. 35m east of the north-western extent of the Site (112620);
 - The Grade II Listed Thwaite Lodge Farmhouse c. 45m south of the north-eastern extent of the Site (1032220);
 - The Grade II Listed Allfield Farmhouse c. 110m north of the north-western extent of the Site (1182668);
 - The Grade II Listed Poplar Farmhouse c. 120m south of the southern extent of the Site (1032285);
 - The Grade II Listed Hunters Moon c. 125m south of the southern extent of the Site (1352481);
 - The Grade II Listed Walnut Farmhouse c. 130m north of the north-western extent of Site (1032199);
 - The Grade II Listed Elm Farmhouse c. 160m north of the central northern extent of the Site (1032198); and
 - The Grade II Listed Barn at Thwaite Hall c. 300m east of the central extent of the Site (1352532).
- 8.17. Further Listed Buildings are located within the settlement at Mendlesham, located to the south of the Site, which is covered by a Conservation Area c. 300m south of the central extent of the Site and includes the Grade I Listed Church of St Mary (1032241) and a further 21 Grade II Listed Buildings.
- 8.18. Five Grade II Listed Buildings are located within Wickham Skeith Conservation Area c. 355m to the north of the Site. The Grade II Listed Pear Tree Cottage lies to the west of the settlement (1032201) and the Grade I Listed Church of St Andrew lies to the east (1352521), outside of the bounds of the Conservation Area.

⁴⁰ Department for Energy Security and Net Zero, 2023., *Overarching National Policy Statement for Energy (EN-1)*

- 8.19. A group of Listed Buildings, comprising one Grade II* Listed and four Grade II Listed Buildings are located at Thwaite, the closest being the Grade II* Listed Church of St George c. 440m east of the Site (1032261).
- 8.20. A cluster of one Grade II* Listed and five Grade II Listed Buildings are located at Wickham Street, further north of Wickham Skeith and approximately 980m north of the Site.
- 8.21. Further assets which are predominantly Grade II Listed farmhouses are located in the wider surrounds of the site, with no particular focus in the landscape, including the Grade II Listed Abbey Farmhouse c. 400m north of the Site (1182599) and Hempnall's Hall c. 505m west of the Site (1180451).
- 8.22. In general, there are a number of discrete, isolated Listed Buildings within the 3km study area, representing isolated farmhouses or similar, as well as Listed Buildings which are clustered within settlements.

Conservation Areas

- 8.23. As stated above, four Conservation Areas lie within 3km of the Site boundary. The Conservation Areas focus on the settlements of Mendlesham, Wickham Skeith, Finningham and Wetheringsett respectively.

Historic Background

- 8.24. To inform this Scoping, a search of the Suffolk Historic Environment Record (SHER) was undertaken within the Site boundaries and a 1km study area. The preliminary results of the geophysical survey undertaken across the Site has also informed the historic background.
- 8.25. Findspots of Mesolithic to Neolithic date are recorded within 500m of the Site boundary, and cropmarks suggestive of Bronze Age ring ditches are recorded approximately 400m and 900m from the boundaries of the Site.
- 8.26. Part of the Coddham to Scole Roman road is located approximately 225m east of the Site. Fieldwalking in the eastern part of the Site has recorded a scatter of over 200 1st to 2nd-century pottery sherds and identified a possible kiln of similar date. Fieldwalking and metal-detecting survey in the southern part of the Site have recorded more Roman pottery sherds, mainly of 2nd to 4th century date, as well as a Roman brooch. Fieldwalking in the south-western part of the Site has also recorded Roman finds.
- 8.27. Saxon coins have been recovered during fieldwalking in the northern part of the Site, along with a scatter of medieval artefacts in the southern extent of the Site. It is likely that the site comprised part of the agricultural hinterland of Mendlesham, Wickham Skeith, and Thwaite, from the medieval period onwards.
- 8.28. A geophysical survey was successfully conducted across the Site which responded well to the geology, although there are small gaps in the data due to areas of the Site which were not suitable for survey. Anomalies of archaeological, agricultural and natural origins have been detected along with anomalies of an undetermined origin. The impact of modern activity on the results is limited and visible in the form of

disturbance resulting from pylons, overhead cables, a buried service and extant fencing.

- 8.29. Activity indicative of possible archaeological origin was identified in the north-eastern and north-western extents of the Site in the form of possible partial enclosures. These comprised a series of linear anomalies that do not correspond to any visible features on historic mapping or on satellite imagery of the area.
- 8.30. Agricultural activity is visible in the data as a large number of mapped former field boundaries, as well as some unmapped boundaries, evidence of modern ploughing regimes and field drains.
- 8.31. Other anomalies were recorded during the geophysical survey which are considered likely to correlate to changes in the superficial geology.
- 8.32. Anomalies were also identified which are of an undetermined origin. While some of these are considered more likely to relate to agricultural/modern or natural features, an archaeological origin cannot be completely confidently ruled out for the anomalies identified in the north-western extent of the Site in close proximity to the possible archaeological origin and in the southern area of the Site.

Likely Significant Effects

- 8.33. All of the designated assets within the 3km study area and the assets within the 1km will be reviewed and then specific assets will be subject to assessment within the baseline. However, at this stage, it is considered useful to identify those assets which, in the opinion of Pegasus, have the potential to experience significant adverse effects from the Project. In this way, consultees are free to agree with these identifications and/or suggest further assets. This allows the baseline, PEIR and ES to be a focused document.
- 8.34. Effects are considered to have the potential to arise during the Construction, Operational and Decommissioning phases of the Project. It is noted that this Project is temporary. NPS for renewable energy infrastructure –EN-3 (November 2023) is clear in providing guidance to the decision-maker at paragraph 2.10.160 stating: “Solar farms are generally consented on the basis that they will be time-limited in operation. The Secretary of State should therefore consider the length of time for which consent is sought when considering the impacts of any indirect effect on the historic environment, such as effects on the setting of designated heritage assets.”
- 8.35. In addition, as an NSIP, this project is considered to meet the criteria of a Critical National Priority project. The implications of this in decision making are set out at section 4.2 of NPS EN-1 (2023). Of particular note are paragraphs 4.2.15 – 4.2.17:

“4.2.15 Where residual non-HRA or non-MCZ impacts remain after the mitigation hierarchy has been applied, these residual impacts are unlikely to outweigh the urgent need for this type of infrastructure. Therefore, in all but the most exceptional circumstances, it is unlikely that consent will be refused on the basis of these residual impacts. The exception to this presumption of consent are residual impacts onshore and offshore which present an unacceptable risk to, or unacceptable interference with, human health and public safety, defence,

irreplaceable habitats or unacceptable risk to the achievement of net zero. Further, the same exception applies to this presumption for residual impacts which present an unacceptable risk to, or unacceptable interference offshore to navigation, or onshore to flood and coastal erosion risk.

4.2.16 As a result, the Secretary of State will take as the starting point for decision making that such infrastructure is to be treated as if it has met any tests which are set out within the NPSs, or any other planning policy, which requires a clear outweighing of harm, exceptionality or very special circumstances.

- 8.36. Paragraph 4.2.17 of EN-1 goes on to identify how, amongst other things the Secretary of State will take as a starting point that for CNP Infrastructure, where substantial harm to or loss of significance to heritage assets should be exceptional or wholly exceptional.

Construction Phase

- 8.37. There is the potential that if archaeological remains are found to exist within the Site, that the Project would cause some harm to these. However, given the nature of the Project and the relatively small impact footprint of the panels and cable runs, it is considered that this would not result in a significant effect upon non-designated archaeological assets.
- 8.38. The construction phase would not result in any direct, physical impacts to any designated assets.
- 8.39. It is also the case that Construction effects could arise from vehicle movements, construction noise and activity. It is considered this could have a significant effect upon the following assets:
- The Grade II Listed Great Oak Farmhouse (112620);
 - The Grade II Listed Thwaite Lodge Farmhouse (1032220);
 - The Grade II Listed Allfield Farmhouse (1182668);
 - The Grade II Listed Walnut Farmhouse (1032199); and
 - The Grade II Listed Elm Farmhouse (1032198).
- 8.40. This is not a closed list, merely a starting point for consideration.

Operation Phase

- 8.41. It is considered that there is the potential for a significant adverse effect on a number of heritage assets within the 3km study area. Without prejudice for what further assessment and Site reconnaissance may identify, the following assets are considered to have the potential to experience significant effect from the operation of the Project:
- The Grade II Listed Great Oak Farmhouse (112620);

- The Grade II Listed Thwaite Lodge Farmhouse (1032220);
- The Grade II Listed Allfield Farmhouse (1182668);
- The Grade II Listed Poplar Farmhouse (1032285);
- The Grade II Listed Walnut Farmhouse (1032199);
- The Grade II Listed Elm Farmhouse (1032198);
- The Mendlesham Conservation Area and assets located within it;
- The Wickham Skeith Conservation Area and the assets located within it; and
- Assets located at Thwaite.

8.42. Again, this is not a closed list, merely a starting point for consideration.

Decommissioning Phase

8.43. The effects arising from this phase will include beneficial effects in removing built form which had been identified as causing adverse effects during the operational period.

8.44. Decommissioning effects may also arise from activity and movement associated with the removal of built form – it is anticipated this phase will be of a short duration and the level of effect will be similar to that at the construction phase with the potential to effect the same assets as identified at this stage.

Assessment Methodology

8.45. There is no specific heritage guidance or prescribed heritage methodology for undertaking an EIA. Therefore, the proposed methodology has been developed using Historic England guidance and advice notes, which include Statements of Heritage Significance: Analysis Significance in Heritage Assets, Commercial Renewable Energy Development and the Historic Environment, The Setting of Heritage Assets and Managing Significance in Decision-Taking in the Historic Environment together with professional judgement and guidance as set out in the NPSs. In addition, the Chartered Institute for Archaeologists Code of Conduct will be followed.

Value/Sensitivity

8.46. The value/sensitivity of a heritage asset for the purposes of Environmental Impact Assessments is determined by professional judgement guided by statutory and non-statutory designations, national and local policies.

Table 9.1 – Criteria for establishing value/sensitivity

Value/sensitivity	Criteria
High	Remains of inscribed international importance, such as World Heritage Sites

Value/sensitivity	Criteria
	Grade I and II* Listed Buildings Grade I and II* Registered Parks and Gardens Scheduled Monuments Registered Battlefield Non-designated archaeological assets of schedulable quality Non-designated buildings, monuments, Sites or landscape that can be shown to have a very important quality in their fabric or historical association
Moderate	Grade II Listed Buildings Conservation Areas Grade II Registered Parks and Gardens Assets of high archaeological resource value identified through consultation
Low	Non-designated buildings, monuments or Sites or landscapes of local importance and of modest quality Locally important historic or archaeological assets, assets with a local value for education or cultural appreciation and of medium archaeological value Locally Listed buildings identified on a local list Non-designated buildings, monuments, Sites or landscape that can be shown to have important qualities in their fabric or historical association Historic townscapes with historic integrity Parks and gardens of local interest
Not Significant	Assets identified as being of no historic, artistic, archaeological or architectural value Assets that are so badly damaged that too little remains to justify inclusion into a higher grade Assets whose values are compromised by poor preservation or survival to justify inclusion in a higher category

Magnitude of Impact

- 8.47. Once a level of value/sensitivity has been assigned, the magnitude of impact as a result of the Project is assessed. Potential impacts are defined as a change resulting from the Project which affects the significance of a heritage asset. These impacts are considered in terms of being either direct, indirect or cumulative, from construction or operation and temporary, long-term or permanent. The assessment will include consideration of an asset's setting in terms of its contribution to the assets significance.
- 8.48. The magnitude of an impact can be judged in a five-point scale. The impact score is arrived at without reference to the value/sensitivity of the asset and the impact is assessed without taking into account any subsequent mitigation proposals, but does take into account embedded mitigation derived throughout the design process.

Table 9.2 Criteria for establishing level of impact

Level of Impact	Description of Impact
High	Change such that the significance of the asset is totally altered or destroyed. Comprehensive change to setting affecting significance, resulting in substantial changes in our ability to understand and appreciate the resource and its historical setting
Medium	Change such that the significance of the asset is affected. Changes such that the setting is noticeable different, affecting significance resulting in moderate changes to significance and in our ability to understand and appreciate the resource
Low	Change such that the significance of the asset is slightly affected. Changes to the setting that have a slight impact on significance resulting in changes in our ability to understand and appreciate the resource
Minimal	Changes to the asset that hardly affect significance. Changes to the setting of an asset that have little effect on significance and no real change in our ability to understand and appreciate the resource
No change	The development results in no change or such a negligible level of change that it does not affect the significance of the asset. Changes to the setting do not affect the significance of the asset or our appreciation of it.

Residual Effect

- 8.49. The assessment of effects will be undertaken in two stages. The magnitude of impact is cross-referenced with the value of the asset to categorise the effect that is likely to result from the Project prior to additional mitigation measures.
- 8.50. Following this stage, further consideration of additional mitigation is carried out, and the mitigation is assessed as to whether this would reduce the significance of the effect. Once additional mitigation is applied, the asset is re-assessed, allowing the residual significance of effect to be determined, as seen in Table 9.3.

Table 9.3 Levels of Effect

Value/sensitivity of asset	Magnitude of Impact				
	No Change	Minimal	Low	Medium	High
High	Neutral	Minor	Moderate	Major	Major
Moderate	Neutral	Minor	Minor/Moderate*	Moderate	Major
Low	Neutral	Neutral	Minor	Minor/Moderate*	Moderate
Not significant	Neutral	Neutral	Neutral	Neutral	Neutral

* - professional judgement to be applied when assigning a level of effect

Proposed Approach to Baseline

- 8.51. A baseline will be prepared which will identify the heritage resource within the study areas identified above. Data has already been sourced from a number of repositories, with further data to be obtained during the preparation of the baseline assessment. The sources of data include:
- National Heritage List for England;
 - Suffolk HER;
 - NRHE (if required);
 - National Mapping Programme data;
 - Suffolk Archives for documentary and cartographic resources;
 - Historic England Archive, Swindon for aerial photographs;
 - LiDAR;
 - Other sources identified during the preparation of the baseline assessment; and
 - The results of the geophysical survey, undertaken by Magnitude Surveys.
- 8.52. The baseline will consider the archaeology, built heritage and historic landscape resource within the relevant study area. The baseline will identify and describe assets and their significance, including the contribution to significance made by their setting. This will help to identify which assets have the potential to experience likely significant effects resulting from the Project. There will be heritage assets which will clearly not experience any effect from the Project, either due to their function or location in an area with no visibility of the Site and with no historic association. These assets will be discussed in broader terms, grouped where appropriate and dismissed from further assessment within the baseline.
- 8.53. The baseline will be supplemented by a Site and study area walkover. The walkover will focus on visiting surrounding heritage assets identified in the initial baseline to assess their setting and relationships with surrounding assets.
- 8.54. In terms of viewpoints, Pegasus, the project Heritage specialist, will liaise with the Pegasus landscape team to identify any viewpoints which may assist with the assessment of the Project's likely significant effects on heritage assets. These will also be discussed and agreed with consultees as the project progresses. Locations will be refined through consultation and further Site reconnaissance.
- 8.55. Throughout the completion of the baseline, PEIR and ES chapter, consultation will be undertaken with relevant stakeholders including Historic England, the Suffolk County Council Archaeological Service and the Suffolk Conservation Officer.
- 8.56. To support the Cultural Heritage assessment, it is proposed that a staged programme of fieldwork will be undertaken to assist in the identification of areas of

archaeological activity. This has commenced with a programme of geophysical survey, with further work following from this as required. The geophysical survey commenced on 4th March 2024 with the Written Scheme of Investigation approved prior to the team commencing on site by the Suffolk County Council Archaeological Service.

8.57. This information will be incorporated into the baseline, PEIR and ES chapters.

8.58. The scope of the pre-determination and post-determination fieldwork will be discussed with the Suffolk County Council Archaeological Service.

Proposed Approach to ES (and PEIR)

8.59. Baseline data will be used to inform the PEIR and ES chapter. The PEIR will be prepared as a 'draft ES' and will provide a summary of the findings of the assessment at that point in time. The PEIR will set out any likely significant effects which have been predicted, including any considered to be significant under the EIA Regulations. The assessment will be finalised within the ES.

8.60. For both PEIR and ES chapters, the same general methodology will be used. Both will assess the potential for the Project to cause significant effects upon the significance of the heritage resource. Should potentially significant adverse effects be identified, mitigation will be proposed seeking to reduce the significance of the identified adverse effects.

8.61. When discussing heritage assets, the term 'significance' is used in the NPS EN-1 document to describe the sum of the heritage interests that a heritage asset holds (this definition is set out in NPS EN-1 – also adding that significance derives not only from a heritage asset's physical presence, but also from its setting) and that some assets have a level of significance that justifies official designation. The term 'significance' has a specific meaning within EIA and therefore to avoid confusion, when discussing heritage significance, this will be made clear and distinct from discussion of significance in EIA terms.

8.62. In order to assess the effect of the Project upon heritage assets, these will first be assigned a value. This is not merely a reflection of any designated status but also accounts for the heritage interests of the asset. This will be expressed as the value/sensitivity of the asset to change. Following this, the magnitude of impact or change to the significance of the asset will be assessed, including impacts to its significance through changes within its setting. The value of the asset will be considered against the magnitude of impact and the resultant effect will be assessed.

8.63. The ES chapter will also assess any likely significant cumulative effects upon the heritage resource resulting from the Project in combination with other schemes, as appropriate.

8.64. The assets with the potential to experience likely significant effects from the Project will be set out in a summary table at the end of the ES chapter.

8.65. In accordance with the requirements of the EIA Regulations, the ES chapter will assess the significance of effects resulting from the Project's impacts. However, the

NPS EN-1 considers impacts in terms of levels of harm or loss to the significance of an asset from a Project. A significant effect identified in the ES chapter would not necessarily equate to a finding of substantial harm, as defined in NPS EN-1. Equally, a less significant effect identified in the ES chapter may result in a higher level of harm according to NPS EN-1. A level of professional judgement will be used throughout the EIA process to ensure that where a matrix-based system is employed, this accounts for professional judgement to ensure that a robust assessment of the level of effect to the significance (in EIA terms) of the heritage asset is reported within the ES chapter. In addition, a narrative conclusion will be set out which will discuss the level of harm (if any) the Project will have upon the significance of the heritage assets. As a DCO, this application will be judged against the policies contained within the NPS documents and these require an assessment of harm and a judgement of whether the Project results in no harm, less than substantial harm or substantial harm.

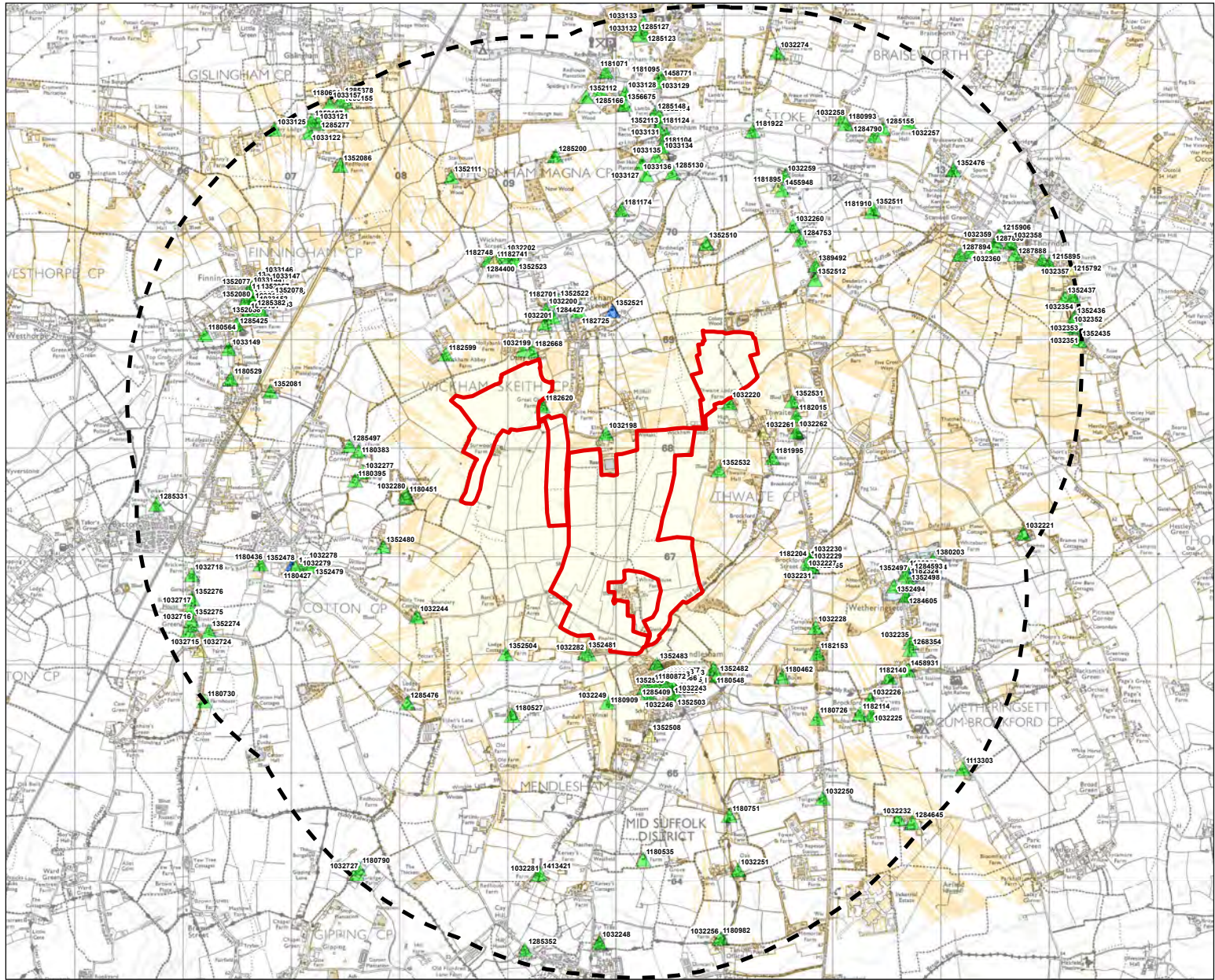
Cumulative Effects

- 8.66. Cumulative effects, that is, effects arising from the Proposed Project in-combination with other schemes in the planning process will form part of this assessment. The list of schemes to be considered will be provided and an assessment will be undertaken to establish if there would be any cumulative effects arising.

Preliminary Discussions of Potential Mitigation and Enhancement Measures

- 8.67. It is considered that embedded mitigation will be in the form of the design changes and iterations arising from data gathering, including identification of areas of significant archaeology will be taken into account within the assessment process. In addition, landscaping mitigation proposed as part of the Project will also be considered as embedded mitigation.
- 8.68. Further mitigation arising from the Project could consist of further archaeological works. The scale and scope of such works is yet to be determined. Additional mitigation may be in the form of identification of areas to be preserved in-situ, where significant archaeology may be present, or the identification of other forms of construction methods which do not require below-ground disturbance. Any such areas of preservation in-situ or 'no-dig' areas will be agreed with the Suffolk County Council Archaeological Service and set out within an Archaeological Mitigation Strategy (if required) which would be submitted with the DCO.
- 8.69. Potential enhancement measures may include the provision of interpretation boards identifying key heritage assets or themes within the study area, or the creation of a walking route which allows visitors to understand any historic aspects of the landscape. This would help to better reveal the significance of identified heritage assets and enhance public knowledge.

Figure 8.1 Designated Heritage Assets



- KEY**
- Site
 - 3km Study Area
 - ▲ Grade I Listed Building
 - ▲ Grade II* Listed Building
 - ▲ Grade II Listed Building
 - Conservation Area
 - Development Visible

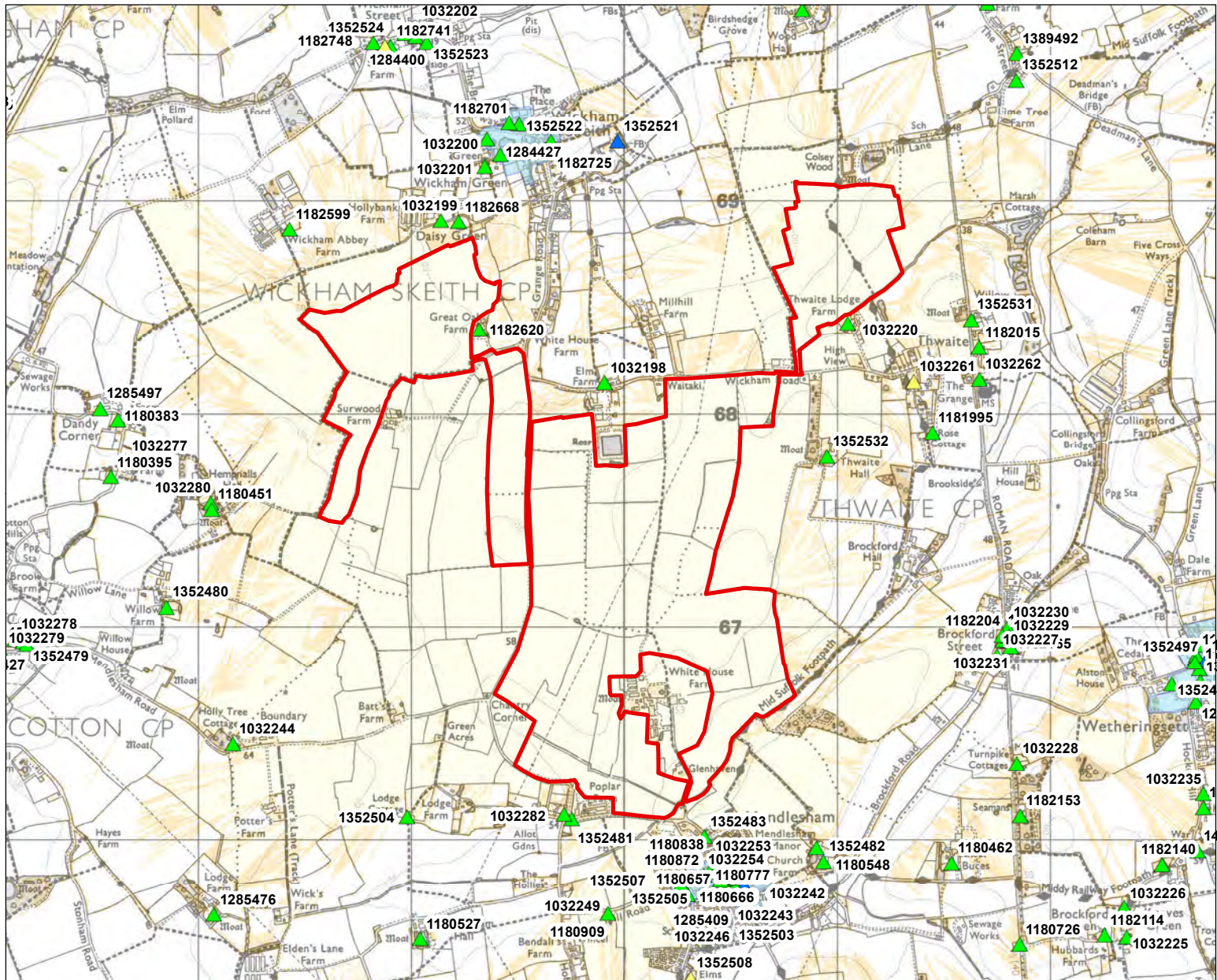
Figure 8.1: Designated Heritage Assets and Screened ZTV

White Elm Solar Farm

Client: Elmya RPC UK Grange Road Limited
 DRWG No: P23-0396 Sheet No: - REV: -
 Drawn by: RW Approved by: GST
 Date: 10/10/2024
 Scale: 1:55,000 @ A3



Figure 8.2 Designated Heritage Assets



KEY

- Site
- ▲ Grade I Listed Building
- ▲ Grade II* Listed Building
- ▲ Grade II Listed Building
- Conservation Area
- Development Visible

Figure 8.2: Designated Heritage Assets and Screened ZTV focused on the Site

White Elm Solar Farm

Client: Elmya RPC UK Grange Road Limited
 DRWG No: P23-0396 Sheet No: - REV: -
 Drawn by: RW Approved by: GST
 Date: 10/10/2024
 Scale: 1:28,000 @ A3



9. Ground Conditions

Introduction

- 9.1. The Ground Conditions chapter of the ES will be prepared by Hydrogeo. This ES chapter will assess the likely effects of the Project on the geology and ground conditions at the Site and immediate surroundings. It will consider geological soils and bedrock, hydrogeology and groundwater conditions, contaminated land, and geohazards/geotechnical risks associated with the project.
- 9.2. In terms of land and groundwater contamination an assessment is required to determine the nature and extent of effects on human health and controlled waters that may result from the project with regard to the ground conditions known to be present across the project. Assessment will also be made to determine effects on human health and the environment from potential geohazards / geotechnical risks as well as the potential for sterilising mineral resources.
- 9.3. This section will consider potential impacts arising from the enabling, construction, operation, maintenance, and de-commissioning phases of the project and identifies the proposed scope and scale of the EIA for ground conditions.

Consultation

- 9.4. No specific consultation has been carried out with regards to land contamination and ground conditions. All relevant consultees will be approached during the informal consultation period.

Relevant Policy, Legislation and Guidance

- 9.5. The following key legislation, guidance and planning policy that is relevant to geology and ground conditions will be considered within the assessment process;

National

- DEFRA Environmental Protection Act 1990: Part 2A – Contaminated Land Statutory Guidance (2012);
- Environment Agency (2020) Land Contamination: Risk Management (LCRM 2020);
- National Planning Policy Framework (2021);
- National Planning Practice Guidance (2021);
- British Standard requirements for the 'Investigation of potentially contaminated sites';
- Code of practice' (ref. BS10175:2011+A1:2017);

- British Standard requirement for 'Soil quality – conceptual site models for potentially contaminated sites' (ref. BS EN ISO 21365:2020);
- Water Resources Act (1991);
- The Contaminated Land (England) Regulations (2006);
- Environmental Damage (Prevention and Remediation) (England) Regulations (2015);
- Water Supply (Water Quality) Regulations (2016);
- Environmental Permitting (England and Wales) Regulations (2016);
- Water Environment (Water Framework Directive) Regulations (2017);
- Overarching National Policy Statement for Energy (EN-1) (March 2023) including Section 4.3 Environmental Effects / Considerations;
- National Policy Statement for Renewable Energy Infrastructure (EN-3) (January 2024);

Local

- Suffolk Minerals and Waste Local Plan (SMWLP_ – Adopted 9th July 2020);
- Babergh & Mid Suffolk Brownfield Land Register 2023 – Brownfield Land Register;
- Babergh and Mid Suffolk Joint Local Plan Part 1 (November 2023);
- Mid Suffolk District Council Statutory Contaminated Land Strategy (May 2006);

Study Area

9.6. The study area for the project comprises the Site and a data search buffer of 50m – 2km. This enables the identification of both on-site and off-site sources of potential contamination and other factors which may influence ground conditions at the Site. The inclusion or otherwise of relevant sensitive sources and receptors gives due consideration to the following:

- The nature of the project which would not typically include occupied buildings, therefore the risk from ground gases (including radon) is considered low. Potential gas sources are therefore restricted to features located within or adjacent to the Site;
- Pollution incidents classified as having a 'major' impact on land and/or water;
- Active groundwater / surface water abstractions.

Preliminary Baseline Conditions

9.7. The baseline environment for the ground conditions, including geology, land contamination, geohazards and geotechnical are covered within the following sections. Data has been captured from the following sources to provide details regarding the baseline conditions across the Site:

- DEFRA Magic Map;
- British Geological Survey (BGS) Geoindex Onshore Online Viewer;
- Groundsure.IO Online Viewer;
- Hydrogeo GIS Database;
- Zetica UXO Online Risk Map Guidance.

Additional datasets will be sourced as part of the Phase I Desk-based Geo-environmental Report and Site Walkover, these may provide more detailed information regarding the site history and land use.

Geology

- 9.1. The bedrock and superficial geology for the area is identified by the BGS Geoindex online mapping. Mapping indicates that the entirety of the Site is underlain by “Crag Group – Sand” bedrock geology.
- 9.2. The British Geological Survey (BGS) also record “Lowestoft Formation – Diamicton” superficial deposits across the entire site. The Project is located within a mapped buried glacial valley where significant superficial thickening is mapped from boreholes, potentially greater than 40m in thickness.
- 9.3. BGS mapping does not show any artificial deposits, including made ground or worked ground across the Project.
- 9.4. The Project is intersected by a large north-east to south-west trending geological fault.
- 9.5. There are no mapped BGS borehole records within the Project boundary. There are several borehole records immediately adjacent to the Project, and several others within the vicinity of the Project.

Hydrogeology

- 9.6. The Project is located within a Zone 3 – Source Protection Zone (SPZ). Zone 3 Source Protection Zones are areas around a supply source within which all the groundwater ends up at the abstraction point. Zone 3 SPZs can extend some distance from the source point of abstraction.

- 9.7. The bedrock geology beneath the Site is designated as a Principal Aquifer. Principal Aquifers are designated by the Environment Agency (EA) as strategically important rock units that have high permeability and water storage capacity.
- 9.8. The superficial geology beneath the Site is classified by the EA as Secondary Undifferentiated. Secondary Undifferentiated aquifers are aquifers where it is not possible to apply either a Secondary A or Secondary B designation because of the variable characteristic of the material. These have only a minor value.
- 9.9. The Project is mapped in an area of Medium to Medium – High groundwater vulnerability.
- 9.10. The Project is not mapped within a Groundwater Drinking Water Safeguarding Zone.
- 9.11. The Project is mapped within a Nitrate Vulnerable Zone (NVZ).

Land Contamination

- 9.12. There are no historic or current landfills mapped on-site or within 1km of the Project.
- 9.13. The Project is not located within a Coal Mining Reporting Area.
- 9.14. There are no mapped pollution incidents within the Project Boundary. The closest recorded pollution incident is located approximately 950m north of the Project.

Geohazards

- 9.15. There are no landslide deposits mapped within the Project Boundary. The surrounding land remains generally flat, with no hills or valleys within the surrounding area. Assessment of landslides can therefore be scoped out of the Environmental Impact Assessment.
- 9.16. The Project is not underlain by soluble bedrock – limestone or thick evaporate (salt and gypsum) deposits. Assessment of soluble bedrock can therefore be scoped out of the Environmental Impact Assessment.
- 9.17. The Project is potentially underlain by collapsible and running sand deposits due to the likely variability of the glacial till beneath the Project, which may contain thick lenses of fine sands.
- 9.18. The Project is likely underlain by thick unconsolidated variable glacial till deposits which may contain clays with potential for shrinking and swelling.

Geotechnical

- 9.19. The Project is likely underlain by thick variable glacial till deposits, which may result in differential settlement when loaded by structures i.e site buildings (battery storage facility) and solar arrays etc.

- 9.20. Foundation design for any proposed building structures (including the battery storage facility) and for the solar P.V arrays should be reviewed in order to prevent any structural issues due to differential settlements during loading.

Unexploded Ordnance (UXO)

- 9.21. The Zetica Online Risk Map Guidance indicates that the Site is mapped within an area of Low Risk for bomb risk.

Potential Project Impacts

- 9.22. The Project may impact on ground conditions during enabling, construction, and decommissioning phases.
- 9.23. The Project activities have the potential to mobilise contaminants associated with the agricultural uses of the Site through the creation of new migration pathways. Current drainage patterns may also be impacted / modified by the development phases.
- 9.24. The enabling and construction phases of the Project provide potential for impacts from the usage of plant machinery and the storage of oils and fuels on-site, where leaks and / or spills may potentially occur.
- 9.25. Enabling, construction and decommissioning phases may encounter unforeseen contamination across the Project which may not have been identified during earlier phases of site works.
- 9.26. During the operational lifespan of the Project, existing infiltration and subsequent recharge of the underlying aquifers may be impacted by the changes from the current Greenfield (natural) infiltration and recharge pathways. Solar PV arrays will likely focus incident rainfall to focused areas beneath the arrays.

Likely Mitigation Measures

- 9.27. Any areas of previously unforeseen land contamination or erroneous ground conditions not identified within the baseline survey work would require appropriate management during the enabling and construction phases to avoid risks to construction workers and sensitive environmental receptors. Mitigation for protection of site workers from soil/groundwater contamination would typically be included within a Construction Environmental Management Plan (CEMP) produced by the eventual contractors. At the planning application stage it is recommended that an Outline Code of Construction Practice with the Environmental Statement which will set out the principles of good practice that will be adhered to during construction.
- 9.28. The requirement for and feasibility of any further mitigation measures will be dependent on the significance of effects and will be reviewed through the Environmental Impact Assessment (EIA) process. At this stage it is anticipated that these may include mineral resource assessments, land contamination assessments (Phase I Geo-environmental Assessment and Site Reconnaissance) and, where

required followings findings of Phase I works, a Phase II Site Investigation including geoenvironmental and geotechnical testing.

Proposed Assessment Methodology

- 9.29. For potential impacts that are scoped in as requiring an Environmental Statement assessment for ground conditions, there will be an assessment of the likely significant effects from the enabling, construction, operation and decommissioning phases of the Project on human health and controlled water receptors.

Assessment Process

- 9.30. The baseline conditions within the Project will be further informed through a series of additional assessments.

- 9.31. The baseline conditions for the Project will be further developed through additional assessment and preparation of a Conceptual Site Model following the Source-Pathway-Receptor linkage approach as recommended in the key land contamination guidance documents. The following assessment processes shall be adopted for the risk assessment and determination of significance of effects.

- Completion of a Phase I Geo-environmental Desk-based Study and Site Reconnaissance;
- Definition of the baseline conditions based upon the Phase I findings;
- Definition of the sensitivity of receptors; and
- Qualitative assessment of the significance of effects on the basis of the magnitude of the effect and the sensitivity of the receptor.

- 9.32. Where there are requirements for additional ground investigation to be undertaken to adequately define the baseline conditions for the Project then this will be identified early in the assessment process and a suitable scope of works determined, agreed and undertaken.

Sensitivity of Potential Receptors

- 9.33. The sensitivity of potential receptors will be qualitatively described and categorised based upon the terms in Table 9-1 below. Professional judgement / opinion has been used to provide examples of receptors and their likely sensitivities.

Table 9.1 – sensitivities of potential receptors

Sensitivity	Typical Descriptors	Examples
High	High importance, with limited potential for substitution	Onsite future users through exposure to contamination;

Sensitivity	Typical Descriptors	Examples
		Principal Aquifers; Licensed groundwater abstractions; Excellent quality surface water bodies;
Medium	Medium importance, limited potential for substitution	Off-site users; Secondary A Aquifers; Good quality surface water bodies;
Low	Low importance	Secondary B Aquifers; Secondary Undifferentiated Aquifers; Satisfactory quality surface water bodies;
Negligible	Very low importance	Unproductive strata; Poor quality surface water bodies

Magnitude of Potential Impact

9.34. The magnitude of the potential impacts will be qualitatively described and categorised based on the terminology within Table 9-2 below.

Table 9.2 – Magnitude of Potential Impact

Magnitude	Criteria	Examples
High	Results in a loss of an attribute and likely to cause exceedance of statutory objectives and / or breaches of legislation.	Soil contamination that could result in a 'contaminated land' designation under Part 2A. I.e. significant possibility of significant harm to human health or controlled waters. A change of planning use deems that the concentration of

Magnitude	Criteria	Examples
		<p>contaminants in the land may be harmful to receptors.</p> <p>Remedial Action under Part 2A will be required.</p>
Medium	Results in impact on integrity of attribute or loss of part of attribute possibly with / without exceedance of statutory objectives or with / without breaches in legislation.	<p>Soil contamination that could provide a strong case for considering that the risks are significant concern so as to be designated as 'contaminated land' designation under Part 2A.</p> <p>A change of planning use deems that the concentrations of contaminants in the land may be harmful to receptors.</p> <p>Remedial action under Part 2A will be required on a precautionary basis.</p>
Low	Results in minor impact on attribute	<p>Soil contamination could arise but the concentrations would not be considered significant or there is a low likelihood of serious pollution.</p> <p>A change of planning use deems that the concentrations of contaminants in the land are not capable of harming receptors.</p> <p>It is unlikely that remedial action will be required, however land owners may consider remedial actions to reduce contamination outside of the Part 2A or planning regime</p>
Negligible	Results in no discernible change or an impact on attribute of insufficient magnitude to affect the use / integrity.	Soil contaminants present, but risk assessment suggests negligible / low risk to human health and / or controlled waters.

Assessment of Effects

- 9.35. The significance of likely effects during enabling, construction, operation and decommissioning of the Project will be determined from the predicted magnitude of an impact and the sensitivity of the receptor using the matrix provided in Table 9-3.

Sensitivity	Magnitude of Impact			
	Negligible	Low	Medium	High
Negligible	Negligible	Negligible or Minor	Negligible or Minor	Minor
Low	Negligible or Minor	Negligible or Minor	Minor	Minor or Moderate
Medium	Negligible or Minor	Minor	Moderate	Moderate or Major
High	Minor	Minor or Moderate	Moderate or Major	Major

Potential Cumulative Effects

- 9.36. The effects of the White Elm Solar Farm with other schemes that are under construction, consented or for which planning permissions are currently being sought will be assessed within the EIA where appropriate. The assessment will consider potential contamination within other sites to evaluate potential risks and significance of effects posed by these developments. Following the assessment any identified requirements for remediation should be completed prior to the commencement of the construction phase.
- 9.37. Considering policy requirements, it is thought that this project and others within the vicinity will be considered as no detriment in terms of off-site land contamination related impacts. Based on this, it is unlikely that there will be any cumulative effects off-site to consider and it is proposed to scope this cumulative assessment out.

Scoped Out

- 9.38. Following this initial assessment of the Proposed Development Site ground conditions and based on the current available data, table 9.4 sets out the topics proposed to be scoped out of any further assessment:

Table 9.4 – Topics to be scoped out

Geo technical / ground conditions topics	Matters to be scoped out
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<p>Landslides – The topographic elevation across the Proposed Development Site remains flat, with no significant breaks in slope which may result in landslides. No landslide deposits are mapped within the vicinity of the Site</p>	<p>Out</p>
<p>Soluble Bedrock – The Proposed Development Site is not mapped as underlain by bedrock which is susceptible to solution features such as Limestone / Chalk Karst environments.</p>	<p>Out</p>
<p>Mineral Resources – The Proposed Development is mapped as underlain by thick glacial till deposits, within a buried glacial valley. It has therefore been established through scoping that there is minimal potential for the Proposed Development to sterilise any areas designated as mineral consultation or mineral safeguarding areas</p>	<p>Out</p>

10. Socio Economics

Introduction

- 10.1. This chapter of the ES will provide an assessment of the likely significant socio-economic effects generated by the Project. This will include the identification and assessment of likely effects during the construction phase, during the operational phase, the decommissioning phase, and including cumulative effects.

Assessment Approach

- 10.2. There is no overarching Government guidance that sets out the preferred methodology for assessing the likely socio-economic effects of development proposals. Accordingly, the approach adopted for the assessment will be based on professional experience and best practice, and in consideration of the policy requirements/tests set out within the NPSs, NPPF and the Local Plan.
- 10.3. The first step in the assessment will be to identify the sensitivity of the receptors. In socio-economic assessments, receptors are not sensitive to changing environmental conditions in the same way as many environmental receptors are. To address this, the assessment will draw on a combination of measurable indicators (jobs, population, etc.) and a consideration of the importance of the receptor in policy terms to gauge the receptor's sensitivity. The sensitivity criteria proposed to be used in the Socio-Economics ES chapter is presented in Table 10.1.
- 10.4. The magnitude of change upon each receptor will then be determined by considering the predicted deviation from baseline conditions, both before and, if required, after mitigation. The magnitude of effect criteria proposed to be used in the Socio-Economics ES chapter is presented in Table 10.2.
- 10.5. Wherever possible the magnitude of change will be quantified. Where this is not possible, for example, for the number of the social related considerations, consideration of magnitude of change will be on a qualitative basis and justified through baseline research, review of relevant policy, and consultation undertaken.
- 10.6. There are no industry standard significance criteria for the assessment of socio-economic effects. The assessment is quantitative where possible. In circumstance where this is not possible, the assessment is qualitative in nature based on professional judgement. The significance of effect is identified by combining the sensitivity of the receptor against the magnitude of impact using the matrix in Table 10.3.

Table 10.1: Criteria for Sensitivity of Receptor

Sensitivity	Evidence for sensitivity assessment
High	Evidence of direct and significant socio-economic challenges relating to receptor. Accorded a high priority in local, regional or

Sensitivity	Evidence for sensitivity assessment
	<p>national economic regeneration policy. Evidence of direct and significant socio-economic challenges including:</p> <p>Areas with levels of unemployment well in excess of / below regional / national averages and high levels of relative deprivation (i.e. top 10%).</p> <p>Areas with claimant count well in excess of / below regional / national averages.</p> <p>Areas with economic activity rate well in excess of / below regional / national averages.</p> <p>Areas with a significant oversupply / undersupply of visitor accommodation.</p>
Medium	<p>Some evidence of socio-economic challenges linked to receptor, which may be indirect. Change relating to receptor has medium priority in local, regional and national economic and regeneration policy. Some evidence of socio-economic challenges, including:</p> <p>Areas with levels of unemployment above / below regional / national averages and levels of relative deprivation (i.e. top 50%).</p> <p>Areas with claimant count well above / below regional / national averages.</p> <p>Areas with economic activity rate above / below regional / national averages.</p> <p>Areas with a moderate oversupply / undersupply of visitor accommodation.</p>
Low	<p>Little evidence of socio-economic challenges relating to receptor. Receptor is accorded a low priority in local, regional and national economic and regeneration policy. Little evidence of socio-economic challenges, including:</p> <p>Areas with levels of unemployment in line with regional / national averages and levels of relative deprivation (i.e. bottom 50%).</p> <p>Areas with claimant count in line with regional / national averages.</p> <p>Areas with economic activity rate in line with regional / national averages.</p> <p>Areas with a sufficient supply of visitor accommodation.</p>

Sensitivity	Evidence for sensitivity assessment
Negligible	<p>No socio-economic issues relating to receptor. Receptor is not considered a priority in local, regional and national economic development and regeneration policy. No socio-economic issues relating to a receptor, including:</p> <p>Areas with levels of unemployment less than regional / national averages and low levels of relative deprivation (i.e. bottom 10%).</p> <p>Areas with claimant count higher than average regional / national averages.</p> <p>Areas with economic activity rate higher than average regional / national averages.</p> <p>Areas with a surplus supply of visitor accommodation.</p>

Table 10.2: Criteria for Magnitude of Effect

Magnitude of impact	Description / criteria
High	<p>Proposed Development would cause a large change to existing socio-economic conditions in terms of absolute and/or percentage change.</p> <p>Greater than 5% increase / decrease on existing baseline levels of employment.</p> <p>Greater than 5% increase / decrease in GVA from baseline.</p> <p>Greater than 5% increase / decrease in business rates from baseline.</p> <p>Greater demand required than available accommodation supply.</p>
Medium	<p>Proposed Development would cause a moderate change to existing socio-economic conditions in terms of absolute and/or percentage change.</p> <p>1% - 5% increase / decrease on existing baseline levels of employment.</p> <p>1% - 5% increase / decrease in GVA from baseline.</p>

Magnitude of impact	Description / criteria
	<p>1% - 5% increase / decrease in business rates from baseline.</p> <p>Increased demand in respect of accommodation but below available supply.</p>
Low	<p>Proposed Development would cause a minor change to existing socio-economic conditions in terms of absolute and/or percentage change.</p> <p>Limited increase / decrease on existing baseline levels of 0.1% - 0.99% increase / decrease on existing baseline levels of employment.</p> <p>0.1% - 0.99% increase / decrease in GVA from baseline.</p> <p>0.1% - 0.99% increase / decrease in business rates from baseline.</p> <p>Limited increase in demand in respect of accommodation.</p>
Negligible	No discernible change in baseline socio-economic conditions.

Table 10.3: Significance of Effect

Magnitude of change	Sensitivity of receptor				
		High	Medium	Low	Negligible
	High	Major	Major	Moderate	Negligible
	Medium	Major	Moderate	Minor to Moderate	Negligible
	Low	Moderate	Minor to Moderate	Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

Preliminary Baseline Conditions

- 10.7. The assessment will establish baseline socio-economic conditions within those areas likely to be affected by the Project. Study areas are defined based on an understanding of relevant local and wider economic geographies, and the extent to which socio-economic effects are likely to be contained within these established statistical geographies. It is proposed to analyse data (where available) for the geographies set out in Table 10.4.

Table 10.4: Study area for the socio-economic assessment

Spatial scale	Title	Justification for inclusion
Primary Impact Zone	Mid Suffolk District	The Site is located within the Mid Suffolk district and most impacts are expected to be retained within the local authority.
Secondary Impact Zone	Mid Suffolk District & the LPAs of Breckland, South Norfolk, East Suffolk, Ipswich, Babergh and West Suffolk	The district of Mid Suffolk is bordered by these six LPAs and some impacts may affect this wider scale.
Comparator Areas		
Regional	East of England	Looking at the region enables analysis to compare the primary and secondary impact zones to the wider area in order to further understand the local context.
National	England / Great Britain *	Looking at the national scale enables analysis to compare the primary and secondary impact zones to the rest of the country in order to further understand the local context.

*Dependent on availability of data

- 10.8. Baseline socio-economic conditions will be established using the most up-to-date available secondary data, establishing the extent to which the following key indicators have changed over time. Baseline information will be sought from sources that include:

- Overarching National Policy Statement for Energy (EN-1).
- National Policy Statement for Renewable Energy (EN-3).
- The National Planning Policy Framework (NPPF).
- Office for National Statistics (ONS).
- Ministry of Housing, Communities & Local Government.
- The Government's Levelling Up White Paper.
- Information obtained from the Applicant.

10.9. A summary of key baseline characteristics of the relevant geographies at this present time is as follows:

- Population: Between 2012 and 2022 the population of Mid Suffolk grew by 8.5%. This compares to population growth of 8.2% in the East of England and 6.7% in England. The fastest growing age group in Mid Suffolk in this time was those aged 65+ with an increase of 28.8%. Between 2018 and 2038, the population of Mid Suffolk is projected to increase by 11%, compared to 8.5% for the East of England and 8.6% for England.
- Employment: Based on data from the Office for National Statistics, as of 2022, there were 39,000 jobs in Mid Suffolk. This was a rise of 2.6% (1,000) since 2015. This increase was below the equivalent changes in employment for the East of England (7.4%) and England (7.8%). Of the 39,000 jobs in Mid Suffolk, 5,000 (12.8%) were in the construction sector.
- Unemployment: As of April 2024, the claimant count in Mid Suffolk was 2.1%, which has decreased from 3.5% in April 2021. The latest rate was below the corresponding figures for the East of England (3.1%) and England (3.9%).
- Commuting data: According to Census data, as of 2021 there were 34,871 people that lived and worked in Mid Suffolk. In 2021, there were 11,192 people that worked in Mid Suffolk and lived elsewhere and 15,012 people that lived in Mid Suffolk but worked elsewhere. This gives a net outflow of 3,820 commuters.
- Economic Output: Between 2012 and 2022, the gross value added (GVA) in Mid Suffolk grew by 47.3% (£794million) to reach £2.5billion. This was above the growth in GVA that was seen in the East of England (46.6%), but below the growth seen in the United Kingdom (51.8%).
- Deprivation: The project is located across two LSOAs, Mid Suffolk 005C and 007D. Based on data from the Index of Multiple Deprivation, Mid Suffolk 005C has an overall rank of 16,907 putting it in the top 50% least deprived LSOAs in England (out of 32,844, rank 1 is most deprived and 32,844 is least). Mid Suffolk 005C has its' highest rank in health with an overall rank of 30,412, putting it in the top 10% least deprived LSOAs. It has its lowest rank in barriers to housing and services with a rank of 3,584, putting it in the top 20% most deprived

LSOAs for this domain. Mid Suffolk 007D has an overall rank of 15,520, putting it in the top 50% most deprived LSOAs in the country. It has its highest rank in the crime domain with a rank of 25,687, putting it in the top 30% least deprived LSOAs for this domain. It has its lowest rank in barriers to housing and services with a rank of 1,230, putting it in the top 10% most deprived LSOAs for this domain.

10.10. Other key indicators that will be included in the baseline analysis are:

- Business base.
- Qualifications and skills.
- Economic activity.
- Economic output.
- Visitor Economy.
- Accommodation provision.

Likely Significant Effects

10.11. During construction, it is anticipated that the Project will generate the following socio-economic effects:

- Employment – direct, indirect and induced jobs based in the local and wider impact areas.
- Economic output – measured in gross value added (GVA, generated by the employment supported during the construction phase).
- Accommodation – potential impacts on available accommodation as a result of construction workers required during the construction phase.

10.12. Once completed and fully operational, it is anticipated that the socio-economic effects associated with the Project will include the following:

- Employment – direct, indirect and induced jobs based in the local and wider impact areas.
- Economic Output – measured in gross value added (GVA, generated by the employment supported once operational).
- Business rates revenue – measured in terms of the business rates generated by the Project comparing to existing levels, where available.

10.13. During decommissioning, it is anticipated that the Project will generate the following socio-economic effects:

- Employment – direct, indirect and induced jobs based in the local and wider impact areas.

- Economic output – measured in gross value added (GVA, generated by the employment supported during the decommissioning phase).
- Accommodation – potential impacts on available accommodation as a result of workers required during the decommissioning phase.

10.14. Table 10.5 presents a summary of the scope of the assessment, including consideration of potential effects, the study areas within which the effect is applicable, and the relevant receptors.

Table 10.5: Summary of assessment scope

Potential effect	Relevant study area	Potential receptors(s)
Construction		
Employment	Primary & Secondary impact zones	District and county level economy
Economic contribution	Primary & Secondary impact zones	District and county level economy
Serviced/Non-Serviced Accommodation Demand	Primary impact zone	District visitors
Operation		
Employment	Primary & Secondary impact zones	District and county level economy workforce
Economic contribution	Primary & Secondary impact zones	District and county level economy
Business rates	Primary impact zone	District economy
Decommissioning		
Employment	Primary & Secondary impact zones	District and county level economy
Economic contribution	Primary & Secondary impact zones	District and county level economy

Potential effect	Relevant study area	Potential receptors(s)
Serviced/Non-Serviced Accommodation Demand	Primary impact zone	District visitors

Impacts to be Scoped Out

- 10.15. The Applicant is intending to accommodate any construction or decommissioning workers who reside from outside of the local area in Serviced and/or Non-Services Accommodation as opposed to residential dwellings (rental or otherwise). As such, consideration of potential effects on housing supply, be it affordable or otherwise, is scoped out of the assessment. Table 10.6 shows a summary of the impacts that will be scoped in or out of the assessment.

Table 10.6: Summary of Impacts to be scoped in or out of the assessment

Socio-Economic Impact	Scoped In/Out
Construction	
Employment	In
Economic contribution	In
Serviced/Non-Serviced Accommodation Demand	In
Housing Supply	Out
Operation	
Employment	In
Economic contribution	In
Business rates	In
Decommissioning	

Socio-Economic Impact	Scoped In/Out
Employment	In
Economic contribution	In
Serviced/Non-Serviced Accommodation Demand	In
Housing Supply	Out

Assumptions & Limitations

- 10.16. Baseline information is derived from the latest available statistics, however there is often a time-lag associated with the publication of this data. As such, the latest available data at the time of finalization of assessment documentation will be presented.

Preliminary Discussions of Potential Mitigation and Enhancement Measures

- 10.17. Requirements for mitigation and opportunities for enhancement measures will be identified and discussed with relevant consultees and the Applicant as soon as practicable.

Cumulative Effects

- 10.18. Cumulative schemes will be studied as part of this assessment. The schemes chosen will align with other chapters and will be assessed in the same manner as the Project in isolation. The schemes which will be assessed will be those within the Primary and Secondary Impact Zones which are also associated with renewable energy development, and for which there is potential for overlap in respect of potential effects with the Project.

11. Transport and Access

Introduction

- 11.1. The Transport and Access chapter of the EIA will be prepared with reference to the Institute of Environmental Assessment (IEMA) Guidelines '*Environmental Assessment of Traffic and Movement*' (2023), as appropriate.
- 11.2. This section of the Scoping Report sets out the proposed methodology for the assessment of the Scheme against transportation matters. In particular, the methodology would consider the potential effects of the Scheme on the local and strategic highway network.

Relevant Policy and Guidance

- 11.3. The transport impact of the Scheme will be considered with reference to local and national guidance and policy contained in the National Planning Policy Framework (NPPF), National Planning Practice Guidance (NPPG), National Policy Statements (NPS), namely the Overarching National Policy Statement for Energy (EN-1 chapter 15.14 'Traffic and Transport') and the National Policy Statement for Renewable Energy Infrastructure (EN-3, chapter 2.10 'Solar Photovoltaic Generation'), IEMA Guidelines for the Environmental Assessment of Traffic and Movement, the Design Manual for Roads and Bridges (DMRB), the Suffolk Local Transport Plan (2011-2031) and the Barbergh and Mid Suffolk Local Plan, as appropriate.

Consultation

- 11.4. No consultation with the highway authority (Suffolk County Council) has been carried out to date.

Preliminary Assessment of Baseline Conditions

- 11.5. As part of the assessment work, the Transport and Access chapter would consider the baseline transportation conditions including traffic flows and highway safety.
- 11.6. At this stage, it is proposed that Annual Average Daily Traffic (AADT) will be assessed at a total of nine links on the local highway network. A combination of Department for Transport (DfT) traffic count data and Automatic Traffic Count (ATC) surveys will be used to provide baseline flows at each link. The proposed link locations are indicatively shown at **Appendix 13.1** alongside the indicative access locations.
- 11.7. A future year of 2027 is proposed for the consideration of temporary construction traffic, on the basis that this will represent the period of peak construction.
- 11.8. A future year of 2029 is proposed for the consideration of operational traffic, on the basis that all construction activities at the site will be complete. The TEMPro growth rates will be determined through dialogue with the local highway authorities in due course.

Potential Impacts / Effects

- 11.9. Access to the site is proposed via multiple new and upgraded access points from the local highway network. These access points will be used for construction purposes with some of the access points retained for operational use (enabling infrequent maintenance etc.) following completion of the construction phase.
- 11.10. The proposals will also be supported by a Transport Statement (TS) and Construction Traffic Management Plan (CTMP). The TS will summarise the proposed access points and traffic movements expected once the site is operational. The CTMP will summarise the traffic movements anticipated throughout the construction period of the Scheme (estimated at this stage to include a 16–24 month construction period) and the associated mitigation measures to be agreed with the highway authority. A scope for the TS and CTMP will be agreed with the highway authority in due course.

Scope and Methodology of Assessment

- 11.11. IEMA rules will be applied to define the threshold impacts for development traffic which will inform the scale and extent of the Transport chapter work. On this basis, links where the traffic flows are expected to increase by more than 30%, or where HGV flows are expected to increase by more than 30% as a result of the scheme will be considered. Links in proximity to sensitive receptors, where traffic flows are expected to increase by more than 10% as a result of the scheme will also be considered. Sites that are considered to be sensitive receptors with reference to the IEMA Guidelines are Conservation Areas, schools, health facilities, community facilities and congested junctions. Any sensitive receptors will be agreed with the highway authority in due course.
- 11.12. Where the predicted increase in traffic and HGV flow is lower than these thresholds then the significance of the effects can be considered to be low or not significant, and it is considered that detailed assessment is not required.
- 11.13. The Transport chapter would provide an assessment of the predicted impact on the local highway network by using pre-defined significance criteria set out within the IEMA guidance. Those criteria will be based on the net change in journeys as a result of construction and operational traffic values and any mitigation to be delivered as part of the proposals. The significance criteria would establish the magnitude of any beneficial or adverse effects the scheme will have on the transport network.
- 11.14. Liaison will take place with highway officers at the local highway authority, as appropriate.
- 11.15. In summary, with reference to the IEMA guidance, it will consider the forecast impacts of the proposed solar development on the following throughout both the construction, operational and decommissioning phases of the development:
- severance and delay;
 - road safety; and

- hazardous / large loads.

11.16. It is noted that there are six Public Right of Way (PRoW) routes which cross or abut the Site. The temporary diversion or stopping up of the PRoW will be considered in consultation with PRoW officers in due course.

11.17. The residual impacts of the scheme, taking into account any proposed mitigation would then be assessed and confirmed. It is anticipated that other related potential impacts such as noise and vibration and air quality will be considered by other disciplines throughout the EIA process.

Matters Scoped Out of Assessment

11.18. Given that there are anticipated to be limited pedestrians within the vicinity of the site (noting the absence of footway provision for the majority of the local highway network within the vicinity of the site), it is not considered necessary to consider the impacts of the scheme on:

- pedestrian delay;
- non-motorised user amenity; and
- fear / intimidation.

Preliminary Discussion of Mitigation and Enhancement Measures

11.19. With regards to the completed and operational Proposed Development, many mitigation measures are embedded into the design of the scheme. If likely significant effects are determined even with such embedded mitigation, where possible, mitigation measures will be proposed so that residual effects are not significant.

Cumulative Effects

11.20. Consideration will be given to the cumulative effects of the transport impact associated with the Proposed Development. This will include for the traffic generated from committed developments within an agreed study area, which will be agreed with the local planning and highway authorities.

Conclusions on Scoping

11.21. Table 11.1 below summarises the results of the initial transport and access scoping assessment. Please note that whilst the final assessment within the ES will deal with the likely impact of traffic and transport on each receptor and for each of the criteria identified in the EIA Guidelines, the following table gives a broad indication of the overall residual effects considered likely.

Table 11.1 – Transport Assessment Criteria to be Scoped Out

Assessment Criteria	Scoped In / Out
Severance and Delay	In
Road Safety	In
Hazardous / Large Loads	In
Pedestrian Delay	Out
Non-Motorised User Amenity	Out
Fear / Intimidation	Out

12. Noise and Vibration

Introduction

- 12.1. Ion Acoustics is appointed to advise on noise issues in relation to the White Elm Solar Farm project. A description of the project is presented in Chapter 2 of this Scoping Report.
- 12.2. Solar farms are not normally considered noisy and operational noise is rarely heard outside of the site boundary. However, various electrical components, such as inverters, transformers, and cooling systems for the battery and inverter containers can emit low levels of noise. As such operational noise levels will be assessed for the EIA against noise limits set to protect residential amenity. Operational noise will be predicted using computer modelling to determine noise levels at nearby noise-sensitive receptors.
- 12.3. Noise can also be generated during the construction period from the construction of new access tracks, cable trenches, hard standings and from the installation of the solar panel frame supports. Most of these activities will occur within the main site far from residential properties. Noise from the transportation of construction materials solar farm and battery components will also occur on local roads.
- 12.4. In view of its remote location, a formal construction noise assessment is not included here. However, a Construction Environmental Management Plan will be prepared if permission is granted for agreement with the local authority. This will detail how construction noise can be controlled using best practicable means. Best practicable means involves using all measures to reduce noise subject to practicality and cost.
- 12.5. Noise during the decommissioning phase will be similar to the construction phase and again no numerical assessment is proposed.

Baseline Conditions

Site Context

- 12.6. The site is in a rural area to the north of Mendlesham. Various noise-sensitive receptors are distributed across the site. These are mostly farmhouses.
- 12.7. Noise levels are likely to be low and determined by traffic noise from the A140 as well as agricultural activity, and other natural sounds such as the wind in the trees and birdsong.

Noise Survey

- 12.8. A noise survey will be carried out to determine baseline noise levels in the area. The typical background noise can be used to determine noise limits for the project in accordance with British Standard BS 4142. The noise monitoring positions will be selected on the basis of preliminary noise predictions and agreed with the local authority.

- 12.9. Figure 12.1 below provides the order limits and four proposed monitoring locations which have been selected to be representative of the noise-sensitive receptors in the area (dwellings). They are all within the site boundary.



Figure 12.1 Site Location and Potential Noise Monitoring locations © Bing

- 12.10. A week-long survey is planned to monitor noise levels over a range of conditions. A weather station will be set up to monitor weather conditions. The noise monitoring positions and methodology for setting limits will be agreed with Mid Suffolk District Council.

Consultation

- 12.11. An informal consultation email has been sent to both the local planning authority and County Council to discuss the proposed monitoring locations.
- 12.12. An email response was received from the local planning authority on the 5th September 2024. The Council agreed in principle with the proposed monitoring strategy though proposed some additional investigation be undertaken of potential dwellings in the vicinity of monitoring location 4. This has been incorporated into the noise monitoring programme

Relevant Policy Context

National Policy Statements (NPS).

- 12.13. The energy National Policy Statements (NPS) set out the government's policy for the delivery of energy infrastructure and provide the legal framework for planning decisions. They were first designated and published in 2011.
- 12.14. The NPS do not provide limits however, policies EN-1 and EN-3 do reference acoustics and offer generic advice without specific criteria.
- 12.15. Policy EN1 details factors '*which will determine the likely noise impact of a proposed development*'. These include elements such as the operational noise and its characteristics i.e. tonal noise, proximity of receptor locations and the existing nature of the location. The policy indicates that the decision maker should be satisfied that the proposals:
- 'avoid significant adverse impacts on health and quality of life from noise
 - mitigate and minimise other adverse impacts on health and quality of life from noise
 - where possible, contribute to improvements to health and quality of life through the effective management and control of noise'
- 12.16. Policy EN03 identifies factors for consideration with a number of renewable energy schemes including wind, biomass and solar schemes. For solar schemes, the policy highlights the potential for noise and vibration associated with construction phase activities, including vehicle movements.

National Planning Policy Framework (NPPF)

- 12.17. In 2012 the National Planning Policy Framework (NPPF) replaced a number of Planning Policy Statements with a single document which is intended to promote sustainable development. The NPPF was revised in December 2023 and certain aspects of the guidance changed.
- 12.18. The NPPF sets out the Government's planning policies for England. The document is generally not prescriptive and does not provide noise criteria. Instead, it places the onus on local authorities to develop their own local plans and policies. Sections of the NPPF relating to noise are stated below:

180. Planning policies and decisions should contribute to and enhance the natural and local environment by:

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans;

191. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason;

Noise Policy Statement for England (NPSE)

12.19. The Noise Policy Statement for England (NPSE) sets out the Government's policy on environmental and neighbourhood noise for England. The policy has three aims:

- "avoid significant adverse impacts on health and quality of life;
- mitigate and minimise adverse impacts on health and quality of life; and
- where possible, contribute to the improvement of health and quality of life.

12.20. The NPSE introduces the following terms which are also used in the NPPF:

"NOEL – No Observed Effect Level

This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

LOAEL – Lowest Observed Adverse Effect Level

This is the level above which adverse effects on health and quality of life can be detected.

SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur."

12.21. However, neither the NPSE nor the NPPF defines numeric bounds for NOEL, LOAEL or SOAEL. The boundary of each effect level should be defined for each situation and location.

12.22. Further Government planning advice is available online . The online guidance refers to the NPPF and NPSE and presents a noise assessment hierarchy table to provide further information on the boundaries between NOEL, LOAEL and SOAEL. This is shown below in Table 1.

Table 12.1: Noise Assessment Hierarchy Table

Perception	Examples of Outcomes	Increasing Effect Level	Action
No Observed Effect Level			
Not noticeable	No Effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

BS4142: 2014 +A1: 2019 – Assessment Principles

- 12.23. The standard method for assessing noise of a commercial or industrial nature affecting housing, is British Standard BS 4142 “Method for rating and assessing industrial and commercial sound”. A BS 4142 assessment is typically made by determining the difference between the industrial noise under consideration and the background sound level as represented by the L_{A90} parameter, determined in the absence of the industrial noise. The L_{A90} parameter is defined as the level exceeded for 90% of the measurement time, representing the underlying noise in the absence of short duration noise events such as dog barks or individual cars passing.
- 12.24. The industrial noise under consideration is assessed in terms of the ambient noise level, L_{Aeq} , but a character correction penalty can be applied where the noise exhibits certain characteristics such as distinguishable tones, impulsiveness or, if the noise is distinctively intermittent. The ambient noise level, L_{Aeq} is defined as the steady-state noise level with the same energy as the actual fluctuating sound over the same time period. It is effectively the average noise level during the period. The industrial noise level (L_{Aeq}) with the character correction (if necessary) is known as rating level, L_{Atr} , and the difference between the background noise and the rating level is determined to make the BS 4142 assessment. The standard then states:
- a) “Typically, the greater the difference, the greater the magnitude of the impact.
 - b) A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.
 - c) A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.
 - d) The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.”
- 12.25. The standard outlines a number of methods for defining appropriate ‘character corrections’ to determine the rating levels to account for tonal qualities, impulsive qualities, other sound characteristics and/or intermittency.
- 12.26. The standard also highlights the importance of considering the context in which a sound occurs. The standard indicates that factors including the absolute sound level, the character of the sound, the sensitivity of the receptor and the existing acoustic character of the area should be considered when assessing the noise impact. The absolute sound level is of particular importance where the measured background sound levels are low, which is typically taken as L_{A90} 30dB and below. In regard to low sound levels, the standard states:

“Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night.”

BS 8233: 2014 and WHO criteria

12.27. British Standard BS 8233: 2014 and the World Health Organisation (WHO) provide absolute noise criteria to protect residential amenity. These are detailed in Table 12.2 below.

Table 12.2: WHO / BS 8233: 2014 Guideline Noise Levels for External Noise

Location	Critical Health Effect	07:00 to 23:00	23:00 to 07:00
Outside Bedroom Windows	Sleep Disturbance (Windows Open)	--	45dB L _{Aeq, 8hours} ⁽¹⁾
Amenity Spaces (Gardens / Patios)	Moderate Annoyance	50dB L _{Aeq, 16 hours} ⁽²⁾	--
	Serious Annoyance	55dB L _{Aeq, 16 hours} ⁽²⁾	--
Notes:			
(1) From WHO Community Noise Guidelines (1999)			
(2) BS 8233: 2014 and WHO Community Noise Guidelines			

12.28. The daytime limits apply to relatively anonymous noises without character and are commonly applied to traffic noise. The WHO night-time threshold of 45 dB L_{Aeq, 8hr} represents an 8-hour L_{Aeq} outside noise-sensitive rooms to prevent sleep disturbance. The WHO limit is a level at 1m from the façade. Therefore, the equivalent free-field level would be approximately 3dB lower, that is 42 dB L_{Aeq}.

Significance Criteria

12.29. In accordance with the NPS, NPPF, the NPSE, and PPG for noise, the LOAEL and SOAEL have been proposed for each noise and vibration source which has been assessed.

12.30. The positive ('beneficial') and negative ('adverse') noise and vibration effects have been defined in accordance with the significance criteria presented in Chapter 5: EIA Methodology. Based on the descriptions of the adverse effect levels in the PPG for noise, recommended actions for each significance level have been provided. The noise and vibration significance criteria are presented in Table 12.3.

Table 12.3 EIA Significance Level and Noise and Vibration Adverse Effect Level

EIA Significance Level	Noise and Vibration Adverse Effect Level	Impact and Action (to be applied to potential effects)
High	SOAEL	Noise causes a material change in behaviour and/or

		attitude. This level should be avoided.
Medium	-	Noise can be heard and causes small changes in behaviour or attitude. Noise should be mitigated and reduced to a minimum.
Low	LOAEL	Noise can be heard but does not cause a change in behaviour or attitude. No specific mitigation measures are required.
Negligible	NOEL	Noise has no effect. No specific measures required.

Potential Significant Effects

Construction Noise

- 12.31. The following legislation and standards are of particular relevance to construction noise:
- The Control of Pollution Act 1974 (CoPA 1974);
 - BS 5228: 2009 Code of Practice for Noise and Vibration Control on Construction and Open Sites.
- 12.32. CoPA 1974 provides local authorities in England and Wales with powers to control noise and vibration from construction sites. Section 60 of the Act enables a Local Authority to serve a notice to a contractor of its requirements for the control of site noise. Section 61 of the Act allows for those carrying out construction work to apply to the Local Authority in advance for consent to carry out the works.
- 12.33. Construction noise can be assessed using British Standard BS 5228 which provides a calculation method and general guidance on controlling noise and vibration from construction sites. This standard:
- Refers to the need for the protection against noise and vibration of persons living and working in the vicinity of and those working on construction sites;
 - Recommends procedures for noise and vibration control in respect of construction operations; and
 - Stresses the importance of community relations, stating that early establishment and maintenance of these relations throughout the site operations will go some way towards allaying people's fears.

- 12.34. There are no noise limits within the main text of BS 5228 and in fact, the preferred approach is to use best practicable means to reduce noise rather than setting limits. This means that everything practicable should be done to reduce noise.
- 12.35. The acceptability of construction noise is likely to be affected by the location of the site relative to the noise sensitive premises; existing ambient noise levels; the duration and working hours of site operations; the characteristics of the noise produced and the attitude of local residents to the site operator.
- 12.36. It is acknowledged that construction noise could result in an adverse noise effect in certain situations (i.e. close proximity to noise sensitive receptors), however it should be noted that potential adverse effects due to construction noise are temporary in nature. Construction activities will be controlled via a construction environmental management plan (CEMP) which will set out best practicable means measures to control noise.
- 12.37. Given that construction noise is temporary, typically occurring in the daytime, it is not always necessary to consider construction noise within the scope of an Environmental Impact Assessment and it is proposed that a construction noise assessment is excluded from the EIA. This assumes that the solar panel frame supports can be installed using a push-piling rig such that impact-driven piles are not necessary. Similarly, it is not proposed to assess the effects of construction traffic.
- 12.38. The proposal to scope out a numerical assessment of construction noise and construction traffic noise should be confirmed by the local planning authority.

Operational Noise

- 12.39. An assessment of operational noise will be undertaken to describe the noise impact at the nearest noise-sensitive receptors (dwellings).
- 12.40. A computer noise model will be constructed using a computer noise modelling software package to calculate the operational noise levels at the nearest identified assessment positions. Within the modelling software, propagation of noise will be calculated in accordance with ISO 9613-2 with the following input parameters:
- Downwind propagation (noise levels under crosswind and upwind conditions will be less);
 - Soft ground between the noise source and the receiver locations ($G = 1.0$);
 - Ambient air temperature of 10°C and 70% Relative Humidity; and,
 - Barriers and screening influence including the effect of the solar panels calculated in accordance with ISO 9613-2. The screening effect of the solar panels will be included in the model. This can reduce noise from string inverters which are normally provided behind the panels.
- 12.41. Noise information on the equipment will be taken from manufacturer's data where provided, and from library data used on previous assessments. In most cases, the manufacturer's information does not provide any information on tonality. However, it

is known that inverters and transformers can produce tones. For the inverters, this would be generally high frequency tones which are readily dissipated by atmospheric absorption. Tonality will be considered in the noise assessment.

BS 4142 Assessment

Proposed Operational Noise Targets

- 12.42. Noise targets will be derived on the basis of the noise survey. BS 4142 states that a low impact (subject to context) occurs when the BS 4142 rating level (dB L_{Ar}) is no greater than the typical background noise for the relevant operational period. It is proposed to derive the operational noise limits on this basis to ensure the project is within the lowest observed adverse effect level (LOAEL).
- 12.43. The operational period would include the daytime period in respect of the solar farm but a separate limit will be derived for the night-time when the BESS may be operational.
- 12.44. The noise limits are set in terms of the BS 4142 rating noise level dB L_{Ar} and therefore include any character penalties in the noise (tonality etc). These noise limits should be agreed with the local authorities.
- 12.45. In instances of low rating noise levels, BS4142 indicates that assessment in line with absolute noise limits might be as, or more, appropriate than a relative assessment. Such criteria would be relevant if the noise survey indicates that existing noise levels are low, for example below 30 dB L_{A90} .

Potential Mitigation

- 12.46. In principle, mitigation, where required, is best provided at source. A more detailed assessment of the equipment noise levels will be carried out during the EIA stage.
- 12.47. The string inverters for the solar farm will be screened to some extent by the panels but further information on the noise levels and the layout can be considered. The noise model will include an even distribution of the noise sources around the site but it will be possible to a certain extent to position the inverters away from the most sensitive properties.
- 12.48. If these methods of mitigation are not sufficient further options such as acoustic barriers can be considered. This would also be considered for the battery storage element.
- 12.49. All of these factors will be considered during the EIA process.

Assumptions, Limitations and Uncertainties

- 12.50. A noise survey will be carried out during the EIA process so that the operational noise levels can be assessed relative to existing baseline noise levels. This will provide a more robust assessment.

- 12.51. At present, it is not intended to address construction noise during the EIA as construction noise levels are temporary and noise occurs during the daytime only. Best practicable means can be used to control construction noise and a Construction Environmental Management Plan (CEMP) will be prepared detailing how environment effects can be managed. This will include noise.

Assessment of Cumulative Effects

- 12.52. To fully assess the potential cumulative effects, consideration should be given to existing and committed developments of a similar nature within a study area of 1 km. These developments will be identified and agreed with the local authority.

Conclusions on Scoping

- 12.53. Table 12.4 below summarises the results of the scoping assessment for acoustics.

Table 12.4 Acoustic Aspects to be Scoped Out

Acoustic Impact Pathway/Receptor	Scoped In/Out
Construction Phase	
Construction Noise	Out
Construction Vibration	Out
Operational Phase	
Operational Noise	In
Operational Vibration	Out
Decommissioning Phase	
Decommissioning Noise	Out
Decommissioning Vibration	Out

13. Air Quality and Greenhouse Gases

- 13.1. Air Quality Consultants is appointed to advise on air quality and greenhouse gas considerations in relation to the White Elm Solar Farm project.

Consultation

Air Quality

- 13.2. No consultation with Mid Suffolk District Council (MSDC) has taken place to date.

Greenhouse gas emissions

- 13.3. No consultation with MSDC has taken place to date.

Baseline Conditions

Air Quality

- 13.4. MSDC monitors air quality throughout its area using two nitrogen dioxide (NO₂) diffusion tube monitoring sites in Stowmarket, located approximately 8 km south west of the Site. The Council does not operate any automatic monitoring within its area. Table 13.1 shows diffusion tube monitoring data for the last five years, with monitoring locations shown in Figure 13.1 (end of chapter). While 2020 results have been presented in this Section for completeness, they are not relied upon in any way as they will not be representative of 'typical' air quality conditions due to the considerable impact of the Covid-19 pandemic on traffic volumes and thus pollutant concentrations.
- 13.5. The results presented in Table 13.1 show that there were no measured exceedances of the annual mean NO₂ objective of 40 µg/m³ at any of the monitoring sites near to the Site within the last five years. Furthermore, concentrations were below 60 µg/m³ at both monitoring sites, which indicates that exceedances of the 1-hour mean objective are unlikely⁴¹.

Table 13.1 Summary of Annual Mean NO₂ Monitoring (µg/m³), 2018 to 2022⁴²

Site No.	Site Type	Location	2018	2019	2020	2021	2022
MSDC1	Roadside	Station Road West, Stowmarket	30.8	31.2	24.8	28.4	28.0

⁴¹ Defra (2022) Review & Assessment: Technical Guidance LAQM.TG22 August 2022 Version, Available: <https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf>

⁴² Mid Suffolk District Council (2023) 2023 Air Quality Annual Status Report

MSDC2	Roadside	Cottage Farmhouse, Stowmarket	22.2	21.4	16.1	17.4	17.8
Objective			40				

13.6. No monitoring of PM₁₀ or PM_{2.5} concentrations is undertaken in Mid-Suffolk.

13.7. Further baseline air quality conditions at the Site will be determined, as necessary, via:

- Consultation with MSDC;
- Review of MSDC's air quality Review and Assessment reports and collation of published data, as well as any unpublished data made available by MSDC;
- Background pollutant concentrations will be determined from the Department for Environment, Food & Rural Affairs (Defra's) background maps ;
- Examination of maps and aerial photographs;
- A review of nearby industrial operations using the Government's Pollutant Release and Transfer Register; and
- If required, detailed dispersion modelling, as described below.

Greenhouse Gases

13.8. The majority of the Site is currently used as agricultural land. Agricultural activities are a net emitter of Greenhouse Gas (GHG) emissions, although the amount of carbon released per hectare of farmland will vary depending on specific farming types and practices. A report by Natural England on UK carbon sequestration⁴³ estimates average net GHG emissions from land under arable agricultural to be 0.29 tCO₂e⁴⁴/ha/yr. Based on a total Site area of over 272 hectares, this would result in baseline annual GHG emissions of approximately 81 tCO₂, which is a very small amount. In any event, the baseline GHG emissions will be very small and as such, baseline GHG emissions will be considered to be zero for the purposes of the assessment. The assessment will though acknowledge the importance of agricultural soils as soil carbon stores, and consider the measures taken to protect the carbon already stored in soils on the Site.

In order to demonstrate the potential GHG savings to the power sector as a result of the zero-emission electricity that will be provided by the project, an alternative

⁴³ Natural England (2021) Carbon storage and sequestration by habitat: a review of the evidence (second edition)

⁴⁴ Carbon dioxide equivalent (CO₂e) is a term for describing different greenhouse gases in a common unit. For any quantity and type of greenhouse gas, CO₂e signifies the amount of CO₂ which would have the equivalent global warming impact.

baseline to the GHG assessment will be considered, which will take account of electricity currently provided to the national grid via non-renewable means e.g., primarily from natural gas fired power stations. It will be assumed that electricity fed into the national grid from the project will displace existing provision from non-renewable means.

Study Area

- 13.9. The anticipated study area for the Air Quality and Greenhouse gas emissions assessments is shown in Figure 13.1 (end of chapter).

Relevant Policy Context

Air Quality

National Policies

- 13.10. The National Policy Statement (NPS) for Renewable Energy Infrastructure (EN-3)⁴⁵, together with the Overarching National Policy Statement for Energy (EN-1)⁴⁶, provides a policy basis for decisions regarding nationally significant renewable energy infrastructure projects. There is no specific NPS for solar projects albeit there is a section dedicated to solar in EN-3. In terms of the assessment of air quality impacts, paragraphs 5.2.8 and 5.2.9 in EN-1 state:

“Where the project is likely to have adverse effects on air quality the applicant should undertake an assessment of the impacts of the proposed project as part of the Environmental Statement (ES).

The ES should describe:

- *existing air quality concentrations and the relative change in air quality from existing levels;*
- *any significant air quality effects, mitigation action taken and any residual effects, distinguishing between the project stages and taking account of any significant emissions from any road traffic generated by the project;*
- *the predicted absolute emissions, concentration change and absolute concentrations as a result of the proposed project, after mitigation methods have been applied; and*
- *any potential eutrophication impacts.*

- 13.11. In terms of dust emissions, paragraphs 5.7.5 to 5.7.7 state:

⁴⁵ Department for Energy Strategy & Net Zero (2023) National Policy Statement for Renewable Energy Infrastructure (EN-3)

⁴⁶ Department for Energy Strategy & Net Zero (2023) Overarching National Policy Statement for Energy (EN-1)

"The applicant should assess the potential for... emissions of... dust... to have a detrimental impact on amenity, as part of the ES.

In particular, the assessment provided by the applicant should describe:

- *the type, quantity and timing of emissions;*
- *aspects of the development which may give rise to emissions;*
- *premises or locations that may be affected by the emissions;*
- *effects of the emission on identified premises or locations; and*
- *measures to be employed in preventing or mitigating the emissions.*

The applicant is advised to consult the relevant local planning authority and, where appropriate, the EA about the scope and methodology of the assessment."

13.12. EN-1 (in paragraph 5.2.12) also states that *"Where a project is likely to lead to a breach of any relevant statutory air quality limits, objectives or targets, or affect the ability of a noncompliant area to achieve compliance within the timescales set out in the most recent relevant air quality plan/strategy at the time of the decision, the applicant should work with the relevant authorities to secure appropriate mitigation measures to ensure that those statutory limits, objectives or targets are not breached"*.

13.13. Further, paragraph 5.2.13 states that *"The Secretary of State should consider whether mitigation measures are needed both for operational and construction emissions over and above any which may form part of the project application. A construction management plan may help codify mitigation at this stage. In doing so the Secretary of State should have regard to the Air Quality Strategy in England..., or any successors to these and should consider relevant advice within Local Air Quality Management guidance and PM_{2.5} targets guidance."*

13.14. EN-3 includes a section on the impacts of solar photovoltaic generation, however that section does not refer to air quality.

13.15. The National Planning Policy Framework (NPPF)⁴⁷ sets out planning policy for England. It states that the purpose of the planning system is to contribute to the achievement of sustainable development, and that the planning system has three overarching objectives, one of which (Paragraph 8c) is an environmental objective:

"to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy".

⁴⁷ Ministry of Housing, Communities & Local Government (2023) National Planning Policy Framework

- 13.16. To prevent unacceptable risks from air pollution, Paragraph 180 of the NPPF states that:
- “Planning policies and decisions should contribute to and enhance the natural and local environment by...(e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air quality.”*
- 13.17. Paragraph 191 states:
- “Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development”.*
- 13.18. More specifically on air quality, Paragraph 192 makes clear that:
- “Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan”.*
- 13.19. The NPPF is supported by Planning Practice Guidance (PPG)⁴⁸, which includes guiding principles on how planning can take account of the impacts of new development on air quality. The PPG states at paragraph 001 that:
- “Defra carries out an annual national assessment of air quality using modelling and monitoring to determine compliance with Limit Values. It is important that the potential impact of new development on air quality is taken into account where the national assessment indicates that relevant limits have been exceeded or are near the limit, or where the need for emissions reductions has been identified”.*
- 13.20. Regarding plan-making, the PPG states at paragraph 002:
- “It is important to take into account air quality management areas, Clean Air Zones and other areas including sensitive habitats or designated sites of importance for*

⁴⁸ Ministry of Housing, Communities & Local Government (2019) Planning Practice Guidance

biodiversity where there could be specific requirements or limitations on new development because of air quality”.

- 13.21. Regarding the need for an air quality assessment, the PPG states at paragraph 005 that:

“Whether air quality is relevant to a planning decision will depend on the project and its location. Concerns could arise if the development is likely to have an adverse effect on air quality in areas where it is already known to be poor, particularly if it could affect the implementation of air quality strategies and action plans and/or breach legal obligations (including those relating to the conservation of habitats and species). Air quality may also be a material consideration if the proposed development would be particularly sensitive to poor air quality in its vicinity”.

- 13.22. The PPG sets out the information that may be required in an air quality assessment, making clear at paragraph 007 that:

“Assessments need to be proportionate to the nature and scale of development proposed and the potential impacts (taking into account existing air quality conditions), and because of this are likely to be locationally specific.”

- 13.23. The PPG also provides guidance on options for mitigating air quality impacts, as well as examples of the types of measures to be considered. It makes clear at paragraph 008 that:

“Mitigation options will need to be locationally specific, will depend on the proposed development and need to be proportionate to the likely impact. It is important that local planning authorities work with applicants to consider appropriate mitigation so as to ensure new development is appropriate for its location and unacceptable risks are prevented”.

Road To Zero Strategy

- 13.24. The Office for Low Emission Vehicles (OLEV) and Department for Transport (DfT) published a Policy Paper⁴⁹ in July 2018 outlining how the government will support the transition to zero tailpipe emission road transport and reduce tailpipe emissions from conventional vehicles during the transition. This paper affirms the Government’s pledge to end the sale of new conventional petrol and diesel cars and vans by 2040, and states that the Government expects the majority of new cars and vans sold to be 100% zero tailpipe emission and all new cars and vans to have significant zero tailpipe emission capability by this year, and that by 2050 almost every car and van should have zero tailpipe emissions. It states that the Government wants to see at least 50%, and as many as 70%, of new car sales, and up to 40% of new van sales, being ultra-low emission by 2030.
- 13.25. The paper sets out a number of measures by which Government will support this transition, but is clear that Government expects this transition to be industry and

⁴⁹ DfT (2018) The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy

consumer led. The Government has recently announced that 80% of new cars and 70% of new vans sold in Great Britain must be zero emission by 2030, increasing to 100% by 2035. If these ambitions are realised then road traffic-related NO_x emissions can be expected to reduce significantly over the coming decades, likely beyond the scale of reductions forecast in the tools that will be utilised in carrying out the air quality assessment.

Local Policies

- 13.26. The Babergh and Mid Suffolk Joint Local Plan, Part 1⁵⁰ was adopted in November 2023, which provides a framework for shaping communities and guiding future development, until the year 2037. It is envisaged Part 2 will be adopted in due course. Part 1 of the Joint Local Plan includes Policy SPO9 'Enhancement and Management of the Environment, which states that:

"Where the monitoring of air quality from traffic on roads within 200 metres of Protected Habitats Sites demonstrates an adverse effect on their integrity, then the Councils will address any mitigation measures required in the Part 2 Plan"

Greenhouse Gases

National Policies

- 13.27. The National Policy Statement (NPS) for Renewable Energy Infrastructure (EN-3)⁵⁰, together with the Overarching National Policy Statement for Energy (EN-1)⁵¹, provides a policy basis for decisions regarding nationally significant renewable energy infrastructure projects. There is no specific NPS for solar projects.
- 13.28. EN-1 includes Section 5.3 on the assessment of Greenhouse Gas Emissions. Paragraph 5.3.4 states:

"All proposals for energy infrastructure projects should include a carbon assessment as part of their ES (See Section 4.3). This should include:

- *A whole life GHG assessment showing construction, operational and decommissioning GHG impacts, including impacts from change of land use.*
- *An explanation of the steps that have been taken to drive down the climate change impacts at each of those stages.*
- *Measurement of embodied GHG impact from the construction stage.*
- *How reduction in energy demand and consumption during operation has been prioritised in comparison with other measures.*
- *How operational emissions have been reduced as much as possible through the application of best available techniques for that type of technology.*

⁵⁰ Babergh District Council and Mid Suffolk District Council (2023) Babergh and Mid Suffolk Joint Local Plan Part 1

- *Calculation of operational energy consumption and associated carbon emissions.*
 - *Whether and how any residual GHG emissions will be (voluntarily) offset or*
 - *removed using a recognised framework.*
 - *Where there are residual emissions, the level of emissions and the impact of those on national and international efforts to limit climate change, both alone and where relevant in combination with other developments at a regional or national level, or sector level, if sectoral targets are developed.”*
- 13.29. EN-3 includes a section on the impacts of solar photovoltaic generation, however that section does not refer to greenhouse gas emissions.
- 13.30. Part 14 of the NPPF⁷ is titled *“Meeting the challenge of climate change, flooding and coastal change”* and sets out the strategy for minimising the climate change effects of new development.
- 13.31. Paragraph 159 states that *“new development should be planned for in ways that [...] can help to reduce greenhouse gas emissions through its location, orientation and design”*. The section describes how renewable and low-carbon energy sources should be considered in planning applications for development of any scale.
- 13.32. Paragraph 160 describes further that *“to help increase the use and supply of renewable and low carbon energy and heat, plans should: a) provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts); b) consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and c) identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers”*.
- 13.33. Paragraph 162 states that, when determining planning applications, the NPPF requests that planning authorities should expect new development to: *“a) comply with any development plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and b) take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.”*
- Climate Change Act 2008**⁵¹
- 13.34. The overarching Act in relation to climate is the Climate Change Act 2008. The Act introduces a legally binding target to reduce the UK’s GHG emissions to at least 80% below 1990 levels by 2050. It also provides for a Committee on Climate Change

⁵¹ Her Majesty’s Stationery Office (2008) Climate Change Act 2008

(CCC) with power to set out carbon budgets binding on the Government for five-year periods.

- 13.35. In the 2009 budget, the first three carbon budgets were announced which set out a binding 34% CO₂e⁹ reduction by 2020; and the Government has since adopted the fourth and fifth carbon budgets to reduce CO₂e by 50% by 2025 and 57% by 2030, respectively.
- 13.36. The CCC also produces annual reports to monitor the progress in meeting these carbon budgets. Consequent upon the enactment of the Climate Change Act, a raft of policy at national and local level has been developed aimed at reducing carbon emissions.

Climate Change Act 2008 (2050 Target Amendment) Order 2019⁵²

- 13.37. In June 2019, the Government passed an order to amend the 2050 carbon emissions target in the Climate Change Act 2008 from 80% below 1990 levels to zero net carbon (i.e. 100% below 1990 levels). This new target will essentially end the UK's contribution to climate change by 2050.

Carbon Budget Order 2021⁵³

- 13.38. The Carbon Budget Order 2021 came into force in June 2021. It sets a legal obligation to meet the targets of the Climate Change Act 2008 and subsequent amendment to cut GHG emissions by 78% by 2035.

Energy Act (2023)⁵⁴

- 13.39. Enacted in October 2023, the Energy Act makes provision about energy production and security and the regulation of the energy market, including new frameworks to incentivise investment in clean energy technologies, such as low-carbon heat schemes. It also makes provision about energy smart appliances and load control, the energy performance of premises and energy savings opportunity schemes, amongst other measures to ensure clean and affordable energy for the UK.

The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting⁵⁵

- 13.40. The National Adaptation Programme sets out government's response to the second Climate Change Risk Assessment, showing the actions government is, and will be, taking to address the risks and opportunities posed by a changing climate. It forms part of the five-yearly cycle of requirements laid down in the Climate Change Act

⁵² Her Majesty's Stationery Office (2019) *The Climate Change Act 2008 (2050 Target Amendment) Order 2019*

⁵³ Her Majesty's Stationery Office (2021) *The Carbon Budget Order 2021*

⁵⁴ Her Majesty's Stationery Office (2023) *Energy Act 2023*

⁵⁵ Defra (2018) *The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting*.

2008 to drive a dynamic and adaptive approach to building our resilience to climate change.

Net Zero Strategy⁵⁶

- 13.41. The UK Government's Net Zero Strategy sets out the strategy for achieving the UK's binding commitment to net zero carbon emissions by 2050.
- 13.42. The strategy sets out a number of key aims and objectives to decarbonise the UK economy across all sectors. In relation to residential development the strategy includes commitments for heat and buildings which include phasing out natural gas heating (and other fossil fuels) and maximising energy efficiency of buildings.
- 13.43. The strategy also covers transport, setting a mandate to decarbonise road transport through the use of zero emission (electric) vehicles.

The Clean Growth Strategy⁵⁷

- 13.44. The Clean Growth Strategy sets out a comprehensive set of policies and proposals that aim to accelerate the pace of "clean growth", i.e. deliver increased economic growth and decreased emissions. In the context of the UK's legal requirements under the Climate Change Act, the UK's approach to reducing emissions has two guiding objectives:
- to meet our domestic commitments at the lowest possible net cost to UK taxpayers, consumers and businesses; and
 - to maximise the social and economic benefits for the UK from this transition.
- 13.45. The Strategy contains policies relating to the delivery of clean, smart and flexible power, including reducing power costs for homes and businesses and more transparent carbon pricing. It effectively replaces the "The Carbon Plan: delivering our Low Carbon Future" published in 2011.

Decarbonising Transport: A Better, Greener Britain⁵⁸

- 13.46. The Department for Transport (DfT) published the Decarbonising Transport plan in 2021, setting out how transport emissions reductions will be delivered in order to reach net zero by 2050. This includes phasing out the sale of all non-zero tailpipe emission vehicles by 2040; for Heavy Goods Vehicles (HGVs), sales of all new medium sized vehicles are to be zero tailpipe emission from 2035, with the largest vehicles being zero tailpipe emission by 2040.

⁵⁶ HM Government (2021) Net Zero Strategy: Build Back Greener

⁵⁷ Her Majesty's Government (2017) *The Clean Growth Strategy*.

⁵⁸ DfT (2021) Decarbonising Transport. A Better, Greener Britain

Energy White Paper⁵⁹

- 13.47. The Government's energy white paper sets out the plan for growth and decarbonisation of the UK's energy supply out to 2050, in line with the 2050 net zero target. The white paper provides a framework of policies and incentives to accelerate investment in renewable energy infrastructure and acknowledges that "onshore wind and solar will be key building blocks of the future generation mix"⁶⁰.

Local Policies

- 13.48. Babergh and Mid Suffolk's Joint Local Plan, Part 1⁰ contains Policy LP25 – Energy Sources, Storage and Distribution, which states:

"1. Renewable and low carbon, decentralised and community energy generating proposals will be supported subject to:

- a. The impact on (but not limited to) landscape, highway safety, ecology, heritage, residential amenity, drainage, airfield safeguarding and the local community having been fully taken into consideration and where appropriate, effectively mitigated;*
- b. Where renewable or low carbon energy designs are to be incorporated within a development, an integrated approach being taken, using technology that is suitable for the location and designed to maximise operational efficiency without comprising amenity;*
- c) The impact of on and off-site power generation infrastructure being acceptable, having regard to other policies in this Plan;*
- d. The provision of mitigation, enhancement and compensation measures when necessary; and*
- e. Approval of connection rights, and capacity in the UK power network, to be demonstrated as part of the planning application (where applicable).*

2. The relevant LPA will normally use conditions attached to planning consents for energy development schemes to ensure the site is restored when energy generation ceases or becomes non-functioning for a period of six months.

3. Where proposals for renewable and low carbon energy impact on nature conservation sites, the Areas of Outstanding Natural Beauty, or the setting of heritage assets including conservation areas), the applicant must be able to convincingly demonstrate that potential harm resultant from development can be effectively mitigated and that there are no alternative sites available within the District or for community initiatives within the area which it is intended to serve. This includes providing underground power lines and cabling."

- 13.49. It also includes Policy LP23 'Sustainable Construction and Design, which states that "All new residential development is required to:... f. Provide feasible and viable on-site renewable and other low carbon energy generation to allow the greatest CO2 reduction".

⁵⁹ HM Government (2020) Energy White Paper. Powering our Net Zero Future

⁶⁰ See Page 45 of the Energy White Paper.

Likely Significant Effects

Air Quality

Construction

- 13.50. Potential air quality effects that will be considered in relation to the construction of the project include:
- Impacts of NO₂, PM₁₀ and PM_{2.5} emissions from vehicles associated with the construction of the project on existing sensitive receptors in the local area. It is anticipated that the construction traffic movements will be mainly associated with staff trips and HGV trips to transport materials to Site; and
 - Impacts of dust and PM₁₀ generated during the construction of the project on nearby sensitive receptors.
- 13.51. The Institute of Air Quality Management's (IAQM's) Guidance on the Assessment of Dust from Demolition and Construction⁶¹ advises that, with appropriate mitigation in place, the effects of construction dust will be 'not significant'. The assessment will, therefore, focus on determining the appropriate level of mitigation to be applied so as to ensure that effects will normally be 'not significant'.

Operation

- 13.52. Potential air quality effects associated with the operation of the project that will be considered are the impacts of NO₂, PM₁₀ and PM_{2.5} emissions from vehicles associated with the operation of the project on existing sensitive receptors in the local area. It is anticipated that operational traffic movements will be minimal, with low numbers of movements expected to be associated with the maintenance of the site.

Decommissioning

- 13.53. The lifetime of the project is anticipated to be 40 years. Based on DfT's Decarbonisation Strategy²², the Net Zero Strategy²¹ and Road to Zero Strategy¹³, exhaust emissions from road traffic in the far future are likely to be zero at the latest by 2050. Furthermore, the baseline air quality 45 years from the opening of the project cannot be accurately predicted.
- 13.54. It is therefore not considered practical or necessary to undertake an assessment of the air quality effects associated with the decommissioning of the project.

Greenhouse Gases

- 13.55. The project will lead to the release of GHGs from its construction and operation. The key GHG emitted during the construction and operation of the project will be carbon dioxide (CO₂), however the assessment will include quantification of GHG emissions

⁶¹ IAQM (2024) Guidance on the Assessment of Dust from Demolition and Construction v2.2

that will be released as carbon dioxide equivalent (CO₂e), which includes the contribution of all other GHGs (i.e. gases with a Global Warming Potential (GWP)).

Construction

- 13.56. Potential GHG effects associated with the construction of the project include:
- CO₂e embedded in materials used for constructing the project (e.g. manufacture of PV cells and frames);
 - CO₂e emitted from transport activities associated with the construction of the project; and
 - CO₂e emitted from site activities associated with the construction of the project (e.g. fuel use by site machinery, electricity consumption and waste).

Operation

- 13.57. Potential GHG effects associated with the operation of the project include CO₂e emitted from transport. It is, however, expected that the traffic movements associated with the maintenance of the project will be minimal and therefore quantification of operational transport emissions will be scoped out of the GHG assessment.

Decommissioning

- 13.58. The 2050 Climate Change Act 2008 (2050 Target Amendment) Order 2019 sets a target to be net zero carbon by 2050. The estimated lifetime of the project is 40 years, which would mean decommissioning after 2070. It is therefore reasonable to assume that the GHG emissions associated with the decommissioning of the project will be least net zero, and the decommissioning will have a minimal contribution to the overall GHG footprint.
- 13.59. It is therefore proposed to scope out the GHG emissions associated with the decommissioning of the project.

Scoping Out

Air Quality

- 13.60. The following element will be 'Scoped Out' of the air quality assessment:
- An assessment of the air quality impacts from Non-Road Mobile Machinery (NRMM). Relevant guidance from the Institute of Air Quality Management (IAQM)⁶² states that '*experience from assessing the exhaust emissions from on-site plant (also known as non-road mobile machinery or NRMM) [...] suggests that they are unlikely to make a significant impact on local air quality and in the vast majority of cases they will not need to be quantitatively*

⁶² IAQM (2016): *Guidance on the Assessment of Dust from Demolition and Construction v1.1*

assessed.' Significant effects as a result of NRMM emissions can thus likely be discounted. However, suitable mitigation measures for site plant will be presented as part of the mitigation measures based on advice presented in the IAQM guidance

Greenhouse Gases

- 13.61. There are no elements of the Greenhouse gas emissions assessment that will be scoped out.

Mitigation and Enhancement

Air Quality

- 13.62. Where possible, mitigation measures will be proposed for the construction and operation of the project in order to ensure that residual effects are 'not significant'.
- 13.63. Appropriate mitigation measures, as listed in the IAQM guidance document on demolition and construction dust, will be proposed for the earthworks and construction phase of the project, based on the level of risk identified by the dust assessment.

Greenhouse Gases

- 13.64. Where possible, mitigation measures will be proposed to reduce emissions of CO₂e associated with installation, operation and maintenance of the project. This will include CO₂e embedded in materials used for constructing the project and materials manufacturing, to transport activities associated with the construction and operation of the project. Consideration will also be given to methods and measures to protect the existing soil carbon stocks at the Site.

Assessment Methodology

Air Quality

Construction

- 13.65. The potential effects from dust generated during the earthworks and construction of the project will be considered using the approach presented in the Institute of Air Quality Management (IAQM) guidance for assessing effects from demolition and construction activities²⁶. The Site is currently agricultural land; there will, therefore, be no demolition phase. Cumulative effects arising from other committed developments in the study area being constructed concurrently with the earthworks and construction of the project will also be considered.
- 13.66. The study area for the assessment of construction phase effects will include sensitive receptors (e.g. residential properties) located within 250m of the Site boundary, or within 50 m of roads used by construction vehicles. It will also consider ecological sites within 50m of the Site boundary or roads along which dust and dirt may be tracked.

- 13.67. Emissions from construction plant (NRMM) will not be explicitly modelled, as relevant guidance from the IAQM²⁶ states that *“experience from assessing the exhaust emissions from on-site plant (also known as non-road mobile machinery or NRMM) [...] suggests that they are unlikely to make a significant impact on local air quality and in the vast majority of cases they will not need to be quantitatively assessed”*. Significant effects as a result of NRMM emissions can thus likely be discounted. However, suitable mitigation measures for site plant will be presented as part of the mitigation measures based on advice presented in the IAQM guidance.
- 13.68. The number of construction vehicles (including heavy duty vehicles (HDVs)) that will travel on the local road network during the construction phase of the project will be considered in the context of the screening criteria provided in guidance from IAQM and Environmental Protection UK (EPUK)⁶³, applicable for outside an Air Quality Management Area (AQMA) (i.e., >500 Light Duty Vehicles (LDVs) Annual Average Daily Traffic (AADT) flows and/or >100 HDV AADT flows).
- 13.69. If it is not possible to screen out the impacts of emissions from construction traffic, impacts will be predicted using the ADMS-Roads dispersion model. Predictions will be made for NO₂, PM₁₀ and PM_{2.5} concentrations. The model requires a variety of inputs, including road traffic data (flows, speeds and vehicle fleet composition) and meteorological data. The model will be used to predict pollutant concentrations for the following scenarios:
- Baseline year (2023);
 - Peak construction year without the project, but including traffic generated by relevant cumulative schemes; and
 - Peak construction year with the project, including traffic generated by relevant cumulative schemes.
- 13.70. An important element of the modelling study will be to verify the ADMS-Roads model output against measurements. This will be undertaken by identifying suitable roadside air quality monitoring locations within the vicinity of the project, against which the model performance can be compared. An adjustment factor will be determined in line with methodology set out in Defra’s Local Air Quality Management Technical Guidance (LAQM.TG22)⁶.
- 13.71. Consideration of the air quality impacts from construction traffic will focus on the area identified for the Transport Assessment and based on published screening thresholds. Air quality will be assessed at a range of worst-case receptors closest to busy roads, particularly those close to junctions, and where the changes in traffic flows will be greatest. The scale, nature and significance of the air quality effects will be determined following the EPUK & IAQM guidance²⁶ and appropriate mitigation measures will be recommended as necessary, based on the outcomes of the assessment.

⁶³ Moorcroft & Barrowcliffe et al. (2017) Land-Use Planning & Development Control: Planning For Air Quality v1.2

- 13.72. Background pollutant concentrations will be determined using data derived from the background maps published by Defra⁶⁴.
- 13.73. In terms of the impacts of emissions from construction vehicles on air quality at ecological sites, the Joint Nature Conservation Committee (JNCC) has published Decision Making Thresholds (DMTs) to identify those projects which can immediately be discounted as unlikely to have a significant effect on biodiversity, either alone or in combination with other projects and plans⁶⁵. With limited exceptions, no further assessment is required wherever:
- The roads affected by the project are more than 200 m from any designated site, or in some cases, from the notified features within those sites; or
 - The affected roads are part of the Strategic Road Network (SRN), unless the project is itself a highways improvement scheme; or
 - The increase to traffic flows caused by the project alone, on any road within 200 m of a designated site, is less than 0.15% of the existing AADT flow on that road.
- 13.74. The guidance also explains, in the context of assessing land use plans, that it is necessary to avoid legislative overkill when assessing the effects of traffic emissions. It thus defines a zone of influence extending 10 km from the boundary of a land use plan, beyond which no assessment is required. This reflects the point that, beyond this distance, changes to traffic relate less strongly to the precise location and nature of a new development. National-level growth has already been accounted for in the modelling which underpins JNCC's DMTs⁶⁶. Following the concepts which underpin JNCC's guidance, roads which are more than 10 km from the project are unlikely to require assessment, nor will sites within 200 m of the A14, which form part of the SRN.

Operation

- 13.75. The number of vehicle movements generated as a result of the operation of the project is expected to be low, and it is therefore anticipated that the impacts of emissions from these vehicles will be screened out of the assessment, following the EPUK & IAQM guidance²⁷.

Greenhouse Gases

- 13.76. The assessment will be undertaken in line with the latest Institute of Environmental Management and Assessment (IEMA) guidelines, taking account of all relevant national, regional and local policies relating to GHG emissions and climate change,

⁶⁴ Defra (2024a) *Local Air Quality Management (LAQM) Support Website*, [Online], Available: <http://laqm.defra.gov.uk/>.

⁶⁵ Chapman and Kite (2021) *Guidance on Decision-Making Thresholds for Air Pollution*, JNCC Report No. 696 (Main Report), JNCC, Peterborough, ISSN 0963-9091

⁶⁶ AQC (2021) *Decision-making Thresholds for Air Pollution*, JNCC Report No. 696 (Technical Report), JNCC, Peterborough, ISSN 0963-809

and will include a summary of mitigation measures designed into the project to prevent, reduce and offset its CO₂e emissions.

Construction

- 13.77. The assessment will utilise the following approaches:
- The embedded carbon from construction will be calculated using carbon factors published by the University of Bath, which are applied to the individual construction materials used. This will include CO₂e emissions arising from the manufacture and production of construction materials. The assessment of embedded carbon covers “cradle to gate” emissions (i.e. carbon emissions from the extraction of raw materials through to finished construction products);
 - Emissions from construction site activities will be estimated, based on the approach recommended in guidance on whole life carbon assessment from the Royal Institute of Chartered Surveyors (RICS); and
 - CO₂e emissions from construction transport will be calculated using Department for Business, Energy and Industrial Strategy (BEIS) carbon factors for road vehicles based on the predicted volume of HGV movements generated by the construction works, the loaded weight of the vehicles and travel distances to their origin/destination.

Operation

- 13.78. The assessment will estimate the net saving in GHG emissions during the project’s operational lifetime by comparison to the emissions associated with other current power generation methods. A comparison of the lifetime GHG intensity of the project to other forms of UK power generation will be provided for context.
- 13.79. The GHG assessment will provide a whole lifetime carbon footprint for the project, which will be compared to appropriate benchmarks (including published national and regional GHG emissions and/or benchmarks) in order to provide context for the scale of the carbon footprint.
- 13.80. The assessment will include an appraisal of the conformance of the project to relevant national and local policies relating to GHGs and climate change as described in Paragraphs 13.10 to 13.23.
- 13.81. The assessment will set out the carbon mitigation being proposed, which will follow the principles of the carbon management hierarchy (avoid, reduce, off-set), in order to reduce, as far as reasonably practicable, the anticipated GHG emissions over the lifecycle of the project.

Significance Criteria

Air Quality

- 13.82. The predicted concentrations will be compared with the relevant air quality objectives as defined within the Air Quality (England) Regulations 2000 (as amended).
- 13.83. There are no statutory objectives for dust. It is therefore common practice to provide a qualitative assessment based largely on experience of the distances over which impacts may occur.
- 13.84. The evaluation of significance of impacts for operation and construction will be based on criteria recommended by the IAQM & EPUK²⁷, and will be determined based on predicted impacts at receptors (where relevant), alongside using professional judgement. Where possible, mitigation measures will be proposed to ensure that residual effects are 'not significant'.

Greenhouse Gases

- 13.85. The significance of GHG effects will be assessed following IEMA guidance. The approach examines the scale and nature of GHG emissions, contextualised using established carbon budgets. The assessment of significance also includes a review of the policy compliance of the project (with respect to key GHG and climate change policies) and the robustness, efficacy and timeliness of mitigation, with focus on the ability of the project to align with local, regional and national trajectories to achieve net zero.

Cumulative Effects

Air Quality

- 13.86. The potential for the project and existing and cumulative schemes to cumulatively impact upon air quality at sensitive receptors during the construction of the project will be considered. The peak construction year traffic data 'without project' and 'with project' scenarios will both include vehicle trips associated with general growth from the baseline situation, as well as from specific relevant cumulative schemes. The inclusion of relevant cumulative schemes in the traffic data utilised in the assessment will allow an inherently cumulative assessment of the construction of the project to be undertaken.

Greenhouse Gases

- 13.87. As set out in the IEMA guidance "*GHG emissions from all projects will contribute to climate change; the largest interrelated cumulative environmental effect*". This statement relates to 'cumulative' on a global scale as all emissions of GHG's contribute to climate change. The definition of 'cumulative effects' in the context of greenhouse gases and climate change therefore goes far beyond the typical definition of cumulative effects for EIA, which tends to focus on other proposed projects in the vicinity of the project. The GHG assessment is therefore intrinsically a cumulative assessment and no consideration to specific local cumulative schemes is required.

Conclusions on Scoping

- 13.88. Table 13.2 below summarises the results, in our considered opinion, of the scoping assessment. Please note, while the final assessment within the ES will deal with each likely impact and Important Ecological Feature individually, this table gives a broad indication of the overall residual effects considered likely. The impact context within which each ecological receptor will be assessed in the ES will be as given in Table 7.5.

Table 13.2 Air Quality and GHG Impacts to be Scoped In/Out

Impact	Scoped In/Out
Air Quality – Construction	
Traffic associated with construction	In
NRMM	Out
Construction dust and PM ₁₀	In
Air Quality – Operation	
Traffic associated with operation	In
GHG – Construction	
Embedded in materials, emitted from transport and site activities	In
GHG – Operation	
Transport associated with operation	In

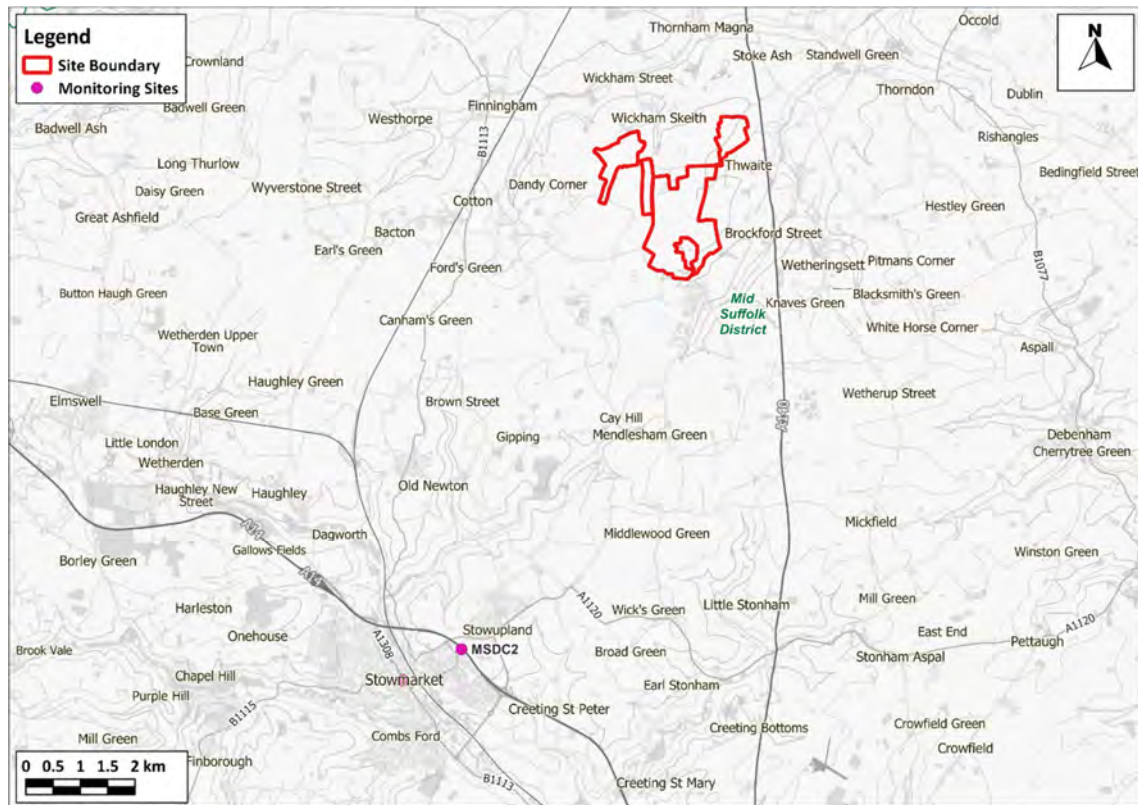


Figure 13.1 Air Quality Monitoring Locations and the Project Study Area

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14. Agriculture

Introduction

- 14.1. This topic considers the potential effects of the Project on agricultural land and businesses. In particular the topic considers the agricultural land quality of the area, and the extent to which land quality and soil resources will be affected.

Preliminary Baseline Conditions

- 14.2. The Agricultural Land Classification (ALC) system is the approved method for assessing the quality of farmland to enable informed choices to be made about its future use within the planning systems of England and Wales. The ALC system classifies land into five grades, with Grade 3 subdivided into Subgrades 3a and 3b. The best and most versatile (BMV) land is defined as Grades 1, 2 and 3a by policy guidance (see Annex 2 of NPPF). This is the land which is most flexible, productive and efficient in response to inputs and which can best deliver future crops for food and non-food uses such as biomass, fibres and pharmaceuticals.
- 14.3. The site is largely agricultural land. Data provided on Natural England's interactive website shows no detailed survey data for the site⁶⁷. The site is shown on the 1:250,000 provisional Agricultural Land Classification Maps (reprinted by Natural England in 2010) as undifferentiated Grade 3 (good to moderate quality agricultural land). The site is shown on the 1:250,000 Likelihood of Best and Most Versatile Agricultural Land Maps published by Natural England in 2017 as falling mostly into the "moderate" likelihood of BMV (20 – 60% area BMV), with land at the eastern edge just falling into the high likelihood (>60% area BMV). These plans are for strategic purposes and are not suitable for site-specific use.
- 14.4. Natural England Document TINO49⁶⁸ Agricultural Land Classification: protecting the best and most versatile agricultural land, provides guidance on the assessment of ALC grade to inform planning decisions on agricultural land with the aim of protecting it from inappropriate development. Site survey work is being undertaken in line with the guidance of TINO49, to map the distribution of ALC grades within the site area, using the MAFF Guidelines (1988)⁶⁹.
- 14.5. ALC site survey work will also gather data on soil physical characteristics which will be used to inform appropriate measures in a Soil Management Plan (SMP) to conserve soil functional capacity through construction, decommissioning and operational activities.
- 14.6. In addition to the agricultural land and the soil resource associated with that land, an assessment will be made of Farming Circumstances. This will review the nature and

⁶⁷ www.magic.gov.uk (accessed June 2024)

⁶⁸ <http://publications.naturalengland.org.uk/publication/35012>

⁶⁹ Agricultural Land Classification of England and Wales: revised guidelines and criteria for grading the quality of agricultural land, MAFF, October 1988

scale of the farm businesses occupying land within the site, and the potential impact of development on these.

Likely Significant Effects

- 14.7. The Project has the potential to affect the quality of agricultural land. Generally the potential adverse impact is restricted to areas where soils are likely to be disturbed, such as for the installation of fixed equipment (such as tracks or inverters), and for the construction of the BESS area. The potential effects will be assessed and quantified by area and by ALC grade.
- 14.8. There will be likely effects on the land use of the area, most of which is currently in arable production. Agricultural uses will be capable of being continued, however, and the reduction in agricultural use (a land-use consideration) will be assessed.
- 14.9. The Project has the potential for adverse and beneficial economic impacts for the businesses affected, and this will be considered and assessed.

Assessment Methodology

- 14.10. As noted above, Natural England document TIN049 provides guidance on the appropriate assessment of ALC grade for the purpose of informing land use planning decisions. Field survey work of agricultural land within the Site will be conducted initially at a semi-detailed level, as across most of the Site the potential for adverse effects on soil and land quality is limited. Areas proposed for physical works, especially the BESS area, will be surveyed at a detailed level.
- 14.11. The assessment will consider the agricultural land quality of the Site, and the extent to which the project will affect the inherent land quality. It will consider the method of construction and the impact this would have on soil qualities. It will consider the potential for removal of the panels and therefore the reversibility of the impact, and it will consider the extent to which agricultural use can continue during the life of the project.
- 14.12. The potential loss of agricultural land will be considered by reference to policy in the NPS EN-1 and EN-3 (both adopted January 2024), the NPPF and the Planning Practice Guidance suite, together with the Written Ministerial Statement of 15th May 2024 and other documents of relevance.
- 14.13. The assessment will consider the effects in terms of permanent or temporary effects on soils and land quality, farm businesses and the wider rural economy.
- 14.14. The assessment will draw on the methodology and criteria used in the IEMA Guide “A New Perspective on Land and Soil in Environmental Impact Assessment” (February 2022). As such the assessment will consider a permanent loss to be where there is a “permanent, irreversible loss of one or more soil functions or soil volumes (including sealing or land quality downgrading)”. Temporary developments will be considered as a loss if they “result in a permanent impact if resulting disturbance or land use changes causes permanent damage to soils”.

Significance Criteria

- 14.15. Land of “best and most versatile” quality is considered to be a receptor of high sensitivity. Land of Subgrade 3b, 4 and 5 is considered to be a resource of moderate/medium sensitivity.
- 14.16. Full-time farm businesses are considered to be a resource of moderate/medium sensitivity. Farms can normally adapt to change brought about by a raft of different factors, and accordingly are not highly sensitive to change. Part-time farm businesses are considered to be of low sensitivity. The economic effects of the project on agricultural circumstances will be considered.
- 14.17. In terms of magnitude of impacts, for this assessment it is proposed that the permanent loss of more than 20 ha of BMV land will be considered to be a large/major magnitude, losses of 5 – 20 ha are of moderate/medium magnitude and losses of less than 5 ha to be of low magnitude. Importantly, this threshold is directed principally at permanent, irreversible development, as defined in the IEMA Guide. Where land use change is temporary and does not result in the permanent loss of BMV resource the standard of depth of alternative site assessments should arguably be less stringent, as the harm will not result. It is understood that ALC grades do not decline during the lifetime of the operational phases of solar farms, therefore, with the panels in place for 40 years, it is expected that there would be no permanent loss of ALC resource or downgrading as a result of the use of the land as proposed.
- 14.18. This magnitude criteria is set by Natural England advice that within the Local Authority planning system they only seek to be consulted on planning application where 20+ ha of BMV agricultural land is to be lost through a change of use. Below 20 ha of BMV Natural England do not require to be consulted.

Assessment of Cumulative Effects

- 14.19. Consideration will be given to the cumulative sites. An appropriate study area will be assessed. Consideration will not be given to non-energy development that may be removing 20 ha or more of BMV agricultural land for their development.
- 14.20. Sites which come forward which are smaller than 20 ha of BMV will not be included within the cumulative assessment as a development of this site would not normally be considered for its impact for loss of agricultural land within the UK planning system as Natural England do not require to be consulted on areas of agricultural land less than 20 ha.

Scoped In and Out

The following are scoped in at this stage:

- - permanent loss or downgrading of agricultural land;
- - permanent loss of soil volume or function;

- - permanent adverse effects on farm operations or businesses that are not capable of mitigation, such as severance;
- - adverse or beneficial effects on soils.

14.21. The following are scoped out at this stage:

- - short term disruption to farms and farming activities during the construction phase;
- - any off site cable works involving only temporary installation works.

Significance Criteria

- 14.22. Land of “best and most versatile” quality is considered to be a receptor of high sensitivity. Land of Subgrade 3b, 4 and 5 is considered to be a resource of moderate/medium sensitivity.
- 14.23. Full-time farm businesses are considered to be a resource of moderate/medium sensitivity. Farms can normally adapt to change brought about by a raft of different factors, and accordingly are not highly sensitive to change. Part-time farm businesses are considered to be of low sensitivity. The economic effects of the project on agricultural circumstances will be considered.
- 14.24. In terms of magnitude of impacts, for this assessment it is proposed that the permanent loss of more than 20 ha of BMV land will be considered to be a large/major magnitude, losses of 5 – 20 ha are of moderate/medium magnitude and losses of less than 5 ha to be of low magnitude. Importantly, this threshold is directed principally at permanent, irreversible development. Where land use change is temporary and does not result in the permanent loss of BMV resource the standard of depth of alternative site assessments should arguably be less stringent, as the harm will not result. It is understood that ALC grades do not decline during the lifetime of the operational phases of solar farms, therefore, with the panels in place for 40 years, it is expected that there would be no permanent loss of ALC resource or downgrading as a result of the use of the land as proposed.
- 14.25. This magnitude criteria is set by Natural England advice that within the Local Authority planning system they only seek to be consulted on planning application where 20+ ha of BMV agricultural land is to be lost through a change of use. Below 20 ha of BMV Natural England do not require to be consulted.

Assessment of Cumulative Effects

- 14.26. Consideration will be given to the cumulative sites. An appropriate study area will be assessed. Consideration will not be given to non-energy development that may be removing 20 ha or more of BMV agricultural land for their development.
- 14.27. Sites which come forward which are smaller than 20 ha of BMV will not be included within the cumulative assessment as a development of this site would not normally be considered for its impact for loss of agricultural land within the UK planning

system as Natural England do not require to be consulted on areas of agricultural land less than 20 ha.

Conclusion on Scoping

14.28. Table 14.1 below summarises the results, in our considered opinion, of the scoping assessment.

Ecological Impact Pathway/Receptor	Scoped In/Out
Agricultural Receptors	
Agricultural land quality, especially land of ALC Grades 1, 2 and 3a	In
Agricultural soils, especially those susceptible to structural damage at construction and decommissioning phase	In
Occupying farm businesses, and effects on enterprises and operations	In
Loss of crops or disruption during construction phase	Out
Effects on soils from cable installation off-site	Out

15. OTHER ENVIRONMENTAL TOPIC

- 15.1. The aim of EIA scoping is to focus the EIA on those environmental aspects that may be significantly affected by the project. The following section provides a summary of other environmental topics that have been considered during the preparation of this EIA Scoping Report. It is proposed to scope out the topics listed below, and these matters would be addressed, where relevant, by separate supporting information that would be prepared as part of the DCO application. Where this is the case, this is stated below.

Glint & Glare

- 15.2. EN-3 identifies how solar panels are specifically designed to absorb and not reflect irradiation. EN-3 goes on to state how *“solar panels may reflect the sun’s rays at certain angles, causing glint and glare. Glint is defined as a momentary flash of light that may be produced as a direct reflection of the sun in the solar panel. Glare is a continuous source of excessive brightness experienced by a stationary observer located in the path of reflected sunlight from the face of the panel. The effect occurs when the solar panel is stationed between or at an angle of the sun and the receptor”*.
- 15.3. The interaction of solar PV panels with sensitive locations, such as residential dwellinghouses is primarily influenced by their siting, as solar PV panels require orientation toward the sun path. As the design develops, consideration will be given to the potential for solar reflections to impact on sensitive receptors. This will include undertaking calculations to determine whether the solar PV panels will be visible from sensitive locations and if a solar reflection could occur, whether it is likely to be a significant nuisance or hazard. If it is likely to be a nuisance or hazard, mitigation will be proposed.
- 15.4. Turning to aviation receptors, EN-3 identifies how *“Whilst there is some evidence that glint and glare from solar farms can be experienced by pilots and air traffic controllers in certain conditions, there is no evidence that glint and glare from solar farms results in significant impairment on aircraft safety. Therefore, unless a significant impairment can be demonstrated, the Secretary of State is unlikely to give any more than limited weight to claims of aviation interference because of glint and glare from solar farms.”*
- 15.5. As appropriate, the results and recommendations of any glint and glare calculations will be incorporated into the project design and a glint and glare assessment presented as a technical appendix to the ES. It is therefore proposed to be **scoped out** of the EIA assessment.

Major Accidents and Disasters

- 15.6. The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, cite two specific directives as examples of types of risk assessments to be considered as part of an Environmental Impact Assessment (EIA). These are the Directive 2012/18/EU of the European Parliament and of the European Council (which

deals with major accident hazard registered sites) and the Council Directive 2009/71/Euratom (which deals with nuclear sites). Neither of these Directives is relevant to the project. Guidance on the consideration of major accidents and disasters is presented within The IEMA Guidance 'Major Accidents and Disasters in EIA: A Primer'.

- 15.7. EN-1 identifies how some energy infrastructure will be subject to the Control of Major Accidents Hazards (COMAH) Regulations. These Regulations aim to prevent major accidents involving dangerous substances and limit the consequences to people and the environment of any that do occur. The project does not fall within the requirements of the COMAH Regulations.
- 15.8. In considering the potential for significant effects from the vulnerability of the Project to risks of accidents and disasters, it is important to note that the UK already has a structured framework of risk management legislation in place. Vulnerability to major accidents and/or disasters for infrastructure and other built environment developments is covered by a wide range of other safety and non-safety-related legislation, as detailed below:
- Construction (Design and Management) Regulations 2015. The Construction (Design and Management) Regulations 2015 (CDM Regulations) place legal duties on almost all parties involved in construction work. The regulations place specific duties on clients, designers and contractors, so that health and safety is taken into account throughout the life of a construction project from its inception to its subsequent final demolition and removal. Under the CDM Regulations, designers have to avoid foreseeable risks so far as is reasonably practicable by eliminating hazards during the three phases of development namely, the construction phase, its proposed use / operational phase; and, subsequent demolition / site restoration.
 - Management of Health and Safety at Work Regulations 1999 – The Management of Health and Safety at Work Regulations 1999 reinforce employer's duties to manage health and safety and apply to all work activities. The principal of risk based assessment provides the cornerstone for management of health and safety and all employers are required to undertake risk assessments.
 - Health and Safety at Work etc. Act 1974 – The Health and Safety at Work etc. Act 1974 provides the framework for the regulation of workplace health and safety in the UK. It places general duties on employers, people in control of premises, manufacturers and employees. The overriding principle is that foreseeable risks to persons will be reduced so far as is reasonably practicable.
- 15.9. In general, major accidents or disasters, as they relate to the project, fall into three categories:
- Events that could not realistically occur, due to the nature of the project or its location;
 - Events that could realistically occur, but for which the project, and associated receptors, are no more vulnerable than any other development; and

- Events that could occur, and to which the project is particularly vulnerable, or which the project has a particular capacity to exacerbate.

15.10. An exercise has been undertaken to identify all possible major accidents or disasters that could be relevant to the Project. The National Risk Register identifies risks that could affect the UK. A long list of potential major accidents or disasters was established utilising the National Risk Register. Major accidents or disasters with little relevance in the UK were not included, such as volcanic eruptions for example. Table 16.1 details the long-listed major accidents and disasters that could be deemed relevant to the project.

15.11. Table 15.1: Long list of potential Major Accidents and Disasters associated with project

Risk	Potential Risk and Receptor
Health and Safety at Work	Potential risk of accidents for workers during the construction and decommissioning of the Project.
Flooding	Potential risk of flooding within order limits and its potential to exacerbate flooding to nearby properties & infrastructure
Fire	Potential risk of fire from development
Road accidents	Risk to road users in the area from increased traffic and slow-moving vehicles.
	Potential risk posed by spillage of hazardous loads from road traffic accidents during construction/decommissioning on the environment
	Potential risk from glint and glare to affect road users
Trenchless works affecting the integrity of the rail, canal and highway	Potential risk of accident as a result of the cable route affecting the integrity of existing infrastructure (local highway).
Aviation accidents	Potential risk from glint and glare to affect pilots and aircraft, albeit it is noted elsewhere in this chapter there is no evidence that glint and glare from solar farms results in significant impairment on aircraft safety.
Utilities failure	Potential risk of utilities failure to affect employees and local residents

Plant disease	Biosecurity risks from new planting to habitats and species
Criminal damage	Risk of sabotage/criminal activity and the effects of preplanned damage to the Project.

- 15.12. The risk of major accidents and disasters will be considered throughout the design process of the project. This will include the siting of potentially hazardous equipment, such as the BESS and grid infrastructure, at a suitable distance from sensitive residential and environmental receptors.
- 15.13. The development is not likely to cause a significant accident or risk of disaster during either the construction, operation or decommissioning phases. Given the nature and characteristics of the project, it is proposed that any perceived impacts associated with accidents and disasters will be discreetly assessed within the ES rather than a standalone ES chapter. The risks and potential effects that are knowingly caused by the development which can be quantified and assessed, such as noise and potential for traffic accidents would be assessed within the relevant technical chapters of the ES or other documents supporting the DCO submission.

Heat and Radiation

- 15.14. Due to the scale and nature of the Project, it is not anticipated that there will be any significant sources of heat or radiation during construction, operation or decommissioning. It is therefore proposed to exclude heat and radiation from the scope of the EIA.

Transboundary effects

- 15.15. Regulation 32 of the EIA Regulations requires the consideration of any likely significant effects on the environment of another European Economic Association (EEA) State. The consideration of transboundary effects is also detailed within the Planning Inspectorate's Advice Note Seven (2020). Taking into account likely impacts of potential pathways and the extent, magnitude, probability, duration and frequency it is considered that the project is unlikely to have a significant effect either alone or cumulatively on the environment in a European Economic Area State.
- 15.16. Due to its nature and location of White Elm Solar Farm, it is considered that the likelihood of transboundary effects is low, therefore, a transboundary screening matrix has not been included within this EIA Scoping request.

Electric, Magnetic and Electromagnetic Fields

- 15.17. Electric fields are produced by voltage, which is the pressure behind the flow of electricity and which depends on the operating voltage of the equipment. Magnetic fields are produced by current, which is a measure of the flow of electricity and depends on the electrical current. It is noted that EN-3 does not identify EMF as requiring assessment against potential impact with regards to solar photovoltaic generation. EN-5 identifies how putting cables underground eliminates the electric field. EN-5 goes on to identify how all overhead power lines produce EMFs. These

tend to be highest directly under a line and decrease to the sides at increasing distance. For protecting against indirect effects, the ICNIRP 1998 guidelines give an electric field reference of 5kV m⁻¹ for the general public and keeping electric fields below this level would reduce the occurrence of adverse indirect effects for most individuals to acceptable levels. The levels of EMFs produced by power lines in normal operation are usually considerably lower than the ICNIRP 1998 reference levels.

- 15.18. It is therefore proposed to exclude electric, magnetic and electromagnetic fields from the scope of the EIA.

Human Health

- 15.19. It is proposed that consideration of the potential effects to human health as a result of the project will be discussed through the findings of other technical assessments undertaken as part of the EIA process, including noise, landscape and visual (and residential visual amenity assessment), air quality, transport and social economic. These technical chapters within the ES will consider the potential effects to human health within their own assessments.

Utilities

- 15.20. The project has the potential to affect existing and proposed utility infrastructure located within and adjacent to the site. Potential impacts on existing utility assets would be limited and the construction phase. To identify any existing infrastructure constraints, a utility search covering the site has been undertaken. Potential impacts on proposed known developments, such as the Norwich to Tilbury scheme, could occur during both the construction and operational phase of the development. The Applicant would also expect to agree protective provisions with each utility owner, in order to ensure the DCO includes appropriate protections and restrictions on the Applicant's exercise of its powers, for the protection of utilities.
- 15.21. Taking the above into account, it is not proposed to prepare a separate utilities chapter as part of either the ES.

Telecommunications and Television Reception

- 15.22. Solar farms have the potential to affect existing utility infrastructure below ground but are not at a height to affect above ground telecommunications.
- 15.23. To identify any existing infrastructure constraints, both consultation and a desk based study will be undertaken. Consultation with relevant telecommunication and utilities providers is a routine part of development and consultees will include water, gas and electricity utilities providers and telecommunications providers as appropriate. Information obtained from consultation will be used to inform the Project design and, if required, appropriate protective provisions will be included in the DCO to ensure the protection of apparatus wherever any existing infrastructure has the potential to be affected by the project.
- 15.24. Taking the above into account, relevant measures will be captured in the Project design, it is proposed to scope out the need for an telecommunications assessment.

Waste

- 15.25. It is proposed that impacts associated with construction waste and component replacement would be considered proportionately within the ES. It is intended that a description of the potential streams and volumes of construction materials and waste disposal will be described within the description of the project chapter of the ES. The Outline Construction Environmental Management Plan would set out how construction materials and waste will be managed on-site, and opportunities to recycle waste will be explored.
- 15.26. Where possible, development-specific commitments for sustainable resource management will be presented within the ES. As part of the detailed Construction Environmental Management Plan, prepared by the Contractor following the making of the DCO, there would be a requirement to develop and implement a Site Waste Management Plan and Materials Management Plan in advance of the construction works. An Outline Decommissioning Environmental Management Plan will be submitted in support of the DCO application, which will set out how the waste will be managed and detail opportunities for re-use and recycling.
- 15.27. There will be relatively little waste produced during the operation phase and the requirement for material assets will be limited to maintenance and replacement parts, as required. For this reason, as impacts associated with waste produced during the operational phase are not likely to result in significant effects, it is proposed to scope out the consideration of operational waste. Waste is covered by a wide range of producer responsibility regulations, including the Packaging (Essential Requirements) Regulations 2025; and The Waste Electrical and Electronic Equipment Regulations 2013 (as amended).

Hydrology & Flood Risk

- 15.28. This section considers the potential effects associated with the project on hydrology and flood risk and provides justification for the proposal to exclude these factors from the scope of the EIA.
- 15.29. The proposed order limits cover a large area to the north of Mendlesham, Stowmarket, Suffolk.
- 15.30. The Flood Map for Planning generally defines the site as Flood Zone 1, not predicted to be at risk of fluvial or tidal flooding during a 1 in 1,000 year flood event. There are small areas of Flood Zone 2/3 defined along the southern site boundary predicted to be at risk during a 1 in 1,000 year and 1 in 100 year fluvial flood event, respectively. This risk is associated with an unnamed tributary of the River Dove which flows along the southern site boundary and is defined as a Main River. The Flood Map for Planning is shown in Figure 15.1.
- 15.31. The Environment Agency's Risk of Flooding from Surface Water Dataset defines large areas of the site to be at Very Low risk, not predicted to be impacted by a 1 in 1,000 year rainfall event. There are also areas of Low to High risk of surface water flooding defined on site, predicted to be at risk during a 1 in 1,000 year and 1 in 30 year surface water flood event, respectively. The Risk of Flooding from Surface Water extents dataset is shown in Figure 15.2.

Figure 15.1 – Flood Map for Planning

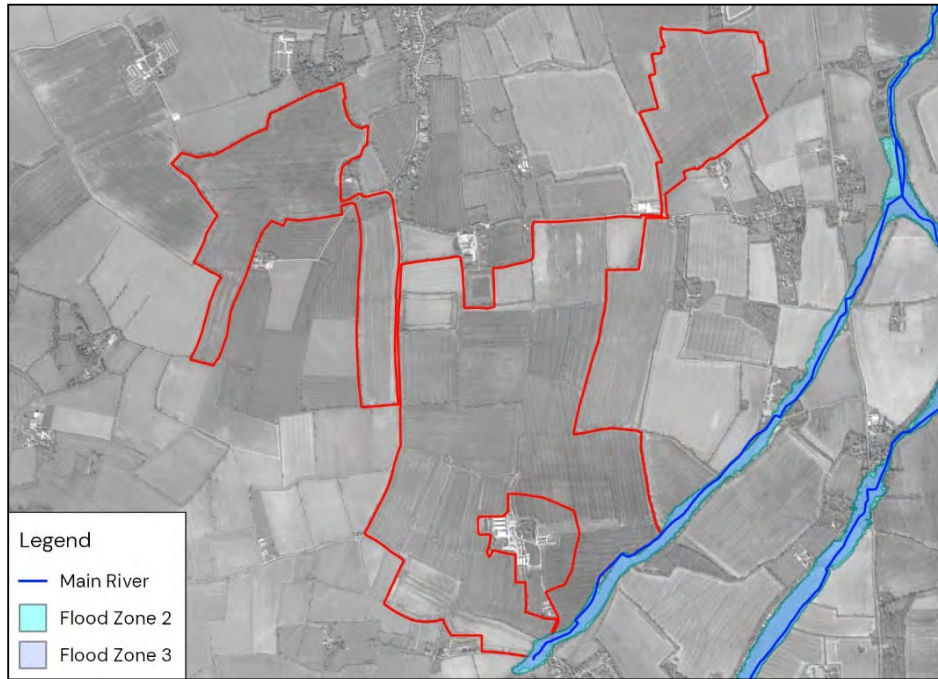
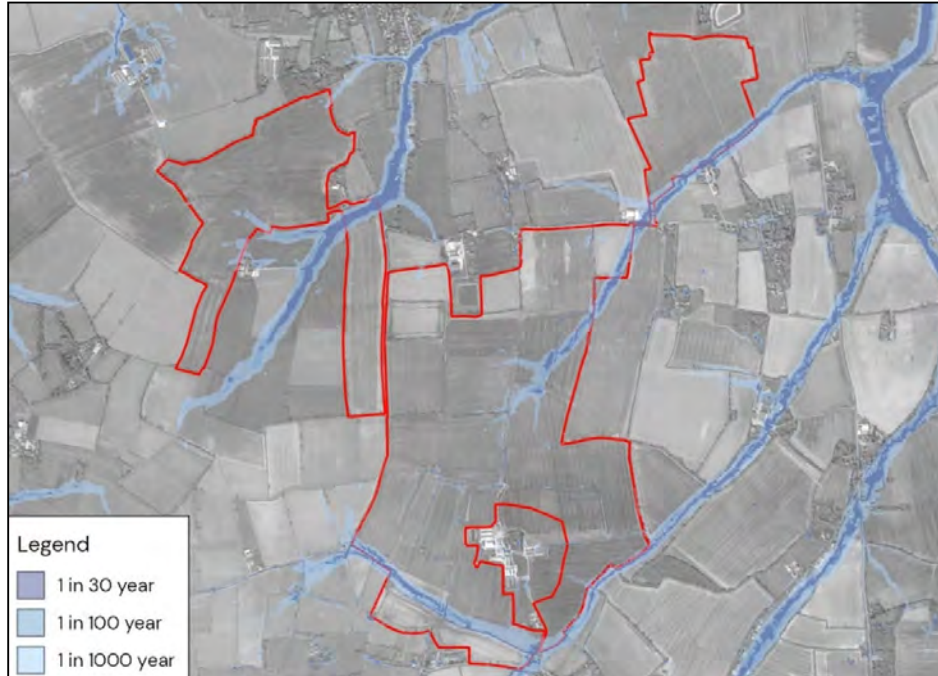


Figure 15.2 – Risk of Flooding from Surface Water Extents



Topography

- 15.32. A topographic survey of the site was conducted by LMS in January 2024. The survey shows that ground levels on site vary between approximately 60mAOD and 40mAOD. Ground levels on site fall in various directions, generally towards watercourses located on site/in the immediate vicinity.

Watercourses

- 15.33. There is a Main River and a significant number of Ordinary Watercourses located on site and along the site boundary.

Geology

- 15.34. The British Geological Survey bedrock dataset shows that site is entirely underlain by “Crag Group – Sand” bedrock geology. The British Geological Survey also record “Lowestoft Formation – Diamicton” superficial deposits across the entire site.

Soils

- 15.35. Soils data describes soils on site to comprise of both “slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils” with “impeded drainage” and “slightly acid loamy and clayey soils with impeded drainage”.

Made Ground

- 15.36. It is considered unlikely that any made ground is located beneath the site. Made ground is generally present in areas of historic and existing residential and industrial buildings where the ground has been prepared for construction.

Aquifer Designation

- 15.37. The hydrogeology 625K digital hydrogeological map of the UK defines a “moderately productive” aquifer below the site.

Source Protection Zones

- 15.38. The Environment Agency’s Source Protection Zone dataset defines the site to be located within “Zone 3: (Total catchment)” which defines the total area needed to support the abstraction or discharge from the protected ground water source.

- 15.39. The closest areas of “Zone 2: (Outer Protection Zone)” or “Zone 1: (Inner Protection Zone)” to the site are approximately 3km away.

Drinking Water Safeguard Zones (Groundwater)

- 15.40. The site is not located within a Drinking Water Groundwater Safeguard Zone, as defined by the Environment Agency. These areas highlight where additional pollution control measures are needed.

Summary of Baseline Conditions

- 15.41. The Site is identified as being at Low risk from coastal, fluvial and surface water sources.
- 15.42. Ground levels vary on site and there are also Main Rivers and Ordinary Watercourses identified on site and along the site boundary.
- 15.43. The site is recorded to be underlain by sand bedrock geology with poorly draining soils above.
- 15.44. There is a Zone 3 (Total Catchment) Source Protection Zone below the site. The site is however not within a Drinking Water Groundwater Safeguard Zone.

Consultation to Date

- 15.45. Consultation to date has included engagement with the Environment Agency (EA), Suffolk County Council as Lead Local Flood Authority (LLFA) and Essex and Suffolk Water.
- 15.46. Table 15.1 provides a summary of the current status of this consultation.

Table 15.1 – Consultation to Date (Hydrology & Flood Risk)

Relevant Body	Current Consultation Status
Environment Agency	<p>Initial contact made and site proposals shared. Meeting arranged with the EA and the Applicant to discuss the EA's role and engagement protocol, the project programme and cost recovery.</p> <p>Still need the EA's view on the easement required for the Main River bordering the site. An indicative 9m easement has currently be provided and will be confirmed as part of the consultation process. Will also seek the EA's view on the provision, and containment of fire water for the proposed Battery Energy Storage Systems. Fire water containment will be considered in the Surface Water Drainage Strategy that will accompany the planning submission documents.</p>
Lead Local Flood Authority	<p>Initial contact made and site proposals shared.</p> <p>LLFA responded to initial consultation by providing their "Standing Advice Solar Panel and Solar Farms Final 2022" document. They also advised an 8m easement should be applied to all Ordinary Watercourse on site.</p>

	The LLFA confirmed they do not consider the provision and containment of fire water to be within their remit and have suggested the project team contact the EA and Suffolk Fire and Rescue.
Essex and Suffolk Water	Site layout shared to inform where hydrants will be needed on site alongside the proposed BESS. Essex and Suffolk Water have confirmed 2no. fire hydrants can be secured on Site for the BESS areas.

Scoping Out Justification

15.58. The justification for scoping hydrology and flood risk out of the EIA is detailed below. This justification is focused on the following identified potential impacts of the proposed development:

- a) Effect of construction and operation on groundwater quality.
- b) Effect of construction and operation on watercourses within the Site Boundary.
- c) Effect of construction and operation on Flood Risk on site and downstream.
- d) Effect of construction and operation on existing surface water drainage patterns within The Site Boundary.
- e) Effect of construction and operation on water quality.

15.59. The impact of the Proposed Development on groundwater water quality will be assessed in detail in the Flood Risk Assessment and Surface Water Drainage Strategy to be submitted as part of the DCO application. The Outline Construction Environmental Management Plan will consider this during the construction phase. As noted above, the site is located within a Zone 3 (total catchment) Source Protection Zone which defines the total area needed to support the abstraction or discharge from the protected ground water source. It is however noted that the site is not located within a Drinking Water Groundwater Safeguard Zone. The impact of the proposed development on groundwater quality is however considered to be minimal. Any risk associated with the quality of surface water running off the site which may then reach groundwater supplies, will be fully mitigated by the proposed surface water drainage strategy which at detailed design will be designed to ensure no interference with groundwater and to ensure any potentially contaminated fire suppression water is contained and not able to pollute groundwater sources. Chapter 9 of the EIA (Ground Conditions) also provides an in depth assessment of “geological soils and bedrock, hydrogeology and groundwater conditions, contaminated land, and geohazards/geotechnical risks”. With the provision of the Flood Risk Assessment, Surface Water Drainage Strategy and Chapter 9 (ground conditions) of the EIA, it is not considered necessary to further assess this within a hydrology and flood risk EIA chapter.

15.60. The impact of the Proposed Development on watercourses within the Site Boundary will be assessed in the Flood Risk Assessment and Surface Water Drainage Strategy to be submitted as part of the planning application. The Outline Construction

Environmental Management Plan will consider this during the construction phase. Ordinary Watercourses on site are generally field boundary ditches assumed to help the drainage of the existing agricultural fields. The unnamed River Dove Tributary (Main River) falls within the “Mendlesham Streat Waterbody” Water Framework Directive area and is defined as having “moderate ecological status”. Mitigation measures will be embedded in the site design will act to protect watercourses on site both in terms of the proposals impact on existing flows and water quality. In addition to water quality mitigation measures on site, which will generally be associated with the proposed surface water drainage strategy, watercourse easements will be built-in to the site design. It is expected that an 8m easement will be applied to all Ordinary Watercourses and that a 9m easement will be applied to Main Rivers. These easements will ensure land immediately adjacent to the watercourse remains undeveloped. Any proposed crossing which go over existing watercourses will be designed to ensure there in no impact on existing flows.

- 15.61. The impact of the Project on Flood Risk on site and downstream will be assessed in the Flood Risk Assessment and Surface Water Drainage Strategy to be submitted as part of the planning application. The Outline Construction Environmental Management Plan will consider this during the construction phase. As discussed above, the site is generally shown to be at low risk from fluvial, coastal and surface water sources. It is considered that the project will not impact current flood risk. The proposals will result in the cessation of agricultural activities at the site which will in turn, result in a variety of beneficial effects which will serve to reduce soil compaction and runoff rates from the site. These benefits include ensuring the site will not be left without vegetation cover during the winter as experienced with arable farming, the site will not be intensively trodden or over grazed and the site will not be regularly traversed by heavy machinery. Additionally, longer meadow type grasses and wildflower vegetation provide high levels of natural attenuation which will serve to reduce the risks of erosion and limit surface water flows across the site. Changing the site's primary function to solar power generation will have several potential longer-term benefits regarding surface water runoff rates and associated flood risk. A sequential approach to development will also be taken by ensuring there are no vulnerable infrastructure located in areas predicted to be at risk of surface water flooding. Areas of Flood Zone 2 and 3 on site will not be developed for arrays.
- 15.62. The impact of the Project on existing surface water drainage patterns within The Site will be assessed in the Flood Risk Assessment and Surface Water Drainage Strategy to be submitted as part of the DCO application. The Outline Construction Environmental Management Plan will consider this during the construction phase. The proposals are considered to have a negligible impact on existing surface water drainage. Solar panels proposed on site will also be raised above the ground to ensure existing surface water runoff patters remain unaffected by the site proposals. Where panels are proposed in areas predicted to be impacted by a 1 in 1,000 year rainfall event, their lowest edge will be raised above the predicted 1 in 1,000 year flood depths. Any areas of proposed hardstanding on site will be managed with the proposed surface water drainage strategy. This drainage strategy will ensure surface water runoff rates from the proposed development are restricted to the calculated greenfield runoff rate. As such, surface water drainage patterns on site will not change as a result of the proposed development.

- 15.63. The impact of the Project on water quality (in addition to groundwater quality which is discussed above) will be assessed in the Flood Risk Assessment and Surface Water Drainage Strategy to be submitted as part of the planning application. The Outline Construction Environmental Management Plan will consider this during the construction phase. By way of good practice, the Outline Construction Environmental Management Plan would confirm measures required to manage the risk of soil erosion, sediment and pollution entering the watercourses. Measures would include storing chemicals (if required) in oversized containers away from watercourses, temporary measures such as sediment traps, temporary bunding or similar to minimise migration of spillages. Within the Flood Risk Assessment, water quality during the operation phase will be assessed in detail and the design of the proposed surface water drainage strategy will ensure that contaminants in surface water runoff discharged from the site are minimised. It will be required to show that the SuDS mitigation indices exceed the pollution hazards indices, as defined by the CIRIA SuDS manual.
- 15.64. In addition to the above justification for scoping out hydrology and flood risk from the EIA, an assessment of cumulative effects on hydrology and flood risk is not considered necessary as part of an EIA. In accordance with national planning policy, other development schemes within the catchment will be expected to incorporate measures to ensure that the development does not increase the flood risk elsewhere. Similarly, any other development schemes will be required to include measures to provide pollution control such that water quality is not adversely affected. On account of policy requirements, it is envisaged that this project and others within the catchment will be categorised as “nil detriment” in terms of off-site/downstream hydrogeology related impacts. On this basis, it is unlikely that there will be any cumulative effects within the catchment to consider and it is proposed to scope this assessment out.
- Conclusion**
- 15.65. It is concluded that all potential impacts of the development on hydrology and flood risk will be adequately addressed in the Flood Risk Assessment and Surface Water Drainage Strategy that will be submitted in support of the DCO and that an assessment of these factors as part of the EIA is not justified.
- 15.66. It is also concluded that the risk of flooding to the Project can be adequately mitigated to remain safe and operational over its lifetime, which will be confirmed and explained through the standalone Flood Risk Assessment to be submitted in support of the DCO application.
- 15.67. The Flood Risk Assessment will also explain the benefits to surface water flood risk arising from the Proposed Development associated with the change to land use. It will also present the proposed surface water drainage strategy to manage runoff from proposed impermeable areas. As a result, it is expected that the Project would have an overall benefit to surface water flood risk both on site and elsewhere.
- 15.68. The proposed surface water drainage strategy and Outline Construction Environmental Management Plan will ensure the impact of the proposed development on water quality will be negligible.

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