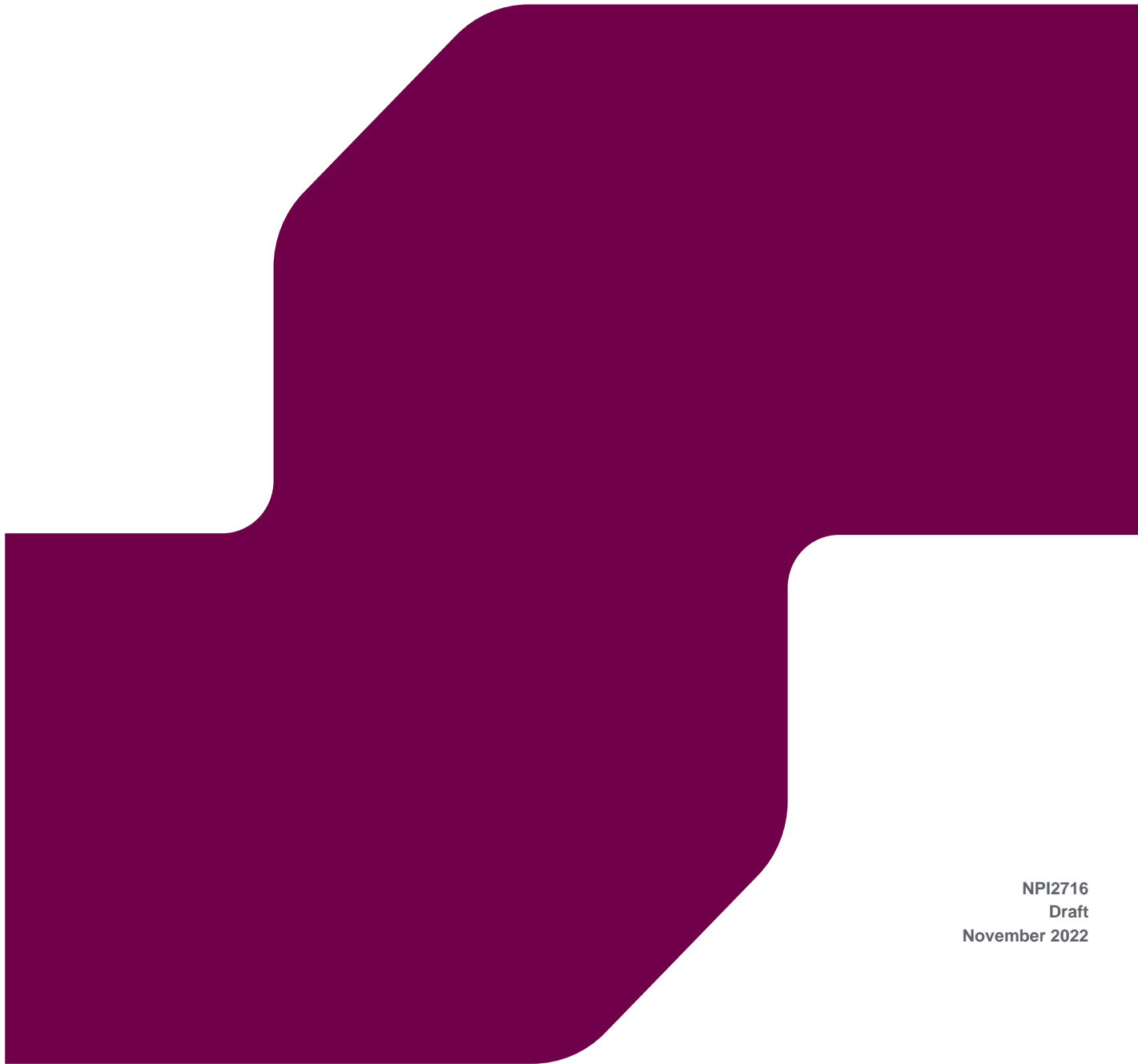


BERDEN HALL FARM SOLAR FARM

Environmental Statement



NPI2716
Draft
November 2022



Quality Management

	Status	Authored by	Reviewed by	Approved by	Date
V1	Draft	PI			5/10/22
V2	Draft	PI			11/11/22
V3	Draft	PI			20/11/22
V4	Final	PI, CM, SP, MF	AR	PI	30/11/22

Approval for issue

[Name] [Signature] [Date]

File/Model Location

Document location: O:\12716 Berden Hall Farm Solar\5. Oxford Reports-Docs\EIA\Reports\NP12716 Berden Hall Farm Solar ES MASTER.docx

Model / Appendices location:

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Prepared by:

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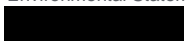
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GLOSSARY

Term	Description
ALC	Agricultural Land Classification
AOD	Above Ordnance Datum
BEIS	Business, Energy and Industrial Strategy
BMV	Best and Most Versatile
BoS	Balance of System
BPM	Best Practicable Means
BS	British Standard
BSF	Battery Storage Facility
CCC	Committee on Climate Change
CEMP	Construction Environmental Management Plan
CFDS	Commission for Darker Skies
CIBSE	Chartered Institution of Building Services Engineers
CIEEM	Chartered Institute of Ecology and Environmental Management
CifA	Chartered Institute for Archaeologists
CO _{2e}	Carbon Dioxide equivalent
CoCP	Code of Construction Practice
COP	Conference of the Parties
CroW	Countryside and Rights of Way
CTMP	Construction Transport Management Plan
DBEIS	Department for Business Energy and Industrial Strategy
DDCMS	Department for Digital, Culture, Media and Sport
Defra	Department for Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges
DNO	District Network Operator
EclA	Ecological Impact Assessment
EcoW	Ecological Clerk of Works
eDNA	Environmental DNA
EIA	Environmental Impact Assessment
EMF	Electric and Magnetic Field
EPD	Environmental Product Declaration
EPS	European Protected Species
ES	Environmental Statement
EU	European Union
FES	Future Energy Scenarios
FFL	Finish Floor Level
FRA	Flood Risk Assessment
FSC	Forest Stewardship Council
FTE	Full Time Equivalent
GCN	Great Crested Newt
GHG	Greenhouse Gas
GtCO _{2e}	Giga tonnes Carbon Dioxide equivalent
GVLIA	Guidelines for Landscape and Visual Impact Assessment
GW	Gigawatt
GWP	Global Warming Potential
ha	Hectare

Term	Description
HER	Historic Environment Record
HGV	Heavy Goods Vehicle
HLC	Historic Landscape Characterisation
ICE	Inventory of Carbon and Energy
ICOMOS	International Council on Monuments and Sites
IEF	Important Ecological Feature
IEMA	Institute of Environmental Management and Assessment
JCS	Joint Core Strategy
JNCC	Joint Nature Conservation Committee
km	Kilometre
kWh	
LBAP	Local Biodiversity Action Plan
LCA	Lifecycle Analysis
LCA	Landscape Character Area
LIB	Lithium-ion Batteries
LiDAR	Light Detection and Ranging
LNR	Local Nature Reserves
LPA	Local Planning Authority
LVIA	Landscape and Visual Impact Assessment
LWS	Local Wildlife Sites
m	Metre
MAFF	Ministry of Agriculture, Fisheries and Food
MAGIC	Multi-Agency Geographic Information for the Countryside
MFPA	National Fire Protection Association
MHCLG	Ministry of Housing, Communities and Local Government
MW	Mega-Watt
NBG	Northants Bat Group
NBRC	Northamptonshire Biological Records Centre
NDC	Nationally Determined Contribution
NERC	Natural Environment and Rural Communities
NFPA	National Fire Protection Association
NIA	Nature Improvement Area
NMC	Nickel-Manganese-Cobalt
NNC	North Northamptonshire Council
NNJC	North Northamptonshire Joint Committee
NNR	National Nature Reserves
NPPF	National Planning Policy Framework
NPPG	National Planning Practice Guidance
NSR	Noise Sensitive Receptor
NTS	Non-Technical Summary
ODPM	Office of the Deputy Prime Minister
OS	Ordnance Survey
PEA	Preliminary Ecological Appraisal
pSAC	Possible Special Area of Conservation
pSPA	Possible Special Protection Area

Term	Description
RCP	Representative Concentration Pathway
SAC	Special Areas of Conservation
SINC	Site of Importance for Nature Conservation
SLL	Society of Light and Lighting
SoS	Secretary of State
SPA	Special Protection Area
SPD	Supplementary Planning Document
SPZ	Source Protection Zone
SSSI	Site of Special Scientific Interest
TCAAP	Town Centre Areas Action Plan
UKBAP	UK Biodiversity Action Plan
UKCP	United Kingdom Climate Projections
UNFCCC	United Nations Framework Convention on Climate Change
WBCSD	World Business Council for Sustainable Development
WRI	World Resources Institute
ZoI	Zone of Influence
ZTV	Zone of Theoretical Visibility

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- Appendix 1.8: Planning, Design and Access Statement (submitted with original planning application)
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1 INTRODUCTION

Introduction

- 1.1 This Environmental Statement (ES) has been prepared by RPS on behalf of Berden Solar Ltd (the Applicant), a wholly owned subsidiary of Statera Energy Ltd. The ES reports on the findings of the Environmental Impact Assessment (EIA) process and accompanies the planning application for the Berden Hall Farm Solar Farm¹.
- 1.2 The proposed development site (the Site) is located on approximately 65.84 hectares (see Chapter 3) of arable land between the villages of Berden and Stocking Pelham, south of Ginns Road on the western edge of the district of Uttlesford, Essex (Figure 1.1). The Site is centred on national grid reference 100m square TL461291.
- 1.3 The proposed development is for the development of a ground mounted solar farm with a generation capacity of up to 49.99MW, together with associated infrastructure and landscaping. It would comprise the following key elements:
- Approximately 91,056 photovoltaic solar panels
 - Nine inverter units
 - A small electrical substation
 - A reconfigured field access off Ginns Road to provide access to the Site
 - Landscaping and deer fencing.

Planning History

- 1.4 On 30th June 2021 the Applicant submitted a request for a Screening Opinion to Uttlesford District Council (UDC) for a “proposed solar energy scheme on land adjacent to Pelham Substation, Park Green Lane, Berden”. The request was supported by a proposed masterplan, a preliminary Landscape and Visual Impact Assessment (LVIA) and an Ecology report.
- 1.5 UDC provided a Screening opinion (UTT/21/2158/SCO) on 14th October 2021 (see Appendix 1.1) for the proposal under Regulation 6 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017, (the EIA Regulations). The screening opinion identified that the proposal was not a Schedule 1 development under the EIA Regulations but did exceed the thresholds for a Schedule 2 development in respect of “industrial installations for the production of electricity, steam and hot water (unless included in Schedule 1)” (EIA Regulations, Schedule 2, 3(a)).
- 1.6 Schedule 3 of the EIA Regulations sets out the selection criteria which must also be taken into account in determining whether the development is likely to have significant effects on the environment with regard to the characteristics and location of the development, and the types and characteristics of the potential impact. The screening opinion concluded that “given the location of the proposals and taking into consideration the potential for cumulative impacts arising, it is considered that the proposals would not give rise to significant adverse effects. Therefore, and Environmental Impact Assessment is not required to be submitted with the application”.

¹ Technical Reports submitted as part of the original planning application in July 2022 refer to the proposed development as Pelham Solar or Stocking Pelham Solar Farm. Berden Hall Farm is the name recorded by the Planning Inspectorate (See Planning History).

- 1.7 Nevertheless, the screening opinion and associated screening matrix prepared by UDC identified a range of additional reports and assessments that would be required to accompany any future planning application. These included a Construction Environmental Management Plan (CEMP), a detailed Heritage Impact Assessment, an assessment of potential effects on nearby Sites of Special Scientific Interest (SSSI), a Transport Statement and a Construction Traffic Management Plan (CTMP), soil surveys to assess the agricultural grade of the land, and a cumulative assessment with other solar farms within Uttlesford.
- 1.8 In February 2022 UDC was placed in special measures due to failings in its planning system. Consequently, UDC is unable to determine large scale planning applications such that developers have to submit applications directly to the Planning Inspectorate under section 62A of the Town and Country Planning Act 1990.
- 1.9 The Applicant submitted a full planning application to the Planning Inspectorate (S62A/22/0006) in July 2022. Planning permission is sought for a temporary period of up to 40 years from the date of the first exportation of electricity from the Site. The application was supported by drawings and plans of the proposed development's key components together with:
- a) Agricultural Land Classification (ALC) prepared by SOYL (Appendix 1.2)
 - b) Access Technical Note prepared by Miles White Transport (Appendix 1.3)
 - c) Construction Traffic Management Plan prepared by Miles White Transport
 - d) Biodiversity Net Gain (BNG) Assessment prepared by RPS
 - e) Preliminary Ecological Appraisal (PEA) prepared by Cherryhill Ecology
 - f) Flood Risk Assessment (FRA) prepared by RPS (Appendix 1.4)
 - g) Glint and Glare study prepared by PagerPower (Appendix 1.5)
 - h) Heritage Statement prepared by RPS (Appendix 1.6)
 - i) Landscape and Ecology Management Plan (LEMP) prepared by Sightline Landscape
 - j) Landscape and Visual Impact Assessment (LVIA) prepared by Sightline Landscape
 - k) Noise Impact Assessment prepared by RPS (Appendix 1.7)
 - l) Planning, Design and Access Statement (PDA) prepared by the Applicant (Appendix 1.8)
 - m) Planning, Design and Access Statement Addendum (PDA Addendum) prepared by the Applicant (Appendix 1.9).
- 1.10 Due to the potential of the proposed development to give rise to significant landscape and visual effects the Planning Inspectorate (on behalf of the Secretary of State) issued a Screening Direction (see Appendix 1.10) under Regulation 12 of the EIA Regulations on 19th August 2022 requiring the Applicant to prepare an Environmental Impact Assessment and submit an ES (this document).
- 1.11 Other relevant planning applications in the vicinity relate to the consenting of the development of a 49.99MW Battery Storage Facility (UTT/16/2316/FUL) connected to Pelham Substation between 2016 and 2018. That facility, now operational, is located adjacent to the south-west of the application site.
- 1.12 The above documents appended to this ES provide the core information for the EIA. The CTMP, BNG, PEA, LEMP and LVIA are not appended as the contents of those documents have been either replaced (and appended later in this ES) or incorporated and updated into this document, primarily in Chapters 7 and 5 respectively.
- 1.13 Further information to address the concerns raised by, in particular UDC, Historic England, and Berden and Stocking Pelham Parish Council following consultation by the Planning Inspectorate is provided.

Statutory Framework and Purpose of the Environmental Statement

Purpose of EIA

- 1.14 EIA is a means of identifying and collating information to inform an assessment of the likely significant environmental effects of a project. The findings of the EIA process are reported in an ES in order to inform the relevant planning authority and interested parties as part of the decision-making process.

The EIA Directive

- 1.15 The legislative framework for EIA is set by European Directive 2011/92/EU, as amended by Directive 2014/52/EU (collectively referred to as the EIA Directive). Directive 2014/52/EU entered into force on 15 May 2014.

The EIA Regulations

- 1.16 For the purposes of the proposed development, the requirements of the EIA Directive have been transposed into UK legislation through the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. As stated above these regulations are referred to in this ES as 'the EIA Regulations'.

Need for EIA

- 1.17 Schedule 1 of the EIA Regulations identifies development types that always require EIA. Schedule 2 identifies development types that require EIA if they are likely to lead to significant effects on the environment by virtue of factors such as their nature, size or location. Schedule 2 development is defined within the EIA Regulations as development of a description mentioned in Column 1 of the table in Schedule 2 where:

'a) any part of that development is to be carried out in a sensitive area; or

b) any applicable threshold or criterion in the corresponding part of Column 2 of that table is respectively exceeded or met in relation to that development.'

- 1.18 The proposed development falls within Part 3(a) of Column 1 of the table in Schedule 2 (Energy Industry).
- 1.19 As noted above the proposed development exceeds the threshold outlined in the Schedule 2 criteria and although not located within a sensitive area, it is considered to be Schedule 2 development.
- 1.20 Schedule 2 developments require consideration against the criteria set out in Schedule 3 of the EIA Regulations to determine whether EIA is required. The criteria include the characteristics of the development, the location of development and characteristics of the potential impact on the environment. Those criteria were sufficient to warrant a screening direction from the Planning Inspectorate.

Content of the ES

- 1.21 This ES has been prepared in accordance with the EIA Regulations. Although there is no statutory provision as to the form of an ES, it must contain the information specified in Regulation 18 and Schedule 4 of the EIA Regulations. For the avoidance of doubt, the specified information within Regulation 18 and Schedule 4 is provided in Appendix 1.11 of this ES.

1.22 This ES provides all information required under Regulation 18 and Schedule 4. The information supplied within this ES is considered to provide a clear understanding of the main and likely significant effects of the project upon the environment.

Structure of the ES

1.23 The ES has been structured in order to allow relevant environmental information to be easily accessible. This volume of the ES (Volume 1) includes the main text of the ES. The description of the project is provided in Chapter 2. Information relating to the need for the development and the main alternatives considered during the evolution of the project and the reasons for the choices made is found within Chapter 3. Chapter 4 outlines the approach and methodology adopted for the EIA. The remainder of Volume 1 contains topic by topic environmental information as shown in Table 1.1.

1.24 Figures and appendices to accompany the text of the ES are provided separately in Volumes 2 and 3 respectively. Volume 3 includes specialist reports providing relevant background and technical information. A Non-Technical Summary (NTS) of the ES is available as a separate summary document.

Table 1.1: Structure of ES

Structure of ES	
Non-Technical Summary	Summary of the ES using non-technical terminology
Volume 1: Text	
	Glossary
Chapter 1	Introduction
Chapter 2	Project Description
Chapter 3	Need and Alternatives Considered
Chapter 4	Environmental Assessment Methodology
Chapter 5	Landscape and Visual Impact Assessment
Chapter 6	Heritage
Chapter 7	Ecology
Chapter 8	Other Environmental Matters
Volume 2: Figures	
Including all figures and drawings to accompany the text.	
Volume 3: Appendices	
Including specialist reports forming technical appendices to the main text.	

The Applicant

1.25 The Applicant is Berden Solar Ltd, a wholly owned subsidiary of Statera Energy Ltd.

1.26 Statera Energy was founded in 2015 with the aim of delivering increased flexibility for the UK electricity system to assist in the transition to a low carbon economy in the belief that renewable energy sources, such as solar and wind, will become the dominant form of generation of the future.

1.27 It is a fully integrated developer, owner and operator of flexible infrastructure which includes both energy storage and high efficiency gas reciprocating engines.

- 1.28 Statera has entered a 15-year partnership with Statkraft, Europe's largest renewable operator to provide flexibility services.
- 1.29 All projects are developed in-house, managed through their construction and on to operation, where they are overseen by a dedicated asset management team which includes its own industry leading technical expertise.
- 1.30 Statera now has a growing portfolio of assets under management which are capable of providing multiple services to National Grid, Distribution Network Operators (DNOs), as well as those operating in the wholesale energy markets.
- 1.31 The team at Statera have developed over 300MW of solar project across the UK.

The Assessment Team

- 1.32 The EIA has been managed by RPS, taking into account information provided by the Applicant and design team. RPS is a registrant of the Institute of Environmental Management and Assessment (IEMA) Quality Mark. All authors of this ES are senior members of RPS and Sightline, and a statement setting out how the authors have sufficient expertise to ensure the completeness and quality of the ES is provided in Appendix 1.12.

Table 1.2: Environmental Statement Authors and Project Team

ES Chapter	Main Author / Contributor
ES Chapters 1 – 4	RPS
ES Chapter 5	Sightline Landscape
ES Chapter 6	RPS
ES Chapter 7	RPS
ES Chapter 8	RPS, Miles White Transport, PagerPower
ES Chapter 9	RPS

Further Information

- 1.33 This Environmental Statement has been submitted as part of a planning application for the proposed Berden Hall Farm Solar Farm. The application has been submitted to the Planning Inspectorate (Reference S62A/22/0006) at:
 Inquiries and Major Casework,
 The Planning Inspectorate,
 3J Kite Wing,
 Temple Quay House,
 2, The Square,
 Bristol BS1 6PN
- 1.34 Copies of the ES, including the Non-Technical Summary and planning application documents can be viewed on, and downloaded from the Planning Inspectorate website:
<https://www.gov.uk/guidance/section-62a-planning-application-s62a220006-berden-hall-farm-ginns-road-berden>

BERDEN HALL FARM SOLAR FARM

- 1.35 Hard copies of the ES and the Non-Technical Summary may be obtained from the following address:
- RPS (quoting reference NP12716)
20 Western Avenue
Milton Park
Abingdon
Oxfordshire
OX14 4SH
- 1.36 An electronic copy (CD) of the Environmental Statement with the Non-Technical Summary can be obtained from RPS at the above address for a cost of £10, and a paper copy from the same address can be obtained for an administration fee (price on application).
- 1.37 All comments on the ES (and planning application) should be forwarded to the Planning Inspectorate quoting reference S62A/22/0006 at the following email address:
section62a@planninginspectorate.gov.uk

2 PROJECT DESCRIPTION

Introduction

- 2.1 This chapter provides a description of the project and forms the basis for the environmental assessment provided in this ES. Further information can be found in the appendices to this chapter provided in Volume 3 of this ES.
- 2.2 The effects of the project have been assessed throughout the ES based on what is likely. For example, construction information is presented as the 'likely case'. A number of measures which would reduce or avoid adverse environmental effects arising have been included as part of the project design. Details of these measures are provided in this chapter and set out in each topic chapter. This chapter, together with the subsequent topic chapters, provide the data required to identify and assess the main and likely significant effects of the project in accordance with Regulation 18 and Schedule 4 of the EIA Regulations (Appendix 1.11).
- 2.3 This chapter provides a description of the Site and the key components of the project, including an overview of the approach to construction.

The Site and Surrounding Area

Site Location

- 2.4 The Site is situated between Berden in Uttlesford, Essex and Stocking Pelham in the district of East Herts, Hertfordshire (Figure 2.1).
- 2.5 Ginns Road between Berden and Stocking Pelham forms the northern boundary of the Site. The footpath (5/25) between the water tower north-west of Brick House End and Crabb's Green Farm marks the southern boundary. The western site boundary is delineated primarily by Uttlesford's boundary with East Herts District Council (EHDC) whilst the eastern site boundary follows footpath 5/22 opposite the Benskins Close development in Berden south for some 700 metres before turning west to the northern edge of the small copse and then south along the western edge of the copse and subsequent field boundary to the water tower.
- 2.6 The application site comprises three large fields, currently arable. The fields are divided by hedges which are typically 2 – 6m high and support the occasional large tree. Two field boundaries also include two small deciduous copses, one of which is within the application boundary, and one immediately adjacent to it. Tracks for farm vehicles run alongside most of the internal hedges and some of these are the routes of the public rights of way (PRoW). There are no landscape features within the fields, such as mature trees or structures.
- 2.7 The fields are drained via a series of ditches which take the water in a northeast direction towards Berden and the catchment of the Stort.
- 2.8 Six County or Local Wildlife Sites (CWS/LWS) which are non-statutory designated sites, are located within 250 metres of the Site. Park Green (a registered common) and Pelham Centre Meadow (a grassland) are both, in part, adjacent to the site's southern boundary. Further details of these and other sites designated for their ecological value are provided in Chapter 7 and Appendix 7.1.
- 2.9 The Crump scheduled ancient monument, a medieval ringwork fortification, is located c.620 metres to the east of the application site.

Topography, Geology and Soils

- 2.10 A review of OS 1:25,000 scale mapping demonstrates that the Site slopes gently from the south-west to north-east with an average elevation above sea level of around 115m AOD.
- 2.11 Ground levels along the western boundary are between 127M AOD and 120m AOD dropping down to 109m AOD along the eastern perimeter.
- 2.12 British Geological Survey (BGS) online mapping (1:50,000 scale) indicates that the Site is entirely underlain by Chalk comprising undifferentiated deposits of the Lewes Nodular Chalk Formation and Seaford Chalk Formation.
- 2.13 Superficial deposits comprise Diamicton of the Lowestoft Formation. Diamicton deposits are a type of siliciclastic sediment that are poorly sorted and contain a wide range of clast sizes from clay to boulders suspended in a matrix of mud or sand.
- 2.14 The soils present have been surveyed and are described in the Agricultural Land Classification (ALC) report prepared by SOYL and submitted with the original planning application (see paragraph 1.9 and Appendix 1.2). In terms of ALC, overall, some 37% of the application site comprises grade 2, 35% grade 3a and 28% grade 3b land. Appendix 1 of the SOYL ALC report describes the grades and subgrades of agricultural land; in headline the grades are described as follows:
- Grade 1 – excellent quality agricultural land
 - Grade 2 – very good quality agricultural land
 - Grade 3a – good quality agricultural land
 - Grade 3b – moderate quality agricultural land
 - Grade 4 – poor quality agricultural land
 - Grade 5 – very poor quality agricultural land
- 2.15 With regard to best and most versatile agricultural land (BMV) as defined by policy guidance (see Annex 2 of NPPF) BMV means grade 1, 2 and 3a. Chapter 8 provides an assessment of the impact of the proposed development on BMV.

Site History

- 2.16 The Site is currently under arable cultivation in open countryside and has not been subject to any planning applications in the past. However, the Site is adjacent to the Pelham Electricity Substation and its radiating network of overhead lines and associated pylons. The Pelham Battery Storage Facility also abounds the south-western edge of the Site.

Planning Context

- 2.17 The land is unallocated in the Local Plan and is not subject to any designations.
- 2.18 The key UDC policies set out in its 2005 Local Plan as identified by UDC officers in their report to committee on 31/08/22 (Uttlesford Council, 2022) that are relevant to the application and the Site are:
- S7 – The Countryside
 - GEN 1 – Access
 - GEN 2 – Design
 - GEN 3 – Flood Risk
 - GEN 4 – Good Neighbourliness

- GEN 5 – Light Pollution
- GEN 6 – Infrastructure Provision
- GEN 7 – Nature Conservation
- E 4 – Farm Diversification: Alternative Use of Farmland
- ENV 2 – Development affecting Listed Buildings
- ENV 3 – Open Space and Trees
- ENV 4 – Ancient Monuments and Sites of Archaeological Importance
- ENV 5 – Protection of Agricultural Land
- ENV 7 – The Protection of the Natural Environment
- ENV 8 – Other Landscape Elements of Importance for Nature Conservation
- ENV 11 – Noise Generators
- ENV 14 – Contaminated Land
- ENV 15 – Renewable Energy

2.19 The following Supplementary Planning Guidance is also of potential relevance:

- Local Residents Parking Standards (2013)
- Essex County Council Parking Standards (2009)
- Supplementary Planning Document – Accessible Homes and play space home (2005)
- Uttlesford Interim Climate Change Policy (2021)

Project Description

Key Components

2.20 The proposed development involves the construction of the following:

- a) Installation of approximately 91,056 photovoltaic solar panels mounted on tables which will have a front edge at around 0.9m above ground and the rear edge 2.5m (a twenty-degree slope) (see Figure 2.2). Rows will run west to east, following the existing contours of the ground with the panels facing south. Spacing between rows will vary between 7.9m and 9.8m, depending on topography. Each string of panels would be mounted on a rack comprising metal poles anchored to the ground using pile driven foundations to a depth of 2 to 2.5m. The solar panels will be constructed of non-reflective glass. Each solar panel would be connected to an inverter via a cable buried to a depth of approximately 0.8m.
- b) Nine inverter and transformer units distributed among the panels and accessed via a combination of existing and proposed farm tracks (formed from crushed stone). Each inverter would be approximately 9m x 2.5m x 2.2m, typically the size of standard shipping container, and would be placed on a concrete base. The transformer along side the inverter would be approximately 2.7m x 2.5m (see Figure 2.3).
- c) A small substation is required as part of the proposed development to act as a single connection point to the Site from the Grid. It will accommodate all necessary equipment to enable the solar farm's electrical system to be controlled, monitored, metered and connected to the local electrical distribution network. The substation would be placed on a concrete base and measure approximately 12m x 9.5m (see Figure 2.4). It would be protected with a palisade fence and will be built in the south-west corner of the Site, adjacent to the existing battery storage facility to which it would be connected by an

underground cable (see Figure 2.5). The existing link between the battery storage facility and the larger Pelham Substation would be used as the final connection to the grid. The substation will be accessed via the internal track network from the main access to the solar farm on Ginns Road. The building would not be permanently occupied but would be periodically visited by maintenance personnel. As such, a small permeable hard standing area will be provided outside the building with parking for approximately two vehicles.

- d) Deer fencing around each field to exclude large mammals and humans from the facility (see Figure 2.6). Gates to allow the passage of small mammals such as badgers and foxes will be provided at intervals along the fence (but not within the sections of fence alongside PRow to prevent dogs passing through the fence).
- e) Existing footpaths will be retained along their same routes, typically within corridors 10 – 15 m wide between existing hedge lines and the proposed deer fence. A hedge will be planted in front of the deer fence to reduce the visual impact of the solar farm from view, reducing the corridor by 3 m (allowing for growth of the hedge).
- f) A new permissive footpath between Stocking Pelham and Berden.
- g) It will be necessary to widen the bellmouth to the Pelham Road access by approximately 5m. The gate will be set 17m back from the edge of carriageway to allow an HGV to turn in without waiting for the gate to be opened. This 17m section will have a tarmac or concrete surface. (See Figure 2.7 for details).
- h) New hedges and copses will be planted to provide additional screening to the proposed development.

2.21 A layout masterplan is provided in Figure 2.8. The proposed development has an estimated lifespan of up to 40 years, and as such the proposed development and associated infrastructure is long-term temporary and reversible. Further details of the key components are provided below.

Access and Parking

2.22 Access to the Site will use the existing field entrance off Ginns Road (see 2.21 g above).

2.23 Internal tracks would provide access to the entire Site. Where possible, existing farm access tracks would be used. Where new internal tracks are needed, these would mainly run adjacent to existing field boundaries with minimum buffers applied to minimise encroachment into hedgerows and other landscape features. The tracks would be constructed from stone (or equivalent), fully permeable with no tarmac and would be used during construction and operation of the proposed development.

2.24 Once operational parking would be provided for two vehicles at the substation.

2.25 During construction a temporary construction compound would be set up within the Site close to the Site entrance off Ginns Road (see Figure 2.9 for an indicative layout).

2.26 Existing footpaths through the Site have been incorporated into the layout design of the solar farm and would be accessible throughout construction (subject to any localised health and safety requirements) and operation of the solar farm.

Transport Management

2.27 An Access Technical Note prepared by Miles White Transport accompanied the planning application (Appendix 1.3). The note demonstrated that during the operation the solar farm traffic flows associated with the proposed development would be very low, amounting to no more than 5 vehicles per week.

2.28 A Construction Transport Management Plan (CTMP) accompanied the planning application and this is appended to this document as Appendix 2.1.

Appearance and Design

- 2.29 The layout of the proposed development is shown on Figure 2.8.
- 2.30 The most visible components of the proposed development would be the solar panels. These would be mounted on a metal frame and constructed from nonreflective glass, and will run west to east, following the existing contours of the ground with the panels facing south.
- 2.31 It is notable that the solar panels are designed to absorb sunlight, therefore there would be no significant issues associated with glint and glare (see Appendix 1.5 and Chapter 8 for further details). In addition, the metal frame is treated to avoid any other significant issues with glint and glare. The metal frame is necessary because it is durable and is sufficiently strong to hold the panels in position, a functional design requirement.
- 2.32 It is envisaged that the containers/cabins and other small buildings would be appropriately coloured or clad to minimise any visual impact and comply as far as practicable with the local vernacular. The structures would however be functional in appearance, reflecting their purposes, which is for the generation of electricity.
- 2.33 The layout of the proposed facility has been led primarily by functional requirements and contractor specifications.

Landscape Strategy

- 2.34 Visual analysis indicates that the proposed development will be well screened by existing tree and hedge cover which lies to the south and west. The more open areas to the east will be screened by hedge and tree planting. The most significant views will be from Ginns Road and higher ground further north. For this reason, it is proposed to plant woodland buffers along the northern edge to augment the existing roadside tree cover and a new hedge which has recently been planted by the landowner. As well as the woodland planting some individual fast-growing trees have been specified to ensure the views from the north are screened as rapidly as possible. Blocks of woodland planting along the eastern edge will be screen the solar farm from Berden, nearby footpaths and in long distant views from high ground to the east.
- 2.35 The public rights of way which will pass through the solar farm will be maintained on their current alignment, set within 10m wide corridors, within which native hedge planting will screen the solar farm from view when in leaf. Tall stature trees will be planted where space and shading issues allow, while on other boundaries smaller stature species such as hawthorn and field maple will be planted. The proposed planting will leave a legacy of tree and hedge cover across the Site once the solar farm has been decommissioned.
- 2.36 The slight north facing slope means that the panels will be spaced sufficiently far apart, which combined with the short solar farm grass mix, will provide opportunities for skylark foraging. The grass sward will also allow sheep grazing within the solar farm if appropriate and practical. Species rich grassland will be specified around the margins and 2.7 hectares of permanent meadow will be established on land outside the array to the east.
- 2.37 Further details of the proposed landscape strategy and plans are set out in Chapter 5. Subject to seasonal constraints planting in accordance with the proposed landscape strategy would be implemented as early as possible in the construction programme (see paragraph 2.65).

Drainage and Flood Risk

- 2.38 OS mapping shows that there are no Main Rivers or ordinary watercourses within the site boundary or in close proximity to the Site. A shallow dry valley runs west east through the middle of the Site which results in a topographic low point on the eastern side of the Site. Within the Site the three fields that would contain the proposed solar array are separated by field drainage ditches. Further interconnected drainage ditches are located along the southern boundary and

along the southern part of the eastern boundary of the Site. That drainage system will continue to operate as it now does once the solar farm is constructed.

- 2.39 Where affected by construction any existing field or tile drainage system will be restored and will be maintained by the Applicant for the life of the proposed development.
- 2.40 A site-specific Flood Risk Assessment (FRA) following NPPF guidance has been prepared for the Site (see Appendix 1.4 and Chapter 8).
- 2.41 The Environment Agency map for planning shows that the Site is located in Flood Zone 1 (FZ1), where the probability of fluvial or tidal flooding is 'Low', whereby the land is having an annual probability of fluvial and tidal flooding of less than 1 in 1,000.
- 2.42 Reference to the Environment Agency's Surface Water Flood Map (see Appendix 1.4, Figure 3) indicates that most of the Site is at 'Very Low' risk of surface water flooding, where the annual chance of surface water flooding is less than 0.1% (1 in 1,000). Surface water flooding is caused when the volume of rainwater falling does not drain away through the existing drainage systems or soak into the ground and lies on or flows over the ground instead.
- 2.43 Nevertheless, localised topographic low points have higher risks of surface water flooding, however the predicted maximum depth of localised ponding would be no more than 300mm, well less than the minimum height of the installed solar panels. The risk of excessive surface water runoff will also be mitigated by maintaining vegetation cover throughout the Site, access tracks being constructed out of permeable materials, and where construction has resulted in soil compaction, the areas between panel rows would be tilled / scarified to an appropriate depth and then re-seeded with an appropriate vegetation cover.
- 2.44 Elsewhere the only elements with vulnerability are ancillary structures with electrical equipment. These are primarily pre-fabricated container units. They can be raised off the ground so there is a void between the ground and floor level of the unit, with internal electrical equipment therein also not situated directly on the floor of the unit.
- 2.45 SuDS techniques will be incorporated into the design, when and where required, and will work in conjunction with existing field drainage to manage the discharge of any excess water from the Site.
- 2.46 There is no requirement for foul drainage within the proposed development.

Lighting and CCTV

- 2.47 As the proposed development will be unmanned only limited lighting is required and would be confined to the substation in the south-west corner of the Site. This will include motion-activated security lighting.
- 2.48 Closed circuit television (CCTV) equipment will include infrared capability for use at night-time, further reducing the need for lighting.

Sustainability

- 2.49 The separate Planning, Design and Access Statement sets out the proposed development's sustainability credentials with regard to the National Planning Policy Framework (NPPF). The proposed development accords with the Government's national planning policy including the NPPF and EN-1 with respect to providing reliable electricity generation capacity to support the shift towards a low carbon, reliable electricity supply and the relevant saved policies of the Uttlesford Local Plan. The Project will provide for the need for efficient and flexible supply to meet peak energy demands within the local power network.
- 2.50 The proposed development would be constructed and operated without altering significantly the environmental, including hydrological, conditions within the Site and there would be a net gain in

biodiversity. The proposal would provide a clean, renewable and sustainable form of electricity and will also make a valuable contribution to the generation of electricity at a local level.

Waste

2.51 No waste is anticipated to be generated during the operation of the proposed development.

Residues and Emissions

2.52 A summary of residues and emissions during operation in relation to water; noise and vibration; and soil are set out in Chapter 8 of this ES based on the technical reports referenced in Chapter 1: Appendix 1.4: Flood Risk Assessment, Appendix 1.7: Noise Impact Assessment, and Appendix 1.2: ALC report. Details of lighting are provided within this chapter and considered within Chapters 5 (LVIA) and 7 (Ecology) where relevant.

Vulnerability to Accidents and Disasters

2.53 The 2017 EIA Regulations require a section within the ES to set out how the design of the proposed development has addressed potential vulnerability to accidents and disasters.

2.54 The proposed development is not of the type to give rise to potential for any unusual accidents or disasters.

Summary of Key Parameters

2.55 The table below provides a summary of the key parameters which have formed the basis for the assessment of effects.

Table 2.1: Key Parameters for Environmental Assessment

Element of the Development	Key Parameter for EIA
Site area	65.84 hectares
Total number of solar panels	91,056
Maximum height	2.5m
Number of inverters	9
Number of electrical substations	1
Total area covered by electrical infrastructure	c. 21.7 hectares
Area of tracks	0.756 hectares
Length of new hedgerows	2.55 km
Area of new woodland	1.7 ha
Area of new species rich meadow	2.7 ha
Surface drainage infrastructure	Existing ditches maintained
Highway infrastructure	Modified existing access of public highway. Internal gravel/stone tracks
Car parking provision	2 maintenance vehicles

Construction

2.56 The details of construction methods, timing and phasing are necessarily broad at this stage. The limits of the assessment, however, have been set sufficiently wide to allow a robust assessment to be undertaken of a reasonable worst case scenario.

2.57 The project is anticipated to utilise standard construction methodologies (including the potential requirement for piling) for the construction of a solar farm.

Overview

2.58 For the purposes of assessment, the development will be subject to a 6-month construction period, which will comprise a relatively intense 3-month period at the start where all the components are delivered to the Site and the following three months will comprise the construction of the solar farm.

2.59 An average of up to 50 construction workers are forecast to be on site during peak times during the construction period. A temporary car parking area (including spaces for minibuses) will be provided on the Site within a contractor's compound. Parking will therefore be contained within the Site and no unnecessary parking will occur on the local highway network.

2.60 The location of where staff will travel from is unknown at this stage as it will depend on the appointed contractor. However, it is likely that a number of the non-local workforce will stay at local accommodation, however general operatives will be transported to the Site by minibuses to minimise the impact on the local highway network. The number of car trips to the Site will be minimised to those senior staff such as project managers, site manager and those responsible for health and safety.

2.61 The construction period will include the use of HGVs to bring the equipment onto the Site and this will be strictly managed to ensure that vehicle movement is controlled and kept to a minimum. It should be noted that unlike wind farms, the construction of a solar farm does not require equipment to be delivered by abnormal loads (i.e. vehicles over 16.5m in length).

2.62 The total number of HGVs is estimated to be 350 which over the 6-month construction period this averages at 2.2 HGVs per day (over a 6-day week). However, this number is likely to be higher during the enabling and ground works phases, with up to 20 lorries per day arriving and departing, and lower during the commissioning period.

2.63 Deliveries to the Site will be managed to avoid highway network weekday peak hours. Construction work and construction traffic movements shall not take place on Sundays, bank holidays or after 13.00 on a Saturday unless such work is associated with an emergency or with the prior written consent of the local authority.

Indicative Phasing of Construction Works

2.64 The timing of the project would be dependent on securing planning permission and the discharge of planning conditions and reserved matters. The indicative construction programme sets out a programme of approximately 5 to 6 month's duration, commencing in Spring 2024. It is anticipated that the focus of the first 3 months would be to prepare the Site and to get the majority of the electrical infrastructure required delivered to Site. The remaining 2 to 3 months would then be given over to the erection of the solar arrays, inverters and the substation.

2.65 The broad sequence of construction activities is likely to be:

- Preparation of the Site and erection of security fencing;
- Reconfiguration of main access to the Site to allow access for construction vehicles;
- Setting up of temporary contractor's compound including storage and vehicle parking;
- Infrastructure works, including improvement or construction of internal tracks, cable trenches;
- Erection of solar arrays and inverters;
- Construction of substation, internal electrical connections and connection to the grid; and
- Planting in accordance with the masterplan (see also paragraph 2.37).

2.66 The Site would be fenced during construction. It is the intention of the Applicant that the Site would be registered under the Considerate Constructors Scheme or locally recognised certification scheme.

Construction Working Hours

2.67 Working hours would be 07:00 to 18:00 hours Monday to Friday, 07:00 to 13:00 hours on Saturday and at no time on Sundays or on public or bank holidays during the winter months (Oct – Mar). During the summer weekday working hours would be extended to 20:00 hours. These hours would be subject to agreement with the local planning authority. In the event that works are required outside of these hours in exceptional circumstances, this would be agreed with the local planning authority prior to commencement of the activity.

2.68 Up to an hour before and after the normal construction working hours, the following activities may be undertaken:

- arrival and departure of the workforce at the site and movement around the Site that does not require the use of plant;
- site inspections and safety checks; and
- site housekeeping that does not require the use of plant.

2.69 Non-noisy activities such as fit-out within buildings may be undertaken outside of those hours where these will not cause disturbance off-site.

2.70 Security staff would be present 24 hours every day.

Environmental Management during Construction

2.71 Construction would be undertaken in accordance with the Code of Construction Practice (CoCP) provided at Appendix 2.2 of this ES. The CoCP sets out the key management measures that contractors would be required to adopt and implement. These measures have been developed based on those identified during the EIA process and set out in the topic chapters of this ES. They include strategies and control measures for managing the potential environmental effects of construction and limiting disturbance from construction activities as far as reasonably practicable.

2.72 This CoCP would form the basis of more detailed plans and method statements, including a Construction Environmental Management Plan (CEMP), to be prepared during the pre-construction period once a Principal Contractor has been appointed. The final CEMP would be agreed with UDC.

Construction Working Areas

2.73 All works would be undertaken within the limits of the proposed development.

2.74 The temporary contractor's compound will likely include:

- Temporary portable buildings to be used as offices and welfare facilities
- Containerised storage areas
- Parking for construction vehicles and workers vehicles
- Temporary hardstanding
- Temporary gated compound
- Wheel washing facilities

- 2.75 The contractor's compound would be used for lorry turning and as a set down area during construction. All vehicles will be able to enter the Site and unload within the compound area. There will be no queuing, parking or unloading on the public highway.

Construction Access

- 2.76 Construction traffic will come from M11 with the majority of traffic travelling from the south. As set out in the CTMP (Appendix 2.1) the construction vehicles will come off the M11 at Junction 8 and be routed to Site via the A120. Traffic will take the first exit from the Homebase roundabout onto the B1383 before turning immediately right on to Michaels Road. Construction traffic will then take the third exit on to Hazel End Road, following Hazel End Road on to Carters Hill, through the village of Manuden and continuing north onto Manuden Road. Construction traffic will then turn left on to Berden Road, passing through the village of Berden and on to Ginns Road, before turning left into the Site, via the existing agricultural access which will be upgraded.
- 2.77 The existing access track has a concrete apron of approximately 8m width and 5m depth adjacent the Ginns Road carriageway before reverting to a consolidated stone track of approximately 3.25m width through the field itself. It is currently gated at a point approximately 7m back from the edge of carriageway. It is proposed that this existing access be upgraded to facilitate vehicle access during construction of the solar farm. It will also be retained post completion of the construction operations to allow for future maintenance access to the Site. Further details of the Site access are set out in the Access Technical Note (Appendix 1.3) whilst further details of the upgrading of internal access tracks are set out in the CTMP (Appendix 2.1).
- 2.78 During construction the Site will be accessed via a Site Security Checkpoint located at the entrance to the construction site. Unrestricted access is not allowed without undertaking a Site-Specific Induction, Assessment and Approval. In the absence of this training and approval, visitors to site will always be escorted by a Site member in possession of this training and authorisation. A temporary compound area will be established next to the Site to allow for the set down of HGVs and materials relating to the construction of the Site. It is proposed the Site will be a Safe 6 site and all personnel working or carrying out deliveries to site will require as a minimum Safety Helmet (Hard Hat), Hi-Vis Tabard, Coveralls, Gloves, Light Eye Protection, Safety Boots. For temporary visitors, spare sets of Light Eye Protection and Hard Hats will be provided but it is the expectation that all deliverers/collection persons will have all the equipment with them. It is a requirement that all site personnel and visitors sign in and out of the site on all occasions.
- 2.79 The Site Manager or his designated deputy will be responsible for supervising, controlling and monitoring vehicle movements to and from the Site as well as whilst the vehicle is on site. Ensuring that there are suitable arrangements for the safe delivery and collection of the vehicle load. All plant, delivery/collection vehicles and cranes will be supervised by a Banksman when reversing. Height Restriction Barriers (Goal Posts) will be installed where there is a potential for accidental contact with overhead infrastructure. Similarly restricted access areas will be identified and barriered. Site personnel vehicles will be parked in a designated area connected to the Site Welfare Area via a Safe Pedestrian Access/Egress Route.
- 2.80 Every effort would be taken to minimise the effects of traffic associated with the construction phase of the project. Materials and resources would be sourced locally, where possible, and deliveries and construction traffic would endeavour to avoid travel during commuter peaks.
- 2.81 Further details to manage traffic during construction are set out in the CTMP (Appendix 2.1).

Construction Vehicles

- 2.82 The type of construction vehicles would be selected by the contractor prior to and during the construction phase. However, the following vehicles would typically be used during construction:
- Excavators;

- Cranes: required for assembly and erection;
- Low loaders: required for transport of construction equipment and plant;
- Concrete lorries;
- Tipper lorries; and
- Construction staff vehicles.

Drainage

- 2.83 Where affected by construction existing field or tile drainage system will be restored and will be maintained by the Applicant for the life of the proposed development.
- 2.84 Where required the construction phase would incorporate pollution prevention and flood response measures to ensure that the potential for any temporary effects on water quality or flood risk are reduced as far as practicable.
- 2.85 Such measures would be implemented through the CoCP and subsequent CEMP, which will require the following (reproduced from the CoCP paragraph 5.29):
- Installation of wheel washing facilities at the entrance to the construction compound;
 - Use of sediment fences along existing watercourses when working nearby to prevent sediment being washed into watercourses;
 - Covers for lorries transporting materials to/from site to prevent releases of dust/sediment to watercourses/drains;
 - Bulk storage areas to be secured and provided with secondary containment (in accordance with the Oil Storage Regulations and best practice);
 - Storage of oils and chemicals away from existing watercourses, including drainage ditches or ponds;
 - Concrete to be stored and handled appropriately to prevent release to drains;
 - Preparation of a flood response plan in the event of flooding during construction works. This would include a procedure for securing or relocating materials stored in bulk;
 - Treatment of any runoff water that gathers in the trenches would be pumped via settling tanks or ponds to remove any sediment;
 - Obtain consent for any works (e.g. discharge of surface water) that may affect an existing watercourse. The conditions of the consent will be specified to ensure that construction does not result in significant alteration to the hydrological regime or an increase in fluvial risk;
 - Use of a documented spill procedure and use of spill kits kept in the vicinity of chemical/oil storage;
 - Storage of stockpiled materials on an impermeable surface to prevent leaching of contaminants and use of covers when not in use to prevent materials being dispersed and to protect from rain; and
 - Stockpiles to be kept to minimum possible size with gaps to allow surface water runoff to pass through.

Construction Waste

- 2.86 During construction the generation of waste material, including a limited amount of concrete washings and other site detritus will be controlled by a Site Waste Management Plan (SWMP) which will form part of the overall Construction Environment Management Plan CEMP). This will be submitted to the LPA before the development starts.

- 2.87 All spoil generated on site will be transported away using a combination of skips and grab-lorry depending on volume and stage of the works.

Use of Natural Resources

- 2.88 The CoCP requires the contractor to identify the main types and quantities of materials required for the project in order to assess potential for sourcing materials in an environmentally responsible way. The construction specification would place preference, when options are available, on the use of materials with a high recycled content.
- 2.89 The Considerate Contractors Scheme includes measures relating to the use of resources, including categories in relation to minimising the use of water. All timbers used as primary structural elements would be required to be Forest Stewardship Council (FSC) certified.
- 2.90 The construction process would take into account the principles of good practice in soil handling and restoration set out in the following documents, wherever possible, to reduce the possibility of damage to soil materials during the construction process:
- Ministry of Agriculture, Fisheries and Food (MAFF) (2000) Soil Handling Guide; and
 - Department for Food and Rural Affairs (Defra) (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (including the Toolbox Talks).
- 2.91 The EIA Directive also refers to the use of land and biodiversity resources. Further details are provided in Chapters 7 (Ecology) of this ES.

Residues and Emissions

- 2.92 A summary of residues and emissions during construction in relation to water; air (e.g. dust); noise and vibration; and soil are set out in Chapter 8 of this ES based on the technical reports referenced in Chapter 1: Appendix 1.4 Flood Risk Assessment, Appendix 1.7 Noise Impact Assessment, and Appendix 1.2 ALC report. Details of lighting are provided within this chapter and considered within Chapters 5 (LVIA) and 7 (Ecology) where relevant. As set out in Chapter 4 of this report the project is not likely to give rise to heat or radiation emissions during its construction phase.

Utilities

- 2.93 There are no existing underground gas, water or electrical utility services within the proposed development site. A new underground electrical connection will be provided between the solar farm's electrical substation at the south-west corner of the Site and the adjacent battery storage facility which itself is connected to the Pelham substation.

Vulnerability to Accidents and Disasters

- 2.94 Consideration has been given to traffic-related accidents (see Appendix 1.3) and flooding (see Appendix 1.4) during construction, the risks of which are considered to be very low. Overall, however, the proposed development is not of the type to give rise to potential for any unusual accidents or disasters.

Operation and Maintenance

- 2.95 Solar Farms require little maintenance. The Site will be unmanned and a passive installation with post-construction activity limited to occasional visits to:
- Undertake any checks, maintenance and adjustments to infrastructure as required.
 - Very rarely an inverter may need replacing

- 2.96 Access for the operational phase of the Site will be via the upgraded agricultural access track.
- 2.97 A long term environmental management strategy for the project is set out in the updated and revised LEMP (Appendix 5.3). The LEMP sets out how the landscape and ecological components of the proposed development are to be managed immediately after planting and sowing, through the establishment phase and through to decommissioning. It describes the key landscape and ecological issues relating to the Site that have been determined from a range of studies that have been undertaken to inform the planning process. A series of landscape and ecological objectives has been determined and strategies and management prescriptions set out to achieve these to a set to a timetable.

Measures Adopted as Part of the Project

- 2.98 In order to avoid or reduce the environmental effects, a number of measures have been designed into the proposed development. Details of these can be found within each topic chapter of the ES and are summarised in Tables 2.3 and 2.4 below.

Table 2.2: Schedule of Measures to be Adopted as Part of the Project during Construction

Topic	Proposed Measures during Construction
General	CoCP and CEMP
Design	CoCP, Planting plan (see Figure 3.3)
Historic Environment	CoCP, Outline Written Scheme of Investigation (pre-construction field evaluation)
Landscape and Visual	CoCP, CEMP and LEMP
Ecology and Nature Conservation	CoCP, CEMP and LEMP
Traffic & Transport	CTMP
Noise and Vibration	CoCP and CEMP
Air Quality and Climate	CoCP and CEMP
Ground Conditions	CoCP
Hydrology and Flood Risk	CoCP and CEMP

Table 2.3: Schedule of Measures to be Adopted as Part of the Project during Operation

Topic	Proposed Measures during Operation
General	Adherence to any agreed long-term monitoring set out in CEMP
Design	Not required
Historic Environment	Not required
Landscape and Visual	Maintaining effective screening vegetation.
Ecology and Nature Conservation	Off site skylark nesting plots, Skylark Mitigation Strategy. Maintenance in accordance with the agreed LEMP.
Traffic & Transport	Not required
Noise and Vibration	Not required
Air Quality and Climate	Not required
Ground Conditions	Not relevant

Topic	Proposed Measures during Operation
Hydrology and Flood Risk	Not required

Decommissioning

- 2.99 The panels have an operational life of between 35 – 40 years with regular servicing, thus it is not anticipated that many will need to be replaced over the life of the system. Once the panels reach the end of their life, or earlier if a term is imposed through planning conditions, the Site will be decommissioned and the land restored back to agricultural use.
- 2.100 When the proposed solar farm is decommissioned, the solar panels and other infrastructure will be removed. All traffic to decommission the Site will use the National Grid owned road and/or the Site access road. Around 90% of materials can be recycled currently and research is ongoing within the industry to increase this figure. Due to the limited quantity of foundations, hard surfacing and heavy infrastructure, combined with the fact that the majority of the Site will be retained as grassland, the land will be easier to restore than more intrusive development with more significant foundations.
- 2.101 The application is for a temporary consent meaning once the time has lapsed the land reverts to its original use, in this case agricultural. The land will not be classed as previously developed.

References

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3 NEED AND ALTERNATIVES CONSIDERED

Introduction

- 3.1 This chapter of the Environmental Statement (ES) provides a summary of the need for the project and the main alternatives considered by the applicant during the EIA process. With regard to need it provides the international, national and local policy context for the development and outlines the current Government guidance for the determination of large scale solar farms. The alternatives section includes a summary of the reasons for the selection of the Site, together with a description of the alternative design and layout options that have been considered. Further information is provided in the Planning, Design and Access Statement that accompanies the planning application.

Need for the Development

- 3.2 The need for the proposed development is set out in the Planning, Design and Access Statement that accompanied the original planning application (Appendix 1.8) as follows.

“In June 2019, the Government raised the UK’s commitments in tackling climate change by legislating a net-zero gas emissions target for the economy by 2050.

Decarbonising the power sector is integral to achieving this target and requires major investment into renewable technologies, such as solar power, which are supported by planning policy at both local and national levels.

The proposed development would meet the annual equivalent electricity demands of approximately 15,200 homes or 26,000 electric cars, while also offsetting 47,000 metric tonnes of CO2 (when compared to generation of electricity by non- renewable sources.

It will help the nation meet its energy needs from a renewable source and save significant levels of emissions associated with fossil fuel generation. It is the underlying policy of Uttlesford District Council to reduce CO2 emissions and to support proposals which help achieve this.

In order to ensure a balanced supply of renewable electrical energy it is necessary to ensure that a range of sources are available with sufficient capacity to meet the annual increase in overall demand. Solar energy is a significant part of that energy supply, recognised by Government which has readmitted solar back into the Contracts for Difference (CfD) scheme, which is the method by which it allows operators to fund and sell energy into the national grid.

At a local level, Uttlesford District Council voted to declare a climate emergency in August 2019 and are currently in the process of preparing a climate change action plan that will set out realistic, measurable and deliverable targets that define how the Council will achieve net zero carbon by 2030. The action plan is currently anticipated to be adopted by April 2023.

The National Infrastructure Commission (NIC), official advisor to the Government on Infrastructure, has published a report (Net-Zero Opportunities for the Power Sector, March 2020) setting out the key infrastructure requirements needed to meet the UK’s 2050 net-zero target, including the amount of renewable energy development that would need to be deployed.

The NIC recommends that in meeting these targets, the UK’s energy mix needs to be made up of around 90% renewables. At page 18 of the report, it is recommended that across all scenarios, significant levels of solar, onshore wind and offshore wind will need to be deployed with between 129 – 237 GW (gigawatts) of renewable energy capacity in operation by 2050. To achieve this, the report recommends the following split:

56-121 GW of solar;

18-27 GW of onshore wind; and

54-86 GW of offshore wind.

To achieve the above targets would require a significant increase in installed capacity across the UK, including over nine times the current installed capacity of solar technologies in the UK, which as of October 2020 is around 13.4GW according to the Department for Business, Energy & Industrial Strategy (BEIS).

When considering the above figures and applying them to the number of local authorities across the UK, this would mean that there is an additional 107.6 GW of solar capacity required across the 382 local authorities across England, Scotland, Wales and Northern Ireland required to meet the NIC's upper figure for solar.

It is therefore reasonable to surmise that every local planning authority, where appropriate developable land allows, should be delivering a significant amount of renewable energy capacity, considering a mixture of landscapes and terrain”.

International and National Policy Context

International Context

- 3.3 The need for the proposed development is set within the context of legislation, policy and guidance and renewable energy targets set at international and national levels.
- 3.4 Renewable energy generation and storage is recognised as an established and important part of the solution for climate change and can help achieve the climate and energy targets set at international and national levels. The most relevant renewable energy and climate change legislation is summarised below.

Kyoto Protocol 1997

- 3.5 The Kyoto Protocol brings the United Nations Framework Convention on Climate Change (UNFCCC) into use by committing industrialised countries and economies to limiting and reducing greenhouse gas emissions in accordance with agreed individual targets (UNFCCC, 1997). The Convention asks those countries to adopt policies and measures on mitigation and to report periodically.

The United Nations Adoption of the Paris Agreement COP21

- 3.6 Some 197 countries, including the UK, adopted the Paris Agreement at the 21st Conference of the Parties (COP21) in Paris in 2015 (UNFCCC, 2015). This is an agreement that seeks to reduce global greenhouse gas emissions and to limit the global temperature increase in this century to 2°C, while pursuing the means to limit this further to 1.5°C (UNFCCC, 2015). This was ratified by the UK Government in November 2016 and now forms part of UK Government Policy.
- 3.7 The UK's Nationally Determined Contribution (NDC) (HM Government, 2020a) under the Paris Agreement to the United Nations Framework Convention on Climate Change (UNFCCC), submitted in December 2020, commits the UK to reducing economy-wide GHG emissions by at least 68% by 2030, compared to 1990 levels.

Conference of Parties 26th Session (COP26)

- 3.8 At the COP26 summit in November 2021, parties voted to adopt the COP26 report, known as the Glasgow Climate Pact (UNFCCC, 2021). This included commitments to phase down the use of coal and supports a common timeframe and methodology for national commitments on emissions reductions. Countries were tasked to return in 2022 with more ambitious 2030 emissions reductions targets. COP26 revisited targets set during the Paris Agreement 2015, strengthening these limits and setting the new target to limit global warming to below 1.5oC.

National Context

The UK Climate Change Act 2008 (as amended)

- 3.9 In November 2008, the Climate Change Act became law requiring the UK to reduce carbon dioxide (CO₂) emissions. This was updated in 2019 to provide a legal basis for the target of securing a 100% reduction of greenhouse gas emissions to be achieved by 2050 (compared to 1990 levels).
- 3.10 The Climate Change Act created a framework for setting a series of interim national carbon budgets and plans for national adaptation to climate risks. The Act requires the UK government to set carbon budgets for the whole of the UK.

The HM Government Energy White Paper - Powering our Net Zero Future

- 3.11 Following the Prime Minister's ten-point plan for a green revolution (HM Government, 2020b), and National Infrastructure Strategy (HM Government, 2020c), the White Paper (HM Government, 2020d) marks a significant milestone in the UK's net-zero transition, setting a net-zero target by 2050 and outlining how this may be achieved. It relates to the generation, supply and use of energy with the drive towards net zero by 2050 at its core, along with energy efficient buildings and lower household bills. It signals a decisive move away from fossil fuel generation and highlights how planned Government investment has the potential to leverage billions of pounds more in private sector funding and support for over 250,000 jobs in the green economy by 2030.

National Planning Policy Framework

- 3.12 The National Planning Policy Framework (NPPF) (Ministry for Housing, Communities and Local Government, 2021) highlights the importance of the UK's transition to a low carbon future in a changing climate and stresses the need for the increased use and supply of renewable and low carbon energy.
- 3.13 Paragraph 152 states that the planning system should 'support renewable and low carbon energy and associated infrastructure' and 'shape places in ways that contribute to radical reductions in greenhouse gas emissions'.

Clean Growth Strategy, 2017

- 3.14 The 2017 Clean Growth Strategy for the UK (Department for Business, Energy and Industrial Strategy) (DBEIS, 2018) contains a key objective of 'Delivering Clean, Smart, Flexible Power' and details specific policies through which this can be achieved.
- Policy 33 of the report states the government's intention to phase out the use of unabated coal for electricity production by 2025.
 - Policy 35 sets government's intentions to improve the route to market for renewable technologies, with up to £557 million for further Contract for Different auctions.
 - Policy 36 details plans to target a total carbon price in the power sector which will give businesses greater clarity on the total price they will pay for each tonne of emissions.
- 3.15 The Strategy discusses a potential low-carbon pathway whereby annual emissions are as low as 16 MtCO₂e by 2032. The report states this is only likely to be achieved if low-carbon power generation including renewables and nuclear has the capacity to provide at least 80% of generation demand.

Energy White Paper: Powering Our Net Zero Future, 2020

UK Government Net Zero 2050

- 3.16 On 27 June 2019, the UK became the first major economy in the world to legally commit through law to end its contribution to global warming by 2050. This target will require the UK to bring all greenhouse gas emissions to net zero by 2050, compared to the previous target of 80% reduction by 2050 (against 1990 baseline) that was set out in the Climate Change Act 2008.
- 3.17 In support of this target, the Energy White Paper: Powering our net zero future (DBEIS, 2020a) was published, setting out the pathway to achieving net zero emissions through the greater reliance on solar and wind energy. At the end of June 2021, the UK Government made a further commitment to reduce emissions by 78% by 2035 (compared to 1990 levels) in order to keep Britain on track to end its contribution to climate change while remaining consistent with the Paris Agreement temperature goal to limit global warming to well below 2°C and pursue efforts towards 1.5°C (DBEIS, 2020a).
- 3.18 In November 2020, the Government delivered ‘The Ten Point Plan for a Green Industrial Revolution’ (DBEIS, 2020b). The Plan lays the foundations for the Green Industrial Revolution by supporting jobs and development of green infrastructure and technology. The plan places focus on advancing green and renewable energies and places an emphasis on “building more network infrastructure and utilising smart technologies” (DBEIS, 2020b).
- 3.19 The Energy White Paper (HM Government, 2020d) builds on the Ten Point Plan to set energy-related measures in a long-term strategic vision, working towards the net zero emissions target for 2050. It establishes a shift from fossil fuels to cleaner energy in terms of power, buildings and industry, whilst creating jobs and growing the economy. In addition to this, the best solutions should be determined for very low emissions and reliable supply, keeping costs low for consumers.
- 3.20 Focusing on electricity is key for the transition away from fossil fuels and decarbonising the economy by 2050. Some commitments from this white paper include:
- Accelerate the deployment of clean electricity generation through the 2020s
 - Invest £1 billion in UK’s energy innovation programme to develop the technologies of the future such as advanced nuclear and clean hydrogen
 - Ensure that the transformation of the electricity system supports UK jobs and new business opportunities, at home and abroad.

National Infrastructure Strategy, 2020

- 3.21 The National Infrastructure Strategy focuses on the investment and delivery of infrastructure, which is fundamental to delivering net zero emissions by 2050. The strategy sets out the UK Government’s plans to deliver on this target, decarbonising the economy and adapting to climate change.
- Work towards meeting the net zero emissions target by 2050 – Decarbonise the UK’s power, heat and transport networks, and take steps to adapt to climate change impacts. This will require increased investments in network infrastructure, storage and increased low carbon generation capacity.
 - Reducing emissions across whole sectors of the economy must be done in a sustainable way that minimises cost.

The Sixth Carbon Budget: The UK’s Path to Net Zero, 2020

- 3.22 The Sixth Carbon Budget: The UK’s Path to Net Zero (Climate Change Committee, 2020) recommends that the UK sets its Sixth Carbon Budget to require a reduction in UK emissions of

78% by 2035 relative to 1990. The report states that ‘this will be a world-leading commitment, placing the UK decisively on the path to Net Zero by 2050 at the latest, with a trajectory that is consistent with the Paris Agreement.’

- 3.23 Meeting the recommended budget will require major investment, with the upscaling of low carbon markets and supply chains. These investments should also have climate resilience in mind to account for the impacts of future climate change. Key objectives should be:
- reducing demand and improving efficiency: require changes that will reduce carbon-intensive activities and the improvement of efficiency in the use of energy and resources;
 - take-up of low carbon solutions: phase out fossil fuel generation by 2035;
 - expansion of low carbon energy supplies: increasing renewables to 80% of generation by 2050; and
 - electricity generation: will require a significant expansion of low carbon generation; This includes low cost renewables, with more flexible demand and storage.
- 3.24 Increasing the renewables penetration in the UK electricity mix to 80% by 2050 will largely be met with intermittent, non-dispatchable generation types. In order to facilitate such a high penetration of intermittent energy sources, the Climate Change Committee emphasise the requirement for a flexible energy network, partially achieved via the use of battery energy storage systems.

Net Zero Strategy: Build Back Greener, 2021

- 3.25 This strategy (DBEIS, 2021) sets out the UK’s long-term plans to meet net zero emissions by 2050 and gives the vision for a decarbonised economy in 2050.
- 3.26 The policies detailed in the strategy will be phased in over the next decade or beyond in order to continue decarbonisation towards net zero. They also aim to keep the UK on track to meet upcoming carbon budgets.
- 3.27 This strategy brings forward the ambition for a fully decarbonised power system by 15 years, building on the targets set out in the Energy White Paper and the Ten Point Plan for a Green Industrial Revolution. The ambition is to fully decarbonise the UK’s power system by 2035, through the growth in renewable and nuclear power in addition to an increase in energy storage capacity to increase the flexibility of supply.

Local Policy Context

- 3.28 The Site is not subject to any site specific allocations set out in the Uttlesford Local Plan (2005). The policies relevant to the proposed development identified by UDC officers at the time of the original planning application are listed previously at paragraph 2.18. The effects the proposed development would have on policies ENV 15 – Renewable Energy, S 7 – The Countryside, GEN 2 - Design and E 4 – Farm Diversification: Alternative Use of Farmland are outlined below. Further consideration is given to some of these, and the other Local Plan policies listed in paragraph 2.18 is provided in the assessment topic chapters (Chapters 5 to 8).
- 3.29 Policy ENV 15 of the Uttlesford Local Plan (2005) is concerned with renewable energy. The policy states:
- Small scale renewable energy development schemes to meet local needs will be permitted if they do not adversely affect the character of sensitive landscapes, nature conservation interests or residential and recreational amenity.*
- 3.30 The Uttlesford Local Plan was published in 2005 with an expectation that “*acceptable schemes in the District would be relatively small scale e.g. solar panels, single wind turbines serving single or small groups of dwellings and/or businesses. Schemes should be sited close to settlements or groups of buildings in rural areas and close to the origin of the energy resource. Development will*

only be permitted in locations where the local road network is capable of handling any additional traffic generated by the proposal'.

3.31 Consequently, Policy ENV 15 is not directly relevant to larger scale renewable energy projects such as the proposed development, other than to highlight the importance of ensuring that such developments do not adversely affect the character of sensitive landscapes, nature conservation interests or residential and recreational amenity.

3.32 More recently in July 2021 Uttlesford issued guidance on applications for solar farms, stating that:
"Solar farms can provide valuable sources of renewable energy and so Uttlesford District Council supports them in principle. However, the council also recognises that there are potential issues regarding matters such as visual impact and potential loss of best and most versatile agricultural land that need to be considered.

In determining planning applications for new solar farms, the council must have regard to the National Planning Policy Framework (NPPF) and planning legislation. While the NPPF contains an expectation that all areas contribute to renewable energy generation, an argument at the other end of the scale, such as "there are just too many in the district" is unable to be considered by a planning authority as a stand-alone planning consideration, unless for instance the cumulative visual impact or loss of best and most versatile agricultural land is also a consideration. Solar farms must always be determined in accordance with national planning policy

Uttlesford District Council will include a policy on solar farms as part of the Local Plan. In the interim, national planning policy and guidelines apply to all planning applications for solar farms."

3.33 The Site is located outside the development limits of Berden and is located within the countryside where Policy S7 applies. Policy S 7 – The Countryside states:

The countryside to which this policy applies is defined as all those parts of the Plan area beyond the Green Belt that are not within the settlement or other site boundaries. In the countryside, which will be protected for its own sake, planning permission will only be given for development that needs to take place there, or is appropriate to a rural area. This will include infilling in accordance with paragraph 6.13 of the Housing Chapter of the Plan. There will be strict control on new building. Development will only be permitted if its appearance protects or enhances the particular character of the part of the countryside within which it is set or there are special reasons why the development in the form proposed needs to be there.

3.34 Policy S 7 is only partially compatible with the current NPPF, as it has a more protective rather than positive approach towards development in rural areas. It is nevertheless recognised (see Chapter 5) that the proposed development would result in some adverse landscape and visual effects causing harm to the character and appearance of the local area, contrary to policy S 7. However, the proposed development has a limited lifespan, is reversible and the proposed landscape and ecological planting will mitigate those effects.

3.35 Policy GEN 2 – Design states that:

Development will not be permitted unless its design meets all the following criteria and has regard to adopted Supplementary Design Guidance and Supplementary Planning Documents.

- a) It is compatible with the scale, form, layout, appearance and materials of surrounding buildings;*
- b) It safeguards important environmental features in its setting, enabling their retention and helping to reduce the visual impact of new buildings or structures where appropriate;*
- c) It provides an environment, which meets the reasonable needs of all potential users.*
- d) It helps to reduce the potential for crime;*
- e) It helps to minimise water and energy consumption;*

f) It has regard to guidance on layout and design adopted as supplementary planning guidance to the development plan.

g) It helps to reduce waste production and encourages recycling and reuse.

h) It minimises the environmental impact on neighbouring properties by appropriate mitigating measures.

i) It would not have a materially adverse effect on the reasonable occupation and enjoyment of a residential or other sensitive property, as a result of loss of privacy, loss of daylight, overbearing impact or overshadowing.

- 3.36 Whilst not every part of policy GEN 2 is directly relevant to the proposed development, the policy applies a general requirement that the development safeguards important environmental features in its setting (paragraph b)) and does not cause unacceptable loss of privacy, loss of daylight, overbearing impact or overshadowing (paragraph i).
- 3.37 Chapters 5 to 7 assess the impact of the proposed development on the landscape, visual receptors, heritage assets and ecological features. The conclusion of those assessments is that adverse effects would be localised and not significant. In addition, Appendix 7.2 demonstrates that there is scope for biodiversity net gain on site.
- 3.38 With regard to the potential impact on neighbouring residential amenity the closest residential areas the Site are at Berden (Gawlers), due north of the application site on the other side of Ginns Road. The main residential area of Berden, due east of the Site, and that of Stocking Pelham due west of the Site, would be located around a minimum of approximately 75m away from the Site. Throughout, and along the Site boundaries new planting and landscaping would off-set the visual impact of proposed development. The proposed solar panels would not be of a scale that would result in a material detrimental impact on the living conditions of the occupants and future occupants of nearby dwellings, by way of an overshadowing or overbearing impact and the proposal would therefore comply with policy GEN2.
- 3.39 Policy E 4 – Farm Diversification: Alternative Use of Farmland states:
Alternative uses for agricultural land will be permitted if all the following criteria are met:
- a) The development includes proposals for landscape and nature conservation enhancement;*
 - b) The development would not result in a significant increase in noise levels or other adverse impacts beyond the holding;*
 - c) The continued viability and function of the agricultural holding would not be harmed;*
 - d) The development would not place unacceptable pressures on the surrounding rural road network (in terms of traffic levels, road safety countryside character and amenity).*
- 3.40 It is acknowledged that the scale and character of the proposed development may adversely affect the setting of some environmental assets and impact the local countryside character. However, as set out in Chapter 5 and Chapter 7 respectively the proposed development includes proposals for landscape mitigation and nature conservation enhancement which are designed to offset those effects. In addition, the land could be returned to arable or grazing at the end of its 40 year development life.
- 3.41 A report of a noise impact assessment of the proposed development accompanied the original planning application (see Appendix 1.7), details of which are set out in Chapter 8. The report concluded that “that levels of sound arising from the operation of the facility will not result in any significant adverse impacts at any of the nearby NSRs” (noise sensitive receptors, such as residential properties). “Sound arising from the operation of the facility is therefore acceptable in accordance with the relevant British Standards, national and local planning policy”. During construction noisy activities would be controlled by the implementation of the requirements of the CEMP agreed with the local authority.

- 3.42 The proposed development would occupy approximately 20% of the agricultural holding within which it is located and would therefore not significantly adversely affect the continued viability and function of the holding.
- 3.43 With regard to potential pressures on the surrounding road network in terms of traffic levels, road safety, countryside character and amenity, the numbers of vehicles needing to access the proposed development once operational would be no more than 5 vehicles per week (see paragraph 2.27 and the Access Technical Note that accompanied the original planning application (Appendix 1.3) and the revised CTMP (Appendix 2.1)). Consequently, the proposed development is not in conflict with Policy E 4.

Planning Practice Guidance

- 3.44 As noted above with reference to Uttlesford Local Plan Policy ENV 15 UDC acknowledged that, “*in the absence of an up-to-date Local Plan national planning policy and guidelines apply to all planning applications for solar farms.*”
- 3.45 The Renewable and Low Energy Carbon section of Planning Practice Guidance sets out the particular factors a determining authority will need to consider include:
- a) encouraging the effective use of land by focussing large scale solar farms on previously developed and non agricultural land, provided that it is not of high environmental value;
 - b) where a proposal involves greenfield land, whether (i) the proposed use of any agricultural land has been shown to be necessary and poorer quality land has been used in preference to higher quality land; and (ii) the proposal allows for continued agricultural use where applicable and/or encourages biodiversity improvements around arrays. See also a speech by the Minister for Energy and Climate Change, the Rt Hon Gregory Barker MP, to the solar PV industry on 25 April 2013 and written ministerial statement on solar energy: protecting the local and global environment made on 25 March 2015.
 - c) that solar farms are normally temporary structures and planning conditions can be used to ensure that the installations are removed when no longer in use and the land is restored to its previous use;
 - d) the proposal's visual impact, the effect on landscape of glint and glare (see guidance on landscape assessment) and on neighbouring uses and aircraft safety;
 - e) the extent to which there may be additional impacts if solar arrays follow the daily movement of the sun;
 - f) the need for, and impact of, security measures such as lights and fencing;
 - g) great care should be taken to ensure heritage assets are conserved in a manner appropriate to their significance, including the impact of proposals on views important to their setting. As the significance of a heritage asset derives not only from its physical presence, but also from its setting, careful consideration should be given to the impact of large scale solar farms on such assets. Depending on their scale, design and prominence, a large scale solar farm within the setting of a heritage asset may cause substantial harm to the significance of the asset;
 - h) the potential to mitigate landscape and visual impacts through, for example, screening with native hedges;
 - i) the energy generating potential, which can vary for a number of reasons including, latitude and aspect.
- 3.46 The Guidance goes on to say that “*the approach to assessing cumulative landscape and visual impact of large scale solar farms is likely to be the same as assessing the impact of wind turbines.*”

However, in the case of ground-mounted solar panels it should be noted that with effective screening and appropriate land topography the area of a zone of visual influence could be zero”.

Alternatives Considered

3.47 Regulation 18 2(d) of the EIA Regulations require that an ES should include:

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

And at Schedule 4(2).

‘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’.

3.48 This section therefore sets out the key reasons for the selection of the Site and current layout, taking into account environmental effects.

Site Location

3.49 The choice of sites for solar is determined initially by the capacity of the national grid to accept connections from new generation sources – the grid has approximately 300 major substations but only perhaps some 10% of these are suitable for Solar PV development. Locations then need to be in areas of elevated levels of solar irradiance to work efficiently – commonly the southern and southwestern parts of England – and be close to the main conurbations to minimise the losses associated with the transmission of electricity over long distances. Sites themselves need to be in locations that can accommodate development of the scale required which have a suitable south or south-west facing aspect, and which avoid principal planning constraints.

3.50 The main driver for location the solar farm at this location is its proximity to the existing Pelham Substation and the high solar irradiance associated with the area. In addition, the Site is already afforded a high degree of visual enclosure with the opportunity of providing additional screening that can become effective within a short timeframe, minimising its impact on the wider landscape.

3.51 A buffer of arable land has been left between the solar farm and the village of Berden to ensure that the setting of the village is protected. It is also proposed to plant screening vegetation in the southeast corner to screen it from the properties in this area.

3.52 The scheme has been designed to maintain all PRoW along their existing alignments, within wide corridors (typically 10 m + between the perimeter deer fences). All fences will include gaps for small mammals to access the Site, such as foxes, badgers and rabbits.

Site Layout and Design

3.53 An evaluation of site constraints and opportunities was undertaken to inform the Site layout and design. In terms of Site layout, the project presents an opportunity to provide the following:

- Maintaining existing public rights of way.
- Extending the right of way network.
- Habitat improvements by strengthening existing hedgerows and planting new hedgerows, woodland and meadow.

3.54 Constraining factors that affected the project layout, design and mitigation strategy included:

- The location of Berden and Stocking Pelham.
- Residential properties in the village of Berden, including the Benskins Close development.
- Listed buildings in Berden including the Grade I Church of St. Nicholas and the Grade II* Berden Hall, together with the Grade II* Berden Priory.
- The presence of The Crump scheduled monument.
- The location of the non-designated ringwork considered to be of national importance.
- Park Green Local Wildlife Site.

3.55 The final design has been influenced through the identification of the above constraints, responses during the consultation process, and identification of environmental effects. There have been three major iterations and a number of refinements to the layout of the project. The iterations were:

- screening (June 2021);
- provision of community woodland, additional woodland planting, species-rich meadow and footpath;
- the original planning application (July 2022);
- removal of fourth field containing archaeology, potentially of schedulable quality; and
- the ES submission and amended planning application (November 2022.)

Layout at screening (June 2021)

3.56 The initial Site layout at the time of the screening request (June 2021) comprised approximately 91,584 panels across four arable fields comprising some 67 ha as shown in Figure 3.1.

Layout at planning application (July 2022)

3.57 Following feedback from the screening request the following changes were made to the layout and design of the proposed development:

- New woodland planting and landscaping
- Establishment of new footpaths
- Increased area of solar arrays

New woodland planting and landscaping

3.58 Following the Public Exhibition in March 2021 (see paragraph 4.61) 5 ha of land was included within the development for further landscape improvements and biodiversity net gain.

3.59 In the north-east corner of the Site closest to Berden 1 ha of new woodland was included in the proposed development. The purpose of this was to provide natural screening and increase the biodiversity of the area.

3.60 The area to the south of the proposed new woodland was also included in the proposed development to form an area for Biodiversity Net Gain. This area comprises 2.7 ha of species rich flower mix grassland planted by the landowner, providing skylark nesting habitat, that now would be incorporated into the long term environmental management regime of the proposed development (see LEMP; Appendix 5.3).

3.61 At the time of the July 2022 planning application a second area of woodland, some 0.6 ha in area, was included on the eastern side of the proposed development, south of the wildflower meadow and south of footpath 5/21, adjacent to the west side of footpath 5/22. This proposed woodland was subsequently removed from the application (see below).

- 3.62 A third area of woodland approximately 0.7 ha in area, located at the extreme south-east corner of the Site next to the water tower, was also proposed.

Establishment of new footpaths

- 3.63 Following the Public Exhibition and through discussion with the landowner the application proposed to establish a new permissive footpath to benefit the local community. The proposed new footpath will run along the northern edge of the Site parallel to Ginns Road from the outskirts of Stocking Pelham, before running through the new proposed woodland (see above) and joining the northern end of existing footpath 5/22 adjacent to the Benskins Close area of Berden.

Increased area of solar arrays

- 3.64 3.08 ha of land, originally set aside for another energy project, immediately to the east of the existing Battery Storage Facility in the south-west corner of the proposed development site, was also added to the development. That increased the number of solar panels by approximately 8,784. The other solar farm project is no longer being taken forward.
- 3.65 The layout of the proposed development at the time of the original planning application in July 2022 is provided in Figure 3.2 of this ES.

Current layout

- 3.66 The current (November 2022) layout of the proposed development is shown in Figure 2.8.
- 3.67 The current layout retains all of the elements of the original planning application of July 2022 apart from the smallest (5.74 ha) of the four fields located on the east side of the proposed development. That, which contained 9,312 panels, an inverter and 1.48 ha of proposed woodland has been removed from the application due to the presence of a non-designated heritage asset of potentially equivalence of a scheduled monument (see Chapter 6 for details).
- 3.68 The proposed planting plan for the current layout is set out in Figure 3.3.

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4 ENVIRONMENTAL ASSESSMENT METHODOLOGY

Introduction

4.1 This chapter of the Environmental Statement (ES) sets out the approach taken to the Environmental Impact Assessment (EIA) of the project. The chapter also includes details of the consultation undertaken to date and the overall approach to the assessment of the likely effects of the project. Further details of topic specific methodologies, such as survey methods, are provided in each topic chapter of this ES.

Scoping

- 4.2 Scoping is the process of identifying the issues to be addressed during the EIA process. Scoping is an important preliminary procedure, which sets the context for the EIA process.
- 4.3 Regulation 15 of the EIA Regulations allows an applicant to request that the local planning authority sets out its opinion (known as a Scoping Opinion) as to the issues to be addressed in the ES. Whilst there is no formal requirement in the EIA Regulations to seek a Scoping Opinion prior to submission of an ES, it is recognised as best practice to do so in most circumstances.
- 4.4 In this instance however, given the scheme’s planning history (see paragraphs 1.4 to 1.12) involving a detailed screening opinion (Appendix 1.1) provided by the Local Planning Authority (UDC), the subsequent detailed correspondence between UDC and the Planning Inspectorate concerning matters raised during the planning process, and the screening direction (Appendix 1.10), no formal scoping request has been made by the Applicant.
- 4.5 During the formal consultation process undertaken by the Local Planning Authority the following consultees and organisations responded to the original planning application.
- Historic England
 - Essex County Council Place Services – Ecology (ECC Ecology)
 - Essex County Council Place Services – Specialist Archaeological Advice (ECC Archaeology)
 - Essex County Council Place Services – Historic Buildings and Conservation Advice (ECC Heritage)
 - Natural England
 - Uttlesford District Council (internal departments)
 - Berden and Stocking Pelham Parish Councils
- 4.6 The ES main assessment topic chapters (Chapters 5 to 7) also provide a summary of the key points raised during consultation with both statutory and non-statutory consultees.
- 4.7 The key matters raised in consultation and correspondence relevant to environmental impact assessment, together with the location within this ES as to where the matter is addressed are set out in Table 4.1.

Table 4.1: Matters raised during consultation and correspondence

Environmental Matter	Raised by	Addressed by
Insufficient information on priority species, particularly farmland birds, notably skylark	Planning Inspectorate ECC (Ecology) UDC officers	Chapter 7
Impact on The Crump Scheduled Monument	Planning Inspectorate Historic England	Chapter 6

Environmental Matter	Raised by	Addressed by
	UDC members	
Impact on a non-designated heritage asset of potentially equivalence as a scheduled monument	Planning Inspectorate Historic England	Chapter 6
Lack of field evaluation (trial trenching)	Historic England ECC Archaeology	Chapter 6 Appendix 6.3
Impact on settings of listed buildings	Historic England ECC Heritage UDC members	Chapter 6
Change in landscape character	Historic England UDC officers UDC members	Chapter 5 Chapter 6
Cumulative impacts on historic assets	Historic England UDC members	Chapter 6
Lack of visualisations	Historic England	Chapter 5 Appendices 5.1 and 5.2 Chapter 6
Access and highway safety	UDC officers	Chapter 8
Aircraft safety	UDC officers	Chapter 8
Impact on neighbouring residential amenity	UDC officers	Chapter 5
Land contamination	UDC officers	Chapter 8
Flood risk and surface water drainage	UDC officers	Chapter 8
UDC policies E4, ENV5, ENV15, S7 and GEN2	UDC officers UDC members	Chapters 3 and 8
Loss of best and most versatile agricultural land	UDC members	Chapter 8
Impact on footpaths	UDC members	Chapter 5
Decommissioning	UDC members	Chapters 2, 5, 6 and 7
Alternative sites	UDC members	Chapter 3
Vegetation screening	Berden and Stocking Pelham Parish Council	Chapter 5
Noise	UDC members Berden and Stocking Pelham Parish Council	Chapter 8
Traffic	UDC members Berden and Stocking Pelham Parish Council	Chapter 8

4.8 Table 4.1 highlights the areas that consultees wished to see addressed within the ES. Taking into account the nature, size and location of the project, the information provided with the initial

planning application documentation and other consultation responses provided, the following key topics have been identified as requiring consideration within this ES:

- Landscape and Visual Impact Assessment (Chapter 5);
- Heritage (Chapter 6);
- Ecology (Chapter 7).

Climate Change

Climate Change Resilience

- 4.9 Resilience to future climate change has been considered during the design process. The design has taken into account, for example, future flood risk and resilience to extreme weather events. The conceptual surface water drainage strategy for the project has been designed to take into account the 1 in 100 year flood risk event, plus a 40% allowance for climate change. Further details are provided in Chapter 2 (Project Description) and Appendix 1.4 (Flood Risk Assessment and Drainage).

Changes to Future Environmental Conditions

- 4.10 Consideration of predicted changes in baseline environmental conditions, including changes resulting from climate change, has been set out within each ES topic chapter (Chapters 5 to 8), where robust information is available at the time of writing. Details are provided in the methodology section of this chapter.
- 4.11 The assessment of effects for each topic has taken into account identified trends or changes predicted to arise as a result of climate change.

Effects of the Project on Climate

- 4.12 Atmospheric emissions associated with use of the proposed development would be negligible and as such have been scoped out of the assessment.

Topics Scoped Out of the EIA Process

- 4.13 Effects on other aspects of the environment are not likely to be significant. The topics scoped out of the assessment are summarised below.

Planning Policy

- 4.14 The ES provides an overview of relevant legislative and planning policy context in Chapter 3 and within each assessment topic chapter. The assessment has had regard to national and local policy documents, where relevant. A separate chapter on planning policy has not been included within the ES. However, a Planning Supporting Statement has been prepared to support the planning application and is appended to this ES (Appendix 1.8).

Material Assets

- 4.15 The EIA Regulations refer to ‘material assets’, including architectural and archaeological heritage. The phrase ‘material assets’ has a broad scope, which may include assets of human or natural origin, valued for socio-economic or heritage reasons. Material assets are in practice considered across a range of topic areas within an ES, in particular the topic areas historic environment and socio-economics. Heritage is included within this ES. Socio-economics has not been raised at any point by UDC, the Planning Inspectorate or in correspondence, and is therefore scoped out of the assessment. Therefore, no separate consideration of material assets is considered necessary.

Radiation and Heat

- 4.16 Given the nature of the proposed development, no significant radiation or heat effects are anticipated and these effects have been scoped out of the assessment.

Health

- 4.17 Given the nature of the proposed development, no significant health effects are anticipated and these effects have been scoped out of the assessment.

Environmental Assessment Methodology

Relevant EIA Guidance

- 4.18 The EIA process has taken into account relevant government or institute guidance, including [amend or add to this list depending on the development type]:
- Ministry for Housing, Communities and Local Government (2019a) Planning Practice Guidance at <http://planningguidance.planningportal.gov.uk>;
 - Department of the Environment, Transport and the Regions (DETR) (1997) Mitigation Measures in Environmental Statements. HMSO;
 - Highways Agency et al. (2008) Design Manual for Roads and Bridges, Volume 11, Section 2, Part 5. HA 205/08;
 - Institute of Environmental Management and Assessment (2004) Guidelines for Environmental Impact Assessment;
 - Institute of Environmental Management and Assessment (2011) The State of Environmental Impact Assessment Practice in the UK. Special Report; and
 - Institute of Environmental Management and Assessment (2015a) Environmental Impact Assessment Guide to Shaping Quality Development;
 - Institute of Environmental Management and Assessment (2015b) Climate Change Resilience and Adaptation; and
 - Institute of Environmental Management and Assessment (2016) Guide to Delivering Quality Development.

Key Elements of the General Approach

- 4.19 The assessment of each of the three environmental topics form separate chapters of the ES. For each environmental topic, the following have been addressed:
- Methodology and assessment criteria;
 - Description of the environmental baseline conditions;
 - Measures adopted as part of the project, including mitigation and design measures that form part of the project;
 - Identification of likely effects and evaluation and assessment of the significance of identified effects, taking into account any measures designed to reduce or avoid environmental effects which form part of the project;
 - Identification of any further mitigation or monitoring measures envisaged to avoid, reduce and, if possible, remedy adverse effects (in addition to those measures that form part of the project); and
 - Assessment of any cumulative effects with other developments planned in the area.

Methodology and Assessment Criteria

- 4.20 Each of the three assessment topic chapters provide details of the methodology for baseline data collection and the approach to the assessment of effects. Each environmental topic has been considered by a specialist in that area.
- 4.21 Each topic chapter defines the scope of the assessment within the methodology section, together with details of the study area, desk study and survey work undertaken and the approach to the assessment of effects. The identification and evaluation of effects have been based on the information set out in Chapter 2 (Project Description) of this ES, EIA good practice guidance documents and relevant topic-specific guidance where available.

Description of the Environmental Baseline Conditions (including Future Baseline Conditions)

- 4.22 The existing and likely future environmental conditions in the absence of the project are known as 'baseline conditions'. Each topic based chapter includes a description of the current (baseline) environmental conditions. The baseline conditions at the Site and within the study area form the basis of the assessment, enabling the likely significant effects to be identified through a comparison with the baseline conditions.
- 4.23 The baseline for the assessment of environmental effects is primarily drawn from existing conditions during the main period of the assessment work in the period 2019 to 2022.
- 4.24 The baseline for the assessment represent the conditions that will exist in the absence of the project at the time that the project is likely to be implemented. The anticipated start date for construction is Spring 2024, with enabling works likely to occur at the same time of that year. The programme would be of approximately 6 months duration (including enabling works). Full operation of the Site has been assumed to take place at the end of 2024. Further information about the construction programme assessed as part of the EIA process can be found in Chapter 2 (Project Description) of this ES.
- 4.25 For projects with a long lead-in time or a lengthy construction period consideration needs to be given to any likely changes between the time of environmental surveys and the future baseline for the construction of the project, and its subsequent operation. In some cases, these changes may include the construction or operation of other planned developments in the area. With regard to the proposed development the likelihood of significant changes in future baselines is considered to be extremely low given its short lead-in time and brief construction period. Nevertheless, future baseline scenarios are referred to in the key assessment topic chapters (Chapters 5 to 7).

Limitations of the Assessment

- 4.26 Each topic chapter identifies any limitations identified in the available baseline data and whether there were any difficulties encountered in compiling the information required.

Mitigation Measures Adopted as Part of the Project

- 4.27 During the EIA process, environmental matters have been taken into account as part of an ongoing iterative design process. The process of EIA has therefore been used as a means of informing the design.
- 4.28 The project assessed within this ES therefore includes a range of measures that have been designed to reduce or prevent significant adverse effects arising. In some cases, these measures may result in enhancement of environmental conditions. The assessment of effects has taken into account measures that form part of the project.
- 4.29 The three assessment topic chapters set out the measures that form part of the project and that have been taken into account in the assessment of effects for that topic. These include:

- Measures included as part of the project design (sometimes referred to as primary mitigation);
- Measures to be adopted during construction to avoid and minimise environmental effects, such as pollution control measures. These measures would be implemented through the Code of Construction Practice (CoCP) (see Appendix 2.2); and
- Measures required as a result of legislative requirements.

Assessment of Effects

4.30 The EIA Regulations require the identification of the likely significant environmental effects of the project. This includes consideration of the likely effects during the construction and operational phases. The assessment is based on consideration of the likely magnitude of the predicted impact and the sensitivity of the affected receptor. The process by which effects have been identified and their significance evaluated is set out within each of the three assessment topic chapters. The overarching principles are set out below.

Sensitivity or Importance of Receptors

4.31 Receptors are defined as the physical or biological resource or user group that would be affected by a project. For each topic, baseline studies have informed the identification of potential environmental receptors. Some receptors will be more sensitive to certain environmental effects than others. The sensitivity or value of a receptor may depend, for example, on its frequency, extent of occurrence or conservation status at an international, national, regional or local level.

4.32 Sensitivity is defined within each ES topic chapter and takes into account factors including:

- Vulnerability of the receptor;
- Recoverability of the receptor; and
- Value/importance of the receptor.

4.33 Sensitivity is generally described using the following scale:

- High;
- Medium;
- Low; and
- Negligible.

4.34 In some cases, a further category of very high has been used.

Magnitude of Impact

4.35 Impacts are defined as the physical changes to the environment attributable to the project. For each topic, the likely environmental impacts have been identified. For each topic the likely environmental change arising from the project has been identified and compared with the baseline (the situation without the project). Impacts are divided into those occurring during the construction and operational phases.

4.36 The categorisation of the magnitude of impact is topic-specific but generally takes into account factors such as:

- Extent;
- Duration;
- Frequency; and
- Reversibility.

4.37 With respect to the duration of impacts, the following has been used as a guide within this assessment, unless defined separately within the topic assessments:

- Short term: A period of months, up to one year
- Medium term: A period of more than one year, up to five years; and
- Long term: A period of greater than five years.

4.38 The magnitude of an impact has generally been defined used the following scale:

- High;
- Medium;
- Low; and
- Negligible.

4.39 In some cases, a further category of ‘no change’ has been used.

Significance of Effects

4.40 Effect is the term used to express the consequence of an impact (expressed as the ‘significance of effect’). This is identified by considering the magnitude of the impact and the sensitivity or value of the receptor.

4.41 The magnitude of an impact does not directly translate into significance of effect. For example, a significant effect may arise as a result of a relatively modest impact on a resource of national value, or a large impact on a resource of local value. In broad terms, therefore, the significance of the effect can depend on both the impact magnitude and the sensitivity or importance of the receptor.

4.1.1 Significance levels are defined separately for each topic. Unless separately defined in the topic chapters, the assessments take into account relevant topic specific guidance, based on the following scale and guidance:

- Substantial: Only adverse effects are normally assigned this level of significance. They represent key factors in the decision-making process with regard to planning consent. These effects are generally, but not exclusively, associated with sites or features of international, national or regional importance that are likely to suffer the most damaging impact and loss of resource integrity;
- Major: These beneficial or adverse effects are considered to be very important considerations and are likely to be material in the decision-making process;
- Moderate: These beneficial or adverse effects may be important, but are not likely to be key decision-making factors. The cumulative effects of such factors may influence decision making if they lead to an increase in the overall adverse effect on a particular resource or receptor;
- Minor: These beneficial or adverse effects may be raised as local factors. They are unlikely to be critical in the decision-making process, but are important in enhancing the subsequent design of the project; and
- Negligible: No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

4.42 The terms minor, moderate, major and substantial apply to either beneficial or adverse effects. Effects may also be categorised as direct or indirect, secondary, short, medium or long term, or permanent or temporary as appropriate.

4.43 Each chapter defines the approach taken to the assessment of significance. Unless set out otherwise within the chapter, topic chapters use the general approach set out in Table 4.1. For some topics, a simplified or quantitative approach is considered appropriate.

Table 4.2: Typical Assessment Matrix

Sensitivity	Magnitude of Impact				
	No Change	Negligible	Low	Medium	High
Negligible	No change	Negligible	Negligible or Minor	Negligible or Minor	Minor
Low	No change	Negligible or Minor	Negligible or Minor	Minor	Minor or Moderate
Medium	No change	Negligible or Minor	Minor	Moderate	Moderate or Major
High	No change	Minor	Minor or Moderate	Moderate or Major	Major or Substantial
Very high	No change	Minor	Moderate or Major	Major or Substantial	Substantial

4.44 Unless set out otherwise in each topic chapter, effects assessed as moderate or above are considered to be significant in terms of the EIA Regulations within this assessment.

Further Mitigation and Future Monitoring

4.45 Where required, further mitigation measures have been identified within topic chapters. These are measures that could further prevent, reduce and, where possible, offset any adverse effects on the environment.

4.46 Where relevant and necessary, future monitoring measures have been set out within the topic chapters.

Assessment of Cumulative Effects

4.47 The EIA Regulations require consideration of cumulative effects, which are effects on a receptor that may arise when the project is considered together with other proposed developments in the area.

4.48 The cumulative effects of the project in conjunction with other proposed schemes have been considered within each topic chapter of the ES. The criteria for identifying other developments to be considered within the cumulative assessment include those that are:

- Under construction;
- Permitted, but not yet implemented;
- Submitted, but not yet determined; and
- Identified in the Development Plan (and emerging Development Plans - with appropriate weight being given as they move closer to adoption) recognising that much information on any relevant proposals will be limited.

4.49 It is noted that developments that are built and operational at the time of submission are considered to be part of the existing baseline conditions.

4.50 In correspondence between UDC and the Planning Inspectorate, UDC identified the following renewable energy development proposals for cumulative assessment.

- UTT/21/0688/FUL – Land at Cole End Lane, Wimbish (Application granted)

- S62A/22/0004 (UTT/22/1474/PINS) - Land East of Parsonage Road, and South of Hall Road, Takeley (Application granted)
- UTT/21/2846/FUL – Green Energy Hub, Chesterford Park, Great Chesterford (Application granted)
- UTT/22/0007/FUL – Land East of School Lane, Felsted (Application granted)
- East Herts DC 3/22/0806/FUL – Stocking Pelham Battery Energy Storage System

4.51 A planning application for a solar farm immediately to the south of the application site (UTT/21/3356/FUL - Land near Pelham Substation, Maggots End Road, Manuden) has been refused planning consent and is therefore not included in any cumulative assessment.

4.52 A summary of the above developments included as part of the cumulative assessment are provided in Appendix 4.1.

Interrelationships

4.53 Each topic chapter considers whether or not there are any inter-related effects with other topics included within the EIA that have not already been considered in order to identify any secondary, cumulative or synergistic effects.

Summary Tables

4.54 Summary tables have been used to summarise the effects of the project for each environmental topic.

Consultation

4.55 The project team has undertaken consultation with, or requested information from, a number of organisations, including (but not limited to) the following organisations.

- Essex County Council Place Services (for Essex Historic Environment Record)
- Hertfordshire County Council (for Hertfordshire Historic Environment Record)
- Historic England
- Natural England
- Essex County Council Place Services (for ecological information)
- Uttlesford Council response to the Planning Inspectorate

Local Planning Authority

4.56 The project lies within the administrative area of Uttlesford District Council (the Local Planning Authority). A pre-application was made to Uttlesford District Council on 15 September 2020, followed by an onsite visit by case officer Lindsay Trevillian and a representative of the Applicant on the 11 March 2022.

4.57 Further to the above, topic specialists have consulted the relevant experts within UDC and their consultees on their approach assessment. Further information regarding consultation with topic specific organisations is detailed within the individual topic chapters.

Public Consultation

4.58 Other than the screening opinion received from UDC no other pre-application advice has been given by the Local Planning Authority.

4.59 As part of the consultation process, the applicant has engaged with the local community in order to inform local people about the project, to explain the development and its likely effects and to take on board environmental matters raised. A summary of pre-application public consultation carried out is set out below:

- Public Exhibition
- Project website

Public Exhibition

4.60 Details of community engagement were set out in the initial Planning, Design and Access Statement submitted with the original planning application (see Appendix 1.8). A public exhibition was held at Berden Village Hall on Tuesday 21st March 2022 between 1pm and 7.30pm. The event was well attended by residents, with over fifty residents in attendance throughout the day.

4.61 Invitations were distributed to houses with local postcodes via Royal Mail two weeks before the event, however, several residents did not receive an invitation. Local volunteers delivered leaflets to the missed houses a week before the Public Exhibition to ensure residents were aware of the event.

Project Website

4.62 A project website has been made available which contains all the same information which was shown at the public exhibition event. That is located at the following web address:
www.pelhamsolar.co.uk

4.63 Following the public exhibition, feedback from local residents and statutory organisations, changes were made to the scheme as follows. Further details of which are set out in Chapter 3.

- New woodland planting
- Establishment of new footpaths
- Area of solar arrays varied
- Removal of one field due to the presence of a ringwork of potentially schedulable quality.

4.64 These comments have been taken into account by the design team in the preparation of the planning application and, where relevant, in the EIA process.

References

Department for Communities and Local Government (DCLG) (2006) Environmental Impact Assessment: A Guide to Good Practice and Procedures – A Consultation Paper.

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Ministry of Housing, Communities and Local Government (2019b) National Planning Policy Framework.

5 LANDSCAPE AND VISUAL IMPACT ASSESSMENT

Introduction

5.1 The main objectives of this chapter are:

- To describe the landscape character of the site and its surroundings, evaluate its sensitivity to change and, taking into account the magnitude of change, assess the effect that the proposal would have on the local landscape character.
- To identify potential visual receptors (i.e. people who would be able to see the development), evaluate their sensitivity to change and, taking into account the magnitude of change, assess the effect that the proposal would have on visual amenity. Residential visual amenity issue is excluded from this LVIA because the proposed development is considered to be sufficiently distant from residential properties that it will not fall into the threshold of requiring an assessment.
- To identify landscape elements associated with the site, such as trees and hedges, evaluate their sensitivity to change and, taking into account the magnitude of change, assess the effect the proposals would have on landscape elements.
- To identify mitigation measures and opportunities for landscape character and visual amenity enhancement, in order to mitigate, offset or reduce the predicted adverse effects.

5.2 This chapter assesses the operational stage of the proposed development only, as the construction and decommissioning stages would be of short duration and temporary. Any potential effects brought about by the construction and decommissioning stages are likely to be lower or similar to those assessed postconstruction.

Assessment Methodology

Planning Policy Context

5.3 The National Planning Policy Framework (NPPF) (Ministry of Housing, Communities and Local Government, 2021). The most relevant chapters are 15) Conserving and enhancing the natural Environment and 16) Conserving and enhancing the historic environment. Paragraph 174 within Chapter 15 states that planning policies and decisions should contribute to and enhance the natural and local environment by:

“..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);

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...”

5.4 Paragraph 195 in Chapter 16 states:

“..Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking account of the available evidence and any necessary expertise”.

Local Plan Policy

5.5 The Site is located within the jurisdiction of Uttlesford District Council and the current plan is the Uttlesford Local Plan Adopted, January 2005. Relevant policies are:

Policy GEN4 - Good neighbourliness.

Policy GEN2 – Design.

Policy GEN5 – Light pollution.

Policy GEN7 – Nature Conservation.

Policy E4 - Farm Diversification: Alternative use of Farmland.

Policy ENV8 – Other Landscape Elements of Importance for Nature Conservation.

Policy ENV15 - Renewable Energy.

Landscape Designations

- 5.6 There are no international or national landscape designations relating to the application site or its immediate surroundings. The Site and immediate surroundings are not subject to any Tree Preservation Orders.

Ecological Designations

- 5.7 There are no statutory environmental designation within the Site or nearby and the Site does not lie within a buffer zone of any ecologically designated area.

Public Rights of Way (PRoW) and Open Access Land

- 5.8 There is a particularly extensive network of PRoW in the locality and several cross the Site, including footpaths and restricted byways. The key PRoW are identified by the Definitive Map numbers annotated on Figures 5.3 and 5.5. The direct, indirect and cumulative effects of the Proposed Development on users of the network are assessed in this report. There is no Open Access land nearby.

Designated Historical Assets

- 5.9 There are no designated heritage assets on the Site and the only potential indirect impact on heritage assets in terms of setting will be to the following:

1. Church of St Nicholas (Grade I) within Berden, List No: 1170264
2. The Crump (Grade II), List No: 1112471
3. Berden Hall (Grade II*), List No. 1112468

- 5.10 The effect of the Proposed Development on the visual settings of these properties is assessed in Chapter 6: Heritage.

Relevant Guidance

- 5.11 This LVIA has been undertaken with regards to the best practice guidelines within GLVIA3.

Study Area

- 5.12 The extent of the visual study area has been determined by running software (ESRI ArcGIS Viewshed run on 3D LiDAR topographical map data) which calculates the potential visibility of the Proposed Development based on topography and certain elements within the landscape such as large blocks of woodland and large buildings. LiDAR is a radar-based system which picks up forms within the landscape (and has a distance error of 0.5 – 2 m and a height error of 10 cm) but it may not record all potentially screening elements such as hedgerows, walls or even deciduous woodland if the LiDAR data was gathered in winter. For this reason, the woodland blocks immediately adjacent to the Proposed Development were modelled at a height of 12m. The

software creates a raster image that indicates the potential visibility of the Proposed Development, known as the Theoretical Zone of Visibility (TZVI).

- 5.13 The model takes into account the curvature of the earth and light refraction, with observer heights of 2 m. The publicly accessible areas where visibility is indicated were visited to see if the mast is likely to be visible or whether views will be blocked by trees, hedges or buildings. The TZVI is presented in Figure 5.2. Multiple survey points were taken to include high points and the edges of the panel blocks.
- 5.14 The study area for landscape character extends as far as a 5 km radius.

Baseline Methodology

5.15 This LVIA has been undertaken by a competent assessor, Chris McDermott, who has been a Chartered Landscape Architect and member of the Landscape Institute for over 35 years. Further details of the expertise of all authors are provided in Appendix 1.4.

5.16 This LVIA has been undertaken with regard to the best practice guidelines within the Guidelines for Landscape and Visual Impact Assessment Edition 3 (hereafter referred to as GLVIA3) (Landscape Institute and Institute of Environmental Management and Assessment, 2013). The GLVIA3 states in paragraph 1.1 that:

“...Landscape and Visual Impact Assessment (LVIA) is a tool used to identify and assess the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right and on people’s views and visual amenity.”

5.17 GLVIA3 also states in paragraph 1.17 that when identifying landscape and visual effects there:

“...is a need for an approach that is in proportion to the scale of the project that is being assessed and the nature of the likely effects. Judgement needs to be exercised at all stages in terms of the scale of investigation that is appropriate and proportional.”

5.18 GLVIA3 also recognises in paragraph 2.23 that:

“...professional judgement is a very important part of LVIA. While there is some scope for quantitative measurement of some relatively objective matters much of the assessment must rely on qualitative judgements”

5.19 The level of visual effect is assessed by considering the sensitivity of the person looking at the view with the magnitude in the change in the view. For this, professional judgment is used to ascribe a value to the magnitude and sensitivity, based on the definitions set out in the following section, ‘Assessment Criteria and Assessment Significance’ (Table 5.4 and Table 5.6). People’s sensitivity to a change in a view can vary, for example workers within an industrial area are less sensitive than those people who choose to use the public rights of way network for the enjoyment of the countryside and the views. Viewers within an unattractive landscape are less sensitive than those in an acknowledged scenic landscape, such as a National Park.

5.20 To assess the effect on landscape, the sensitivity of a landscape is determined by identifying its quality (condition) and its ability to either absorb, or not, the type of development proposed without significant harm (its susceptibility). Quality and susceptibility are combined to determine landscape sensitivity. The magnitude of change resulting from the Project to elements within the landscape (such as trees and hedges) and landscape character is then assessed.

5.21 For both visual and landscape effects, the magnitude of impact and sensitivity are considered, taking into account the principles set out in the matrix (Table 5.7) to determine the significance of an effect (whether beneficial or adverse) ranging from Major to Negligible.

5.22 This assessment has followed guidance set out in the ‘Guidelines for Landscape and Visual Impact Assessment’, Third Edition (Landscape Institute and the Institute of Environmental

Assessment, 2013). The assessment seeks to identify impacts which are either so beneficial or so adverse that they should be a significant consideration in determining the application.

- **Substantial:** Only adverse effects are normally assigned this level of significance. They represent key factors in the decision-making process. These effects are generally, but not exclusively, associated with sites or features of international, national or regional importance that are likely to suffer a most damaging impact and loss of resource integrity. However, a major change in a site or feature of local importance may also enter this category.
- **Major:** These beneficial or adverse effects are considered to be very important considerations and are likely to be material in the decision-making process.
- **Moderate:** These beneficial or adverse effects may be important, but are not likely to be key decision-making factors. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse effect on a particular resource or receptor.
- **Minor:** These beneficial or adverse effects may be raised as local factors. They are unlikely to be critical in the decision-making process, but are important in enhancing the subsequent design of the project.
- **Negligible:** No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

5.23 Existing background Information on the study area has been sourced from:

1. Ordnance Survey – 1:50,000 and 1:25,000 scale maps.
2. Countryside Agency – Character Map of England.
3. Countryside Agency – Countryside Character Initiative Website.
4. Magic Website (www.magic.gov.uk).
5. Uttlesford District Council web site.
6. Google Earth and measuring tools within it.

5.24 The effects are therefore assessed at Year 1, immediately post completion, and at Year 7 to take into account proposed mitigation and enhancement measures. The assumed vegetative growth is taken as 0.5m per year as a mean over a 10 year period.

Photography and Imaging

5.25 Photographs illustrating views from each viewpoint were taken using a Sony Alpha 7 digital camera with a Sony SEL200F 18 lens, set at a focal length of 50 mm. The camera has a full frame sensor, and is set level both vertically and horizontally, 1.5 m above ground from publicly accessible locations.

5.26 Photomontages have also been produced for the key viewpoints in accordance with Visual Representation of Development Proposals, Landscape Institute Technical Guidance Note 06/19, 17 September 2019. Since solar farms can frequently extend across the field of view panoramic images are presented, which if printed at A1, represent the view of the naked eye if held 400 mm 500 mm from the eye. Typically, a viewer would have to turn their head to take in the whole panorama and the A1 sheet should ideally be held in a curve to replicate this.

Consultation

5.27 An Environmental Impacts Assessment screening request was made to Uttlesfield District Council and a reply was received on the 14th October 2021, which stated:

“The most significant impacts are likely to be visual but not significant in terms of EIA impacts “

and

“In addition, landscape character assessments will also need to consider the existing the wider landscape impacts of the proposals and particularly for users of the public rights of way networks, both within and surrounding the footpath network”.

“In terms of cumulative developments, this proposal would need to be considered in relation to similar applications that are currently being assessed for solar farms by the Local Planning Authority. These include application UTT/21/0688/FUL- Land At, Cole End Farm Lane, Wimbish and application UTT/21/2846/FUL- Chesterford Park, Little Chesterford, Essex”.

5.28 Subsequent to the screening request further planning applications for electrical infrastructure near the Application Site have been made including the above as follows:

UTT/21/3356/FUL - Land Near Pelham Substation Maggots End Road Manuden (consent currently refused);

UTT/21/0688/FUL- Land At, Cole End Farm Lane, Wimbish (awaiting determination), and

UTT/21/2846/FUL- Chesterford Park, Little Chesterford, Essex (awaiting determination).

5.29 As a result, the Planning Inspectorate advised that an Environmental Impact Assessment should be undertaken to fully consider cumulative effects.

5.30 A Landscape and Visual Impact Assessment was submitted to the Planning Inspectorate as part of the planning application. On review of the documentation the Planning Inspectorate ruled that an ES is required. The methodology in the LVIA has been subsequently slightly modified to provide a consistency of approach across the ES and this has not led to any change in the significance of landscape and visual effects.

Assessment Criteria and Assignment of Significance

5.31 Landscape and visual effects are determined by combining the sensitivity of the receptor with the magnitude of change using a matrix set out in Table 5.7. The criteria for determining sensitivity and magnitude of change are set out in Tables 5.1-5.6.

Calculation of Landscape Effects

Landscape Quality and Condition

5.32 Typical descriptors used to define landscape quality are set out in Table 5.1 below.

Table 5.1: Definitions of Landscape Quality (Condition)

Sensitivity	Typical Descriptors
High	Designated landscape including but not limited to World Heritage Sites, National Parks, Areas of Outstanding Natural Beauty considered to be an important component of the country’s character experienced by a high number of people. Landscape character highly distinctive with very few features perceived as either detracting or intrusive. Landscape condition is good and components are generally maintained to a high standard. In terms of seclusion, enclosure by land use, traffic and movement, light pollution and presence/absence of major infrastructure, the landscape has an elevated level of tranquillity. Often attracting visitors for the enjoyment of the landscape. Rare or distinctive landscape elements and features are key components that contribute to the landscape character of the area. High importance and rarity, national scale, and limited potential for substitution.
Medium	Undesignated landscape of medium quality. Typical of many rural landscapes across the UK. Only occasional detracting or intrusive features. Countryside considered to be a distinctive component of the regional or local landscape character.

Sensitivity	Typical Descriptors
	<p>Landscape condition is fair and components are generally well maintained. In terms of seclusion, enclosure by land use, traffic and movement, light pollution and presence/absence of major infrastructure, the landscape has a moderate level of tranquillity.</p> <p>Some rare or distinctive landscape elements and features that contribute to the character of the area. Medium importance and rarity, regional scale, limited potential for substitution.</p>
Low	<p>Undesignated landscape including urban fringe and rural countryside considered to be of unremarkable character and containing detracting elements.</p> <p>Landscape condition may be poor and components poorly maintained or damaged.</p> <p>In terms of seclusion, enclosure by land use, traffic and movement, light pollution and presence/absence of major infrastructure, the landscape has limited levels of tranquillity.</p> <p>Rare or distinctive elements and features are not notable components that contribute to the landscape character of the area. Low or medium importance and rarity, local scale.</p>
Negligible	<p>Poor quality, degraded landscape with many detracting or intrusive elements and few positive attributes. Would benefit from comprehensive restoration. Very low importance and rarity, local scale.</p>

Landscape Susceptibility

5.33 Susceptibility looks at how well suited the landscape is to absorb the type of development proposed without the likelihood of significant harm. Typically urban areas have a Low susceptibility to absorbing more urban development but open wilderness has potentially a High susceptibility. Some areas may be less susceptible due to high levels of enclosure from topography, woodland or the proximity to urban areas. The criteria for determining susceptibility are set out in Table 5.2.

Table 5.2: Definitions of Landscape Susceptibility

Susceptibility	Typical Descriptors
High	<p>Scale of enclosure – landscapes with a low capacity to accommodate the type of development being proposed owing to the interactions of topography, vegetation cover, built form, etc.</p> <p>Nature of land use – landscapes with no or little existing reference or context to the type of development being proposed.</p> <p>Nature of existing elements – landscapes with components that are not easily replaced or substituted (e.g. ancient woodland, mature trees, historic parkland, etc).</p> <p>Nature of existing features – landscapes where detracting features, major infrastructure or industry is not present or where present has a limited influence on landscape character.</p>
Medium	<p>Scale of enclosure – landscapes with a medium capacity to accommodate the type of development being proposed owing to the interactions of topography, vegetation cover, built form, etc.</p> <p>Nature of land use – landscapes with some existing reference or context to the type of development being proposed.</p> <p>Nature of existing elements – landscapes with components that are easily replaced or substituted.</p> <p>Nature of existing features – landscapes where detracting features, major infrastructure or industry is present and has a noticeable influence on landscape character.</p>
Low	<p>Scale of enclosure – landscapes with a high capacity to accommodate the type of development being proposed owing to the interactions of topography, vegetation cover, built form, etc.</p> <p>Nature of land use – landscapes with extensive existing reference or context to the type of development being proposed.</p> <p>Nature of existing features – landscapes where detracting features or major infrastructure is present and has a dominating influence on the landscape.</p>
Negligible	<p>The Project is entirely in keeping with the character of the existing landscape and the elements within it.</p>

Calculating Landscape Sensitivity

5.34 Landscape quality is then combined with susceptibility to ascertain the degree of sensitivity the landscape has to the type of development proposed (Table 5.3).

Table 5.3: Assessment Matrix to determine Landscape Sensitivity

Landscape Susceptibility	Landscape quality			
	High	Medium	Low	Negligible
Negligible	Low Sensitivity	Negligible	Negligible	Negligible
Low	Medium Sensitivity	Low to Medium Sensitivity	Negligible or Low Sensitivity	Negligible
Medium	Medium-High Sensitivity	Medium Sensitivity	Low to Medium Sensitivity	Negligible
High	High Sensitivity	Medium- High Sensitivity	Medium Sensitivity	Low Sensitivity

Magnitude of Change to a Landscape

5.35 The magnitude of change to a landscape is then assessed (Table 5.4).

Table 5.4: Definitions of Magnitude of Change to the Landscape

Magnitude of change	Typical Descriptors
High	Introduction of major new elements into the landscape not currently present or some major change to the scale, landform, landcover or pattern of the landscape. Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements (Adverse).
	Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality (Beneficial).
Medium	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements (Adverse).
	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality (Beneficial).
Low	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements (Adverse).
	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring (Beneficial).
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements (Adverse).
	Very minor benefit to or positive addition of one or more characteristics, features or elements (Beneficial).
No change	No loss or alteration of characteristics, features or elements; no observable impact in either direction.

5.36 To determine the effect of the Proposed Development on landscape, sensitivity and magnitude of impact are combined using the matrix set out in Table 5.7 below.

Calculating Visual Effects

5.37 The level of visual impact is assessed by combining the sensitivity of the person looking at the view with the magnitude in the change of the view. For this a series of assessment tables are used to ascribe a value to the combination of magnitude and sensitivity and these are presented in

Tables 5.5 and 5.6. Sensitivity and Magnitude are then combined in Table 5.7 to calculate the degree of effect. People’s sensitivity to a change in a view can vary, for example workers within an industrial area are less sensitive than those people who choose to use the PRoW network for the enjoyment of the countryside and the views. Viewers within an unattractive landscape are less sensitive than those in an acknowledged scenic landscape, such as an AONB or National Park.

Sensitivity of the Visual Receptor

5.38 Typical descriptors used to define the sensitivity of visual receptors are set out in Table 5.5 below.

Table 5.5: Definitions to Visual Receptor Sensitivity

Sensitivity	Typical Descriptors
High	<p>Receptors (tourists / visitors) within, or looking towards, internationally- or nationally-designated landscapes, areas and features such as World Heritage Sites, National Parks, Areas of Outstanding Natural Beauty, Registered Historic Parks and Gardens, Scheduled Ancient Monuments, Grade I and II* listed buildings and other places where the landscape / feature is the main reason for the visit.</p> <p>People using national trails and other designated routes where the view is likely to be the focus of attention.</p> <p>People living in residential properties.</p> <p>Communities where views contribute to the landscape setting enjoyed by residents in the area.</p> <p>People travelling through the landscape on roads, rail or other routes on recognised scenic routes or where there is a distinct awareness of views of their surroundings and their visual amenity.</p> <p>People walking on national long distant trails or promoted walks, well used rural routes close to urban areas, motorists on designated scenic routes, people walking in nationally designated landscapes. High importance and rarity, national scale, and limited potential for substitution.</p>
Medium	<p>Receptors within, or looking towards, undesignated landscapes, areas and features of local importance, and in places where the landscape / feature is not necessarily part of the reason for the visit.</p> <p>People engaged in outdoor recreation (such as walking local rural footpaths) whose attention is likely to be focused on the landscape and / or particular views, not on national trails or within designated landscapes.</p> <p>People staying in hotels and healthcare institutions who are likely to appreciate and / or benefit from views of their surroundings.</p> <p>Travellers on roads which have an attractive setting or scenic quality (rural or urban).</p> <p>People working in premises where the views are likely to make an important contribution to the setting, and / or to the quality of working life. High or medium importance and rarity, regional scale, limited potential for substitution.</p>
Low	<p>Receptors in commercial and industrial premises, schools, playing fields etc. where the view is not central to the use.</p> <p>People using main roads, infrequently used / inaccessible public rights of way and likely to be travelling for a purpose other than to enjoy the view.</p> <p>Low or medium importance and rarity, local scale.</p>
Negligible	<p>People moving past the view often at high speed (e.g. main roads, motorways and main line railways) and with little or no focus on or interest in the landscape through which they are travelling and significant roadside highway infrastructure (barriers, signs etc.). Very low importance.</p>

Magnitude of Visual Impact

5.39 Typical descriptors used to define the magnitude of visual change are set out in Table 5.6 below.

Table 5.6: Definitions of Magnitude of Visual Change

Sensitivity	Typical Descriptors
High	<p>Substantial, obvious, loss or addition of features in the view. Major change in the composition of the view A major proportion of the view may be either blocked or occupied by the Project. The development introduces colours or forms which draw the eye and are not commonplace in the view. Views may be short-distance and direct. Prominent position within the landscape, such as on the skyline or open hillside or open floodplain or plateau. Changes in the view may be visible over a large proportion of the view. The Project is permanent and irreversible.</p> <p>Typically, this would be where a development would be obvious to the casual viewer, seen in close proximity with a large proportion of the view affected with little or no filtering or backgrounding and there would be a great scale of change from the present situation for the long or medium-term.</p>
Medium	<p>Readily noticeable loss or addition of features in the view. Partial alteration to the existing view and/or the introduction of readily noticeable elements in the view. There is some screening or backgrounding by landform, woodland, and or built form The colours and forms are largely in keeping with the colours and forms within the surrounding landscape Views may be middle-distance, direct or oblique. Views may be filtered by vegetation. Partial loss of, or change to, sites visual function / contribution The duration of effect would be considered long-term / permanent but is potentially reversible</p> <p>Typically, this would be where a development would be seen in views for the long or medium-term where a moderate proportion of the views is affected. There may be some screening or backgrounding which minimise the scale of change from the present situation.</p>
Low	<p>The change in the view would not be readily noticeable. Development would form a minor constituent of the view, being partially-visible, or at a sufficient distance to be a limited component of a view The duration of effect may be considered long-term / permanent but is easily reversible; or, the duration may be medium-term A significant part of the development is screened It does not lie within a particularly prominent location within the landscape Introduction of features which may already be present in views.</p> <p>Typically, this would be where a moderate or low proportion of the view would be affected for the short-term or the development would be visible for the long-term in distant views; where only a small proportion of the view is affected in the medium-term or long-term; where the medium-term or long-term effect is reduced due to a high degree of filtering, screening or backgrounding or where there is a low scale of change from the existing view.</p>
Negligible	<p>A slight change in the view but barely noticeable to the casual observer/passers by. The change can only be perceived using equipment to enhance vision, such as binoculars or zoom lenses.</p>
No change	<p>No loss or alteration of characteristics, features or elements; no observable impact in either direction.</p>

Significance of Effects

5.40 The significance of landscape and visual effects is determined from the following matrix.

Table 5.7: Assessment Matrix

Sensitivity	Magnitude of Impact of change				
	No Change	Negligible	Low	Medium	High
Negligible	No change	Negligible	Negligible or Minor	Negligible or Minor	Minor
Low	No change	Negligible or Minor	Negligible or Minor	Minor	Minor or Moderate
Medium	No change	Negligible or Minor	Minor	Moderate	Moderate or Major
High	No change	Minor	Minor or Moderate	Moderate or Major	Major or Substantial

5.41 The significance of these categories in terms of EIA regulations is set out below.

Major (Substantial) Adverse

The Project will cause an obvious substantial degradation of the landscape character/landscape features/existing views. These adverse effects are key factors in the decision-making process. These effects are generally, but not exclusively, associated with sites or features of international, national or regional importance that are likely to suffer a most damaging impact and loss of resource integrity. However, a major change in a site or feature of local importance may also enter this category.

Moderate Adverse

The Project will cause noticeable degradation of the landscape character/elements/existing views. These adverse effects may be important but are not likely to be key decision-making factors. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse effect on a particular resource or receptor.

Minor Adverse

The Project will cause small but not readily perceived degradation of the landscape character elements/existing views. These adverse effects may be raised as local factors. They are unlikely to be critical in the decision-making process but are important in enhancing the subsequent design of the project.

Negligible

A barely perceptible effect. Such effects should not affect influence the decision-making process.

Minor beneficial

The Project will cause small improvement of the landscape character elements/existing views. These adverse effects may be raised as local factors. They are unlikely to be critical in the decision-making process but are important in enhancing the subsequent design of the project.

Moderate Beneficial

The Project will cause noticeable, but not readily perceived, improvement of the landscape character/elements/existing views. These beneficial effects may be important, but are not likely to be key decision-making factors. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall beneficial effect on a particular resource or receptor.

Major (Substantial) Beneficial

The Project will cause and obvious substantial improvement of the landscape character/landscape features/existing views. These beneficial effects are key factors in the decision-making process and should be balanced against any adverse effects.

Limitations of the Assessment

- 5.42 The initial assessment was undertaken on the 17th October 2021 when deciduous trees and hedges were in leaf, a time of least visibility across the landscape in terms of leaf cover. At time of the survey the weather was a mix of sun and overcast sky, but visibility was good. A second site visit was undertaken on the 20th January 2022, a time of greatest visibility across the landscape, the weather clear and sunny.
- 5.43 The landscape character and views have been assessed from public vantage points. Although there is no right in planning law to a view from a private property, visual impact assessment protocol normally requires such views to be considered. In this case, however, it was impractical to seek access to private property.

Baseline Environment

Topography and Water Courses

- 5.44 The Site lies within an area of undulating landscape and this wider landscape ranges between 93m Above Ordnance Datum (AOD) to 134m AOD. The Site slopes gently to the north from around 125m AOD down to 112m AOD although there is a slight dip or fold in the centre which drains the Site to the east.
- 5.45 Beyond the Site to the north the land continues to drop down to a small valley and small stream at around 93m AOD before rising to a ridge which crests at 115m AOD 1km from the Site. The southern edge of the Site also forms a ridge line, with the land beyond gently dropping down to around 99m AOD in the vicinity of Battles Hall. This is significant in relation to the proposed Pelham Spring solar farm which would occupy this south facing slope: essentially the two proposed solar farms would be visually separated by topography.
- 5.46 The land to the east and west of the Site is also part of the north facing, gently undulating slope in which the Site lies. This slope eventually drops down into the River Stort, over 2 km to the east. The Stort is the only main watercourse in the vicinity and flows south.
- 5.47 As a result of topography the Site is not visible from the south and is potentially only visible from a small area of high ground to the north, although due to tree cover only a small area of hillside to the northeast affords a view back towards the Site in the vicinity of Chalk Pit Lane (see View 15, Figure 5.6.15).

Description of the Site and the Immediate Surroundings

- 5.48 The proposed solar farm will occupy four large fields, currently arable. The fields are divided by hedges which are typically 2 – 6m high and support the occasional large tree. Tracks for farm vehicles run alongside most of the internal hedges and some of these are the routes of the PRow. There are no landscape features within the fields, such as mature trees or structures. The fields are drained via a series of ditches which take the water in a northeast direction towards Berden and the catchment of the Stort. Photographs of the Site are presented in Figure 5.4 and the locations of the photographic viewpoints are presented in Figure 5.3.

Land to the north

- 5.49 The north boundary of the Site is defined by the Pelham Road (also known as Ginns Road) which heads east from Stocking Pelham to Berden. The only residential properties on this stretch are nine single storey dwellings on the northside of the road on entering Berden (Benskins Close).

They afford partial views towards the Site, mainly in winter (see View 9 Figure 5.6,9). The Pelham Road is flanked by mature hedges which substantially restrict views of the Site, although there are gaps which do afford views to travellers (see Views 10 and 11, Figures 5.6.10 and 5.6.11).

- 5.50 The land drops to a small valley north of the Pelham Road which contains several properties, many are listed (Berden Priory) but due to topography and high tree cover there is no intervisibility with the Site.

Land to the east

- 5.51 The village of Berden lies beyond the east boundary to the north. It is separated from the arable fields by a small paddock on the edge of the village (approximately 100m wide). Also, the Site does not utilise the full extent of the field in the northeast corner. Instead, a 112m wide strip is to be left as agriculture to act as a further buffer to the village and avoid placing panels opposite the nine bungalows on the Pelham Road.
- 5.52 Further south the east boundary is defined by a linear copse and mature hedgerow with arable fields beyond. A rural lane, The Street, lies 56m to the east, along which are scattered three large dwellings set within well vegetated gardens. The effect of the Proposed Development on the visual amenity of residents and users of the lane is assessed (see Views 6 and 7, Figures 5.6.6 and 5.6.7).

Land to the south

- 5.53 The southern boundary of the Site is defined by a mature hedgerow and tree belt, which, along with topography, screens the Site from views further south. A PRoW (5 25) heads east-west on the southside of the hedge and affords glimpsed views of the Site through the hedge in winter (but views are not significant).
- 5.54 A recently constructed battery storage facility lies in the southwest corner of the Site and comprises a small substation and seven small buildings housing batteries with twenty-six inverter and transformer units. The buildings are finished in light grey and are locally prominent in some views, but tree and hedge planting to mitigate the visual impact will eventually screen the facility.
- 5.55 The main Pelham Substation lies south of this facility, largely screened by the tree cover on the southern boundary. Eight high voltage transmission radiate out from it to the west, south and east and these are prominent features in many views within the local landscape.
- 5.56 A group of properties lie just beyond the southeast corner of the Site, including a converted water tower set within a copse. In summer there is little intervisibility with the Site due to tree and hedge cover but in winter views are possible.

Land to the west

- 5.57 The western boundary of the Site is defined by the tarmac access road to the Pelham Substation. PRoW 5 27 also runs along this access and affords views into the Site through gaps in a sporadic hedgerow on the east side of the access (see View 2, Figure 5.2). A more substantial hedgerow runs along the west side of the access, beyond which lie a series of paddocks with a good hedgerow structure, and beyond the village of Stocking Pelham. This intervening hedgerow structure (and some woodland blocks) means that there are no views of the Site from the village.
- 5.58 Internal views of the Site are presented in Figure 5.4 and the location of the viewpoints presented in Figure 5.3.

Landscape Character

- 5.59 Landscape character is defined as:

"A distinct, recognisable and consistent pattern of elements, be it natural (soil, landform) and/or human (for example settlement and development) in the landscape that makes one landscape different from another, rather than better or worse." (Natural England).

5.60 Impacts on the landscape may arise where the landscape character of the area is modified by the development. It is important to place the application site in its landscape context.

National

5.61 Natural England has identified 159 geographical areas of similar landscape character known as National Character Areas (NCAs). This mapping, sometimes described as 'The Character of England Map', provides a description of landscape character at the national scale. It is considered that whilst the NCAs provide a national spatial framework, the scale of the mapping and information is of limited use at the local scale. The Site is located within the South Suffolk and North Essex Clayland (NCA 86), as identified by Natural England. The key characteristics include:

- "An undulating chalky boulder clay plateau is dissected by numerous river valleys, giving a topography of gentle slopes in the lower, wider valleys and steeper slopes in the narrower upper parts.
- Fragments of chalk give many of the soils a calcareous character, which also influences the character of the semi-natural vegetation cover.
- South-east-flowing streams and rivers drain the clay plateau.
- Watercourses wind slowly across flood plains, supporting wet, fen type habitats; grazing marsh; and blocks of cricket-bat willows, poplars and old willow pollards. Navigation locks are present on some rivers.
- Lowland wood pasture and ancient woodlands support the dormouse and a rich diversity of flowering plants on the clay plateau. Large, often ancient hedgerows link woods and copses, forming wooded skylines.
- The agricultural landscape is predominantly arable with a wooded appearance. There is some pasture on the valley floors.
- Field patterns are irregular despite rationalisation, with much ancient countryside surviving. Field margins support corn bunting, cornflower and brown hare.
- Winding, narrow and sometimes sunken lanes are bounded by deep ditches, wide verges and strong hedgerows.
- A strong network of public rights of way provides access to the area's archetypal lowland English countryside."

Regional

5.62 The landscape around the Site is described and analysed in the Essex Landscape Character Assessment, published in 2003 by Essex County Council. According to the published Assessment the Site falls within the southern end of the Chalk Upland Landscapes Landscape Character Type (LCT) A1. According to the published assessment (para 4.2.2):

"Typical hedgerow species are Hawthorn and Ash, with occasional Blackthorn, Elderberry, Dogwood, Hazel, Beech, Field Maple, Oak, Dog rose, Spindle, Wayfaring tree."

5.63 The 'Key Characteristics' of the host North West Essex Chalk Farmland A1 LCA are:

- "Strongly rolling landform of broad round backed ridges.
- Large scale arable farmland.
- Distinctive elevated, expansive and generally open character.

- Panoramic views from ridgetops.
- Dispersed blocks of woodland and isolated copses.
- Sparse settlement pattern, small linear villages alongside stream courses, and hamlets with greens. Mostly tranquil and remote character”.

5.64 With regards to the ‘Landscape Condition’ the published assessment notes:

“...relatively small number of farmland hedgerows are in poor condition due to lack of management, and tend to be fragmented. Thicker, better managed hedgerows are locally associated with settlements”.

5.65 In terms of ‘Past, Present and Future Trends for Change’ pylons in the southern part of the LCA and intensification of agriculture have been identified in the Essex Landscape Character Assessment.

Uttlesford District Council Landscape Character Assessment

5.66 At the district level, Uttlesford District Council published its own landscape character assessment titled Braintree, Brentwood, Chelmsford, Maldon and Uttlesford Landscape Character Assessments. According to the published assessment the Site is located within H4 ‘Berden and Farnham Chalk Upland Landscape Character Area (LCA), part of Landscape Character Type (LCT) H ‘Chalk Upland Landscapes’.

5.67 The ‘Key Characteristics’ of the LCA H4 ‘Berden and Farnham Chalk Upland’ include:

- “Broad undulating upland slopes that flatten at the highest elevations.
- Distinctly elevated, open, arable fields. Field patterns mainly regular, with large farms and becoming.
- Smaller and more organic in shape in the valleys and around villages.
- Scrubby, often fragmented hedgerows or scattered tree groups, with distant blocks of trees framing views, particularly towards the middle and southern part of the area, where it is dissected by Bourn Brook.
- A complex array of pylons leading to electricity substation near Berden dominates views in the high plateau. Few roads; sense of emptiness and openness.”

5.68 Its Visual Characteristics have been described as:

- “Dramatic views of steeply sloping fields and small church above Bourne Brook.
- Highly visible double row of pylons and electricity generating station outside Berden.”

5.69 The published assessment goes on to state in ‘Sensitivities to Change’:

“Sensitive key characteristics and landscape elements within this character area include small patches of woodland (some of which are ancient) and several springs, which are sensitive to changes in land management. The open nature of the skyline on the ridges of this upland landscape is visually sensitive to new development, which may be visible within panoramic views across the plateau. The overall sense of tranquillity within the character area is also sensitive to change and potential new development”.

Site specific landscape character assessment

5.70 The existing Site is representative of the gently undulating chalk upland farmland, but a significant defining feature locally is the electrical infrastructure. Although the Pelham Substation is reasonably well concealed by tree cover the taller elements are visible from middle and long distant views and the network of transmission lines radiating from it significantly influence the local landscape character.

5.71 Stocking Pelham and Berden are discretely located within the landscape, set within high levels of tree cover. They are attractive historic villages which have seen very limited residential expansion. Mature hedges, tree belts and copses, both within the Site and within the surrounding landscape, are locally defining features and afford a significant amount of visual enclosure.

Landscape Value

5.72 A range of criteria is used to assess the value of a landscape to society in terms of its perceptual, cultural, recreational and ecological contribution. The Site is assessed in relation to these attributes in Table 5.8.

Table 5.8: Assessment of Landscape Value

Landscape Value				
Element	Assessment in relation to the Site	Value	Assessment in relation to the surrounding area	Value
<p>Landscape quality</p> <p>A measure of the physical state of the landscape. It may include the extent to which typical character is represented in individual areas, the intactness of the landscape and the condition of individual elements.</p>	<p>The landscape is not subject to any landscape designation which recognises quality. The Site is adversely influenced by the existing facility.</p>	Medium	<p>The wider landscape is influenced by the Pelham Substation and radiating transmission lines.</p>	Medium
<p>Use</p> <p>In terms of its value to society as a whole</p>	<p>Agricultural production.</p> <p>PRoW traverse the Site and the Site forms the rural setting to others.</p>	Medium	<p>Agricultural production, countryside for recreation, electrical infrastructure.</p>	Medium
<p>Scenic quality</p> <p>The term used to describe landscapes that appeal primarily to the senses (primarily but not wholly the visual senses)</p>	<p>Attractive rolling farmland with but visually influenced by the visible transmission lines.</p>	Medium	<p>Potentially high but adversely affected by the existing electrical infrastructure.</p> <p>Attractive villages.</p>	Medium
<p>Rarity</p> <p>The presence of rare elements or features in the landscape or the presence of a rare Landscape Character Type</p>	<p>It is a typical settled farmland landscape common throughout much of central England; a common Landscape Character Type.</p>	Low	<p>It is a typical settled farmland landscape, influenced electrical infrastructure. A common Landscape Character Type.</p>	Low
<p>Representativeness</p>	<p>The Site is not of a type or includes features which are</p>	Low	<p>The wider landscape is not of a type or includes features</p>	Low

Landscape Value				
Whether the landscape contains a particular character and/or features or elements which are considered particularly important examples.	representative of a unique landscape.		which are representative of a unique landscape.	
Conservation interests The presence of features of wildlife and earth science interest can add to the value of the landscape as well as having value in their own right.	The Site is not subject to a wildlife designation and as arable land, currently has low ecological value.	Low	The substantial network of mature trees, copses and hedgerows forms a valuable network of ecological corridors through the largely arable landscape.	Medium
Historical and Cultural Interests The presence of features of archaeological, historical and cultural interest can add to the value of the landscape as well as having value in their own right. Some landscapes are associated with particular people, such as artists or writers, or events in history that contribute to perceptions of the natural beauty of the area	The tower of St Nicholas Church in Berden is visible in some views from within the Site and so it contributes to its wider setting. Archaeological investigations as part of the application have identified below ground areas of high archeological interest. As a result the application area has reduced to avoid development on the most sensitive areas.	Low	There are several historical assets within the wider landscape, including Berden, Berden Priory and the Crump.	Medium
Recreational value Evidence that the landscape is valued for recreational activity where experience of the landscape is important.	PRoW traverse the Site and the Site forms the rural setting to others.	Medium - High	There is a good network of PRoW in the surrounding countryside.	Medium - High
Perceptual aspects A landscape may be valued for its perceptual qualities, notably wildness and/or tranquillity.	The Site is arable farmland and so has no sense of wildness. The tranquillity of the Site generally High but is adversely affected	Medium	It is an intensively farmed landscape with no sense of wildness and is adversely affected by the proximity of the Pelham Substation (and	Medium

Landscape Value

by the proximity of the Pelham Substation.

when close to the substation, aurally).

5.73 Overall, the value of the landscape of the Site is Medium, while that of the wider countryside is Medium. The PRoW network that crosses the Site is the most significant value of the Site in terms of providing access to the countryside, particularly from the adjacent villages.

Landscape Susceptibility

5.74 The LVIA Guidelines define susceptibility as “The ability of the landscape receptor (whether it be the overall character or quality / condition of a particular landscape type or area, or an individual element and / or feature, or a particular aesthetic and perceptual aspect) to accommodate the Proposed Development without undue consequences for the maintenance of the baseline situation and / or the achievement of landscape planning policies or strategies”.

5.75 The elements of the landscape which help it accommodate development of this type are:

- Proximity to the Pelham Substation and battery storage facility which has established a precedent for electrical infrastructure in the locality.
- Adjacent mature woodlands providing screening.
- A significant amount of enclosure provided by topography.

5.76 The susceptibility of the wider landscape to the type of development proposed is **Medium**.

Landscape Sensitivity

5.77 If the Medium value of the landscape surrounding the Site is combined with the Medium susceptibility the sensitivity of the landscape beyond the Site and existing facility is **Medium**.

Visual Baseline

5.78 Visual receptors are: “the different groups of people who may experience views of the development” (GLVIA, 3rd edition, para 6.3). In order to identify those groups who may be significantly affected the ZTV study, baseline desk study and site visits have been used. The different types of groups assessed within this report encompass local residents; people using key routes such as roads; cycle ways, people within accessible or recreational landscapes; people using Public Rights of Way; or people visiting key viewpoints. In dealing with areas of settlement, Public Rights of Way and local roads, receptors are grouped into areas where effects might be expected to be broadly similar, or areas which share particular factors in common.

5.79 A series of viewpoints have been chosen to convey the main potential visual impacts. These are not the only places where someone may see the Proposed Development but have been chosen to be sufficiently representative that an accurate overall assessment of impact can be made. The selection includes close views, medium distance views and long distant views and views covering all directions of the compass around the Site. The list of representative views is presented in Table 5.9. The photographs taken from each public viewpoint are presented in Figures 5.6 and 5.8 and the positions where the photographs have been taken are located on Figures 5.5 and 5.7. It has not been possible to take photographs from private properties and so the visual impacts from these receptors are estimated.

5.80 Photographs were taken on the 17th October 2021, when the trees were in leaf, and on the 20th January 2022, a time of greatest visibility across the landscape. For the viewpoints the winter photographs have predominately been used to illustrate the worst-case scenario. For each view a panoramic view is presented to show the full context, with labels to identify key features and text to

assess the predicted changes to the view. A single frame image is presented on the following page, which if printed at A3, replicates the view of the naked eye, if printed at A3 and held 400 - 500 mm from the eye. Photomontages have also been prepared for key views and these are presented in Appendix 5.1. Wire frame photomontages have also been produced to illustrate the relationship between the proposed solar farm and nearby heritage assets. These are presented in Appendix 5.2.

Table 5.9: Representative views

Viewpoint	Location	Visual receptors	Reason for choice	Landscape and visual receptor sensitivity
View 1: The Pelham Road as it heads east out of Stocking Pelham	<p>Direction of View: East</p> <p>Distance to nearest site boundary: 32 m</p> <p>Elevation: 114 m AOD</p> <p>Grid reference: TL 45676 29421</p>	Users of the road	To illustrate likely level of visibility to from the eastern edge of the village.	<p>Receptor sensitivity: Lane users Medium.</p> <p>Landscape sensitivity: Medium and Local</p>
View 2: PRoW 5/27 as it heads north along the access drive to the Pelham Substation	<p>Direction of view: Northeast</p> <p>Distance to nearest site boundary: 5 m</p> <p>Elevation: 124 m AOD</p> <p>Grid reference: TL 45708 29178</p>	Walkers and workers accessing the substation	Illustrative the typical views afforded to walkers.	<p>Receptor sensitivity: High (Well used footpath)</p> <p>Landscape Sensitivity: Medium and Local</p>
View 3: PRoW 5/26 as it heads north towards the Pelham Road	<p>Direction of view: North</p> <p>Distance to nearest site boundary: Within the Site</p> <p>Elevation: 126 AOD</p> <p>Grid reference: TL 46113 28652</p>	Walkers	Illustrative the typical views afforded to walkers.	<p>Receptor sensitivity: Medium High (Well used footpath)</p> <p>Landscape Sensitivity: Medium and Local</p>
View 4: From PRoW 5/22	<p>Direction of view: Northwest</p> <p>Distance to nearest site boundary: 118 m</p> <p>Elevation: 122 m AOD</p> <p>Grid reference: TL 46520 28716</p>	Walkers and adjacent residential property at the base of the water tower.	To illustrate the change of view to walkers and the adjacent residential property.	<p>Receptor sensitivity: High (Well used footpath)</p> <p>High (Residential Property)</p> <p>Landscape Sensitivity: Medium and Local</p>
View 5: PRoW 5/21 as it passes through the Site	<p>Direction of view: West</p> <p>Distance to the site: Within the Site</p> <p>Elevation: 111 m AOD</p> <p>Grid reference:</p>	Walkers	Illustrating the change of view to walkers as they pass through the Site	<p>Receptor sensitivity: High (Well used footpath)</p> <p>Landscape Sensitivity: Medium and Local</p>

Viewpoint	Location	Visual receptors	Reason for choice	Landscape and visual receptor sensitivity
	TL 46174 29182			
View 6: Field Gate on The Street by Easingwell Pond	Direction of view: West Distance to the site: 250 m Elevation: 108 m AOD Grid reference: TL 46842 29212	Users of the lane, including walkers	Illustrating how the view may change, including from the environs of nearby residential properties on The Street.	Receptor sensitivity: Medium (lane), High (residents). Landscape Sensitivity: Medium and Local
View 7: The southern end of The Street near the Crump (SAM) and a residential property	Direction of view: West Distance to nearest site boundary: 354 m Elevation: 120 m AOD Grid reference: TL 46919 28893	Users of the lane including walkers and residents	Illustrating how the view may change, including from the environs of a nearby residential property on The Street.	Receptor sensitivity: Medium (lane), High (residents). Landscape Sensitivity: Medium and Local
View 8: PRow 5/21 as it leaves the edge of Berden	Direction of view: Southwest Distance to the site: 245 m Elevation: 104 m AOD Grid reference: TL 46766 29363	Walkers	Illustrating the likely change of view to walkers and to the environs of a residential property. Illustrates the impact on the setting of the village.	Receptor sensitivity: High (Well used footpath) High (Residential property). Landscape Sensitivity: Medium and Local
View 9: Footway adjacent to dwellings at Benskins, on the western edge of Berden	Direction of view: South Distance to nearest site boundary: 48 m Elevation: 113 m AOD Grid reference: TL 46430 29747	Residents of single storey dwellings Road and footpath users	Illustrating the change in view to residents and road users.	Receptor sensitivity: Medium (Local road and footway) High (Residential property). Landscape Sensitivity: Medium and Local
View 10: The Pelham Road where it is met by PRow 5/62, also the location of the existing farm access	Direction of view: Southeast Distance to nearest site boundary: 11 m Elevation: 114 m AOD Grid reference: TL 46172 29672	Walkers, and road users	To illustrate the change in view to those passing the Site along Pelham Road.	Receptor sensitivity: Medium Landscape Sensitivity: Medium and Local

Viewpoint	Location	Visual receptors	Reason for choice	Landscape and visual receptor sensitivity
View 11: The Pelham Road east of View 10.	<p>Direction of view: Southwest</p> <p>Distance to nearest site boundary: 11 m</p> <p>Elevation: 112 m AOD</p> <p>Grid reference: TL 45913 29565</p>	Road users	To illustrate the change in view to those passing the Site along Pelham Road.	<p>Receptor sensitivity: Medium</p> <p>Landscape Sensitivity: Medium and Local</p>
View 12: The start of PRoW 5/26 as it heads north from the Pelham Road.	<p>Direction of view: North</p> <p>Distance to nearest site boundary: Within the Site.</p> <p>Elevation: 113 m AOD</p> <p>Grid reference: TL 45994 29582</p>	Walkers	One of the clearest views from high ground to the east from a long-distance trail.	<p>Receptor sensitivity: High (Well used footpath)</p> <p>Landscape sensitivity: Medium and Local</p>
View 13: From Crabb's Lane on the eastern side of Stocking Pelham	<p>Direction of view: East</p> <p>Distance to nearest site boundary: 180 m</p> <p>Elevation: 128 m AOD</p> <p>Grid reference: TL 45548 28973</p>	Road	To illustrate the lack of inter-visibility between the village and the Site.	<p>Receptor sensitivity: Medium</p> <p>Landscape sensitivity: Medium and Local</p>
View 14: PRoW 5/29 which crosses slightly elevated ground south of the Site	<p>Direction of view: south</p> <p>Distance to nearest site boundary: 432 m</p> <p>Elevation: 116 m AOD</p> <p>Grid reference: TL 45761 29946</p>	Walkers	To illustrate the likely change in view to walkers	<p>Receptor sensitivity: High (Well used footpath)</p> <p>Landscape Sensitivity: Medium and Local</p>
View 15: Chalk Lane (Byway Open to All Traffic, 10/50), a distant view northeast of the Site.	<p>Direction of view: East</p> <p>Distance to nearest site boundary: 2.7 km</p> <p>Elevation: 108 m AOD</p> <p>Grid reference: TL 48552 31349</p>	Walkers	To illustrate the likely change in view to users of the lane from distant ground to the southeast. A similar view is afforded from parts of the lane leading to Rickling and Drover Lane, further to the east.	<p>Receptor sensitivity: High (Well used BOAT)</p> <p>Landscape Sensitivity: Medium and Local</p>

Discounted Views

- 5.81 These areas have been visited and it is concluded that are no significant views from the following:
- Stocking Pelham and land further to the east due to the screening effect of high levels of tree cover around the village and the screening effect of the buildings within the village.

- Land further east of High Street apart from high ground 2.8 km to the east in the vicinity of Drover Lane.
- Land south of the southern boundary due to topography(slopes away from the Site) , tree and hedge cover.
- Land to the north beyond the B1038 due to topography, tree and hedge cover. There are no views from the B1038.
- Berden Priory, due to topography (within a valley), tree and hedge cover.
- Berden, due to topography, tree and hedge cover.
- The ridge to the east, east of Potash Farm due to high tree cover on the intervening hill (Little London and Peyton Hall area) and the screening affect of the village of Berden and the tree cover around it.

The Future Baseline Conditions

- 5.82 Without any development the landscape is likely to remain unchanged although a hedge that has been recently planted along Ginns Road between Stocking Pelham and Berden will gain stature and will eventually screen the Site from this road in summer and substantially screen it in winter.
- 5.83 The hedge and tree planting that was undertaken to screen the battery storage facility in the southwest corner of the Site will also gain stature and reduce its visibility within the landscape.

Mitigation Measures Adopted as Part of the Project

- 5.84 Visual analysis indicates that the proposed solar farm will be well screened by existing tree and hedge cover which lies to the south, west and to the east can be quickly screened by hedge planting. The most significant views will be from the Stocking Pelham to Berden road (Ginns Road) and higher ground further north. For this reason, it is proposed to plant woodland buffers along the northern edge to augment the existing roadside tree cover and the new hedge which has recently been planted by the landowner. As well as the woodland planting some individual fast-growing trees have been specified to ensure the views from the north are screened as rapidly as possible.
- 5.85 The public rights of way which will pass through the solar farm will be maintained on their current alignment, set within 10 m wide corridors, within which native hedge planting will screen the solar farm from view when in leaf. Tall stature trees will be planted where there is space and where they will not cast excessive shade on solar panels when mature. On other boundaries smaller stature species such as hawthorn and field maple will be planted so that they provide sufficient screening but do not shade panels. Scots Pine is specified around the northeast corner to reinforce screening in winter to the edge of the village. The proposed planting will leave a legacy of tree and hedge cover across the Site once the solar farm has been decommissioned.
- 5.86 A proposed community woodland will be located between the residential properties on Ginns Road on the edge of Berden and the proposed solar farm, which once established will block views of the solar farm and beneficially the existing substation and transmission lines which occupy the distant skyline.
- 5.87 A woodland will be planted to the southwest of Berden to protect the setting of the village and screen the solar farm from the PRow as they leave the village.
- 5.88 The slight north facing slope means that the panels will be spaces sufficiently far apart, which combined with the short solar farm grass mix, will provide nesting opportunities for skylark nesting (see Chapter 7: Ecology). Additional offsite mitigation for skylarks is also being provided. Species rich grassland will be specified around the margins.

5.89 A permissive path will be created through the woodland and hedge corridor alongside Ginns Road between Stocking Pelham and Berden so that people walking between the two villages do not have to walk in the carriageway (there is no footway) but have a safe and attractive green route.

Timescales for the proposed mitigation to become effective

5.90 The main mitigation proposed is the planting of native hedgerows. Since these will be planted in arable soil there is the expectation that the plants will be able to establish quickly. Typically, limited growth is experienced in the first three years but between 4 and 7 years, growth can be rapid (subject to weather conditions). It will be necessary to trim the hedges during this growth period to establish a densely branching form which will ensure a solid screen when the hedge is in leaf and adequate screening in winter. Therefore, it is likely to take up to 8 - 10 years before the hedges have established a dense 2.5 – 3 m high structure.

5.91 The woodland planting will provide a screening function within a similar time frame but, it will take over fifteen years before it forms an adequate screen to those crossing the high ground to the north. The individual tree planting on the northern edge includes a fast-growing poplar species which gains height quickly before forming a broad crown. This makes it an ideal screening tree for the northern edge and should significantly reduce views of the solar farm from the land to the north within an acceptable timeframe.

Assessment of Construction Effects

5.92 Construction activities associated with solar farms typically do not have a high visual effect because the plant used is typically not significantly greater than farm machinery. The main visual impact arises from vehicles delivering to the Site and plant working on the Site, typically small scale machinery such as mini pile drivers and excavators. Visual effects gradually increases during the construction period as more and more panels are installed, reaching maximum landscape visual effect once operational, before the landscape mitigation has time to be effective. Therefore, visual effects from construction are usually less than those determine for the operational phase immediately after construction.

Assessment of Operational Effects

Potential Impacts

5.93 Once operational the main features of the Proposed Development which could potentially result in landscape and visual impacts are:

- Changes to land use;
- Introduction of additional electrical infrastructure in the local landscape, reinforcing this negative impact of landscape character affecting the visual amenity of those living, working and visiting the area, and
- Introduction of new hedges and woodland blocks which will reinforce this positive aspect of landscape character.

Impact on Topography and Watercourses

5.94 The tables supporting the panels will be mounted on pile driven legs which will follow the existing contours of the Site. The tracks will also follow the existing contours. The existing ditch network draining the Site will be retained. The effect of the Proposed Development on Topography will be Negligible.

Proposed Mitigation and Residual Impact

- 5.95 The residual impact will be Negligible, and no mitigation is required.

Impact on Trees and Hedgerows and Other Landscape Features

- 5.96 No trees or hedges will need to be removed to build of the solar farm.

Proposed Mitigation and Residual Impact

- 5.97 It is proposed to plant 2.55 km length of native hedgerow, 163 standard trees and 1.7 hectares of new woodland. Overall, the effect on tree and hedgerow cover will be Minor beneficial during operation, becoming Moderate beneficial on decommissioning.

Impact on Landscape Character of the Site

- 5.98 The landscape character of the Site is of Medium sensitivity and the magnitude of change will be High once the solar farm has been built out. This will result in a Moderate to Major adverse effect.

Proposed Mitigation and Residual Impact

- 5.99 The hedgerow and woodland planting will reduce the visibility of the panels within the Site to a certain degree, reducing the impact on its landscape character to Moderate adverse.

Impact on the Landscape Character of the Wider Upland Farmland Landscape Character Areas

- 5.100 The proposed development will only have a visual influence on a small area of the wider countryside (in the vicinity of Chalk Pit Lane) and this area is fairly distant and views will be glimpsed. Therefore, visually it will only have a Minor adverse effect on the wider character area. It will, however, increase the amount of electrical infrastructure within the area (a perceptually negative characteristic) and so intrinsically it will also have a Minor adverse effect.

Visual Impact

- 5.101 The visual impact for each key view is assessed below using criteria set out in paragraph 5.37. The location of each viewpoint is plotted on Figures 5.5 and 5.7 and photographs taken from each viewpoint are presented in Figures 5.6 and 5.8.

View 1: The Pelham Road as it heads east out of Stocking Pelham

The Existing View

- 5.102 This is the first view of the Site when heading east from the village of Stocking Pelham. Prior to this point views are blocked by intervening trees and hedges, even in winter. Part of the Site is visible through a gap in the hedge which runs alongside the access to the Pelham Substation. The Site appears as an open rural field with a hedge on the far side of the field forming the skyline.

Predicted Changes To The View Without Mitigation

- 5.103 Solar panels will be seen side on through the gap in the hedge and through the perimeter deer fencing, but the first panels will be set 35 m back from the edge of the field. The proposed permissive path will pass through the gap between the hedge and the fence to run parallel to the road as far as Berden.
- 5.104 The sensitivity of users is Medium and the magnitude of change is Medium in winter and Low summer, resulting in a Moderate adverse effect in winter and Minor adverse in summer.

Mitigation And Assessment Of Residual Impact

- 5.105 It is proposed to plant a native hedge set 2m out from the deer fence to screen the proposed solar farm. Once established the hedge will be managed at a winter cut height of 3m and 3m wide at the base.
- 5.106 Once established the hedge will screen the solar farm from view in summer, resulting in a Negligible impact on visual amenity. In winter it will be possible to glimpse the panels and fencing through the leafless branches (a Low magnitude of change), resulting in an adverse effect of Minor significance.

View 2: PRoW 5/27 as it heads north along the access drive to the Pelham Substation

The Existing View

- 5.107 This PRoW heads south from the Pelham Road, along the tarmac access road to the Pelham Substation. A hedge runs along the eastern edge, but several large gaps afford views through to the Site, such as this gap. It is a rural view which is curtailed by rising ground and hedge cover to the east and south. There are wider, but not extensive, views over the valley to the north.

Predicted Changes To The View Without Mitigation

- 5.108 The solar panels will be visible through the gaps in the hedge, typically set back 15 – 25m from the existing hedge and seen through the deer fencing.
- 5.109 The sensitivity of walkers is High and the magnitude of change is High (when walking sequentially along the PRoW) in winter and Medium in summer, resulting in a Major adverse effect in winter and Moderate – Major in summer.

Mitigation And Assessment Of Residual Impact

- 5.110 It is proposed to plant a native hedge set 2m out from the deer fence to screen the proposed solar farm. Once established the hedge will be managed at a winter cut height of 3 m and 3 m wide at the base.
- 5.111 Once established the hedge will screen the solar farm from view in summer, resulting in a Negligible impact on visual amenity. In winter it will be possible to glimpse the panels and fencing through the leafless branches (a Low magnitude of change), resulting in an adverse effect of Minor significance.

View 3: PRoW 5/26 as it heads north towards the Pelham Road through the Site

The Existing View

- 5.112 PRoW 5/27 terminates at the boundary of the substation, joining with PRoW 5/25 which heads east to join with PRoW 5/26. Views towards the Site from PRoW 5/25 are very restricted by a substantial intervening hedgerow, even in winter. PRoW 5/26, however, heads south, first affording clear views over the Site, as at this viewpoint, and then it continues north through the Site until it meets Ginns Lane.

Predicted Changes To The View Without Mitigation

- 5.113 The solar farm will be visible in the foreground, with the panels facing the viewer when heading north, seen through the deer fence. The area of panels to the east will be largely screened by the hedge which runs down the east side of the footpath. Walkers will then continue through the solar

farm within a corridor flanked to the east by an existing hedge and the deer fence of the proposed solar farm set around 12m from the hedge.

- 5.114 The sensitivity of walkers is High and the magnitude of change is High in winter and summer resulting in a Major adverse effect on visual amenity.

Mitigation And Assessment Of Residual Effect

- 5.115 It is proposed to plant a native hedge on the west side of PRoW 5/26 set 2m out from the deer fence to screen the proposed solar farm. Once established the hedge will be managed at a winter cut height of 3 m and 3 m wide at the base, leaving a 7m wide grass corridor for the PRoW.
- 5.116 Once established the hedge will screen the solar farm from view in summer, resulting in a Minor effect on visual amenity (due mainly to the loss of openness). In winter it will be possible to glimpse the panels and fencing through the leafless branches (a Medium magnitude of change), resulting in an adverse effect of Moderate - Major significance.

View 4: From PRoW 5/22

The Existing View

- 5.117 This view illustrates the relationship between the residential property, water tower and the Site. The Site lies behind the hedge and is not visible, even in winter. A small part of the Site becomes visible through gaps in the hedge as walkers on the footpath head north. There are a few other residential properties along the lane to the southeast of this viewpoint but their views towards the Site are blocked by hedge and tree cover.

Predicted Change To The View Without Mitigation

- 5.118 The residential properties will not afford views of the solar farm from within the dwellings or their immediate environs. The sensitivity of the viewer is High, and the magnitude of change is Negligible resulting in a Negligible adverse effect on visual amenity, winter and summer. Users of the PRoW will be able to glimpse some panels resulting in a Moderate adverse effect on visual amenity (winter and summer).

Mitigation And Assessment Of Residual Effect

- 5.119 It is proposed to plant a block of woodland within the southeast corner of the Site to ensure there is spatial and visual separation between the solar farm and the nearby residential properties. Tree planting will be undertaken to close of gaps in the hedgerow to screen the panels from walkers.
- 5.120 The effect of the Proposed Development on visual amenity will be Negligible.

View 5: PRoW 5/21 as it passes through the Site

The Existing View

- 5.121 This footpath heads east from PRoW 5/26, passing through the Site. The view has been chosen to illustrate the change in view to walkers as they pass through the Proposed Development.

Predicted Change To The View Without Mitigation

- 5.122 Solar panels will occupy the field to the left of the existing hedge and within the field in which the footpath runs. Deer fencing will be erected around 11 - 13m from the edge of the existing hedgerow within the field through which the footpath runs and, in the adjacent field, 5 m beyond the hedge. The panels will lie 5 – 10m beyond the deer fence.
- 5.123 The sensitivity of the viewer is High, and the magnitude of change is High in winter and summer resulting in a Major adverse effect on visual amenity, winter and summer.

Mitigation And Assessment Of Residual Effect

- 5.124 It is proposed to plant a native hedge set 2m out from the deer fence to screen the proposed solar farm. Once established the hedge will be managed at a height of 3m and 3m wide at the base, leaving a 7 - 8m wide grass corridor for the PRoW.
- 5.125 Once established the hedge will screen the solar farm from view in summer, resulting in a Minor adverse effect on visual amenity (mainly due to the loss of openness). In winter it will be possible to glimpse the panels and fencing through the leafless branches (a Medium magnitude of change), resulting in an adverse effect of Moderate – Major significance.

View 6: Field access on The Street by Easingwell Pond

The Existing View

- 5.126 Views towards the Site from The Street are limited by the sunken nature of the lane and hedge cover, but this field gate affords a clear view across to the Site. The majority of the Site lies beyond the far hedge/tree line, but it is proposed to erect panels on the far side of the foreground field. The field has a significant dip to it, falling to the west, and so most of the field which comprises the Site is screened from view. There are some residential properties along the lane, but their views are largely restricted by intervening garden and hedge cover, but clearer views will be possible from west facing upper windows, such as those of Mayberry. The effect on residential views is assessed separately at the end of this section.

Predicted Changes To The View Without Mitigation

- 5.127 The majority of the solar farm will be screened from view, but it will be possible to glimpse the tops of some of the panels on the eastern edge. It will also be possible to see panels in the far field, through the gap in the tree cover.
- 5.128 The sensitivity of the viewer is Medium and the magnitude of change or this glimpsed view in the gap is Medium in winter and summer, resulting in a Moderate adverse effect on visual amenity in summer and winter.

Proposed Mitigation And Residual Effect

- 5.129 It is proposed to plant a native hedge and woodland between the proposed solar farm and the PRoW which crosses the field in the foreground. As well as screening the solar farm to users of the PRoW it will also screen it from this view. The residual impact will be Negligible in summer and adverse of Negligible/Minor significance in winter since it may be possible to glimpse some panels through the leafless branches.

View 7: The southern end of The Street near the Crump (a dwelling with a nearby Scheduled Ancient Monument of the same name)

The Existing View

- 5.130 Views from The Street and the dwelling The Crump are restricted by hedge banks, but this open field access on the corner affords a glimpsed view over the countryside towards the Site. The view is marred by the overhead transmission line which crosses in the foreground. Originally the closest part of the Site was within part of this field, but this field has been taken out of the application to avoid any adverse archaeological effects within this field. The Site now lies behind the hedgerow on the far side of the field and is only visible through gaps in the internal hedge and tree cover.

Predicted Changes To The View Without Mitigation

- 5.131 It will be possible to glimpse panels in the far fields through gaps in the hedgerow. Users of PRoW 5/16 and 5/22 which cross the field in the foreground will also afford glimpsed views of the panels.
- 5.132 The sensitivity of the viewer is High and the magnitude of change Low in summer and Medium in winter. This will result in a Moderate adverse effect in both summer and winter.

Proposed Mitigation And Residual Effect

- 5.133 It is proposed to plant a native trees on the far side of the existing hedge to close up the gaps. Once established the trees will form an effective screen in summer, but it will still be possible to see areas of panels through the leafless branches in winter.
- 5.134 The residual effect to users of the lane will be Negligible in summer and Minor adverse in winter. To users of the PRoW which cross the fields the effect will be Negligible in summer and Moderate adverse in winter.

View 8: PRoW 5/21 as it leaves the edge of Berden

The Existing View

- 5.135 The village of Berden benefits from substantial tree and hedge cover within and on the edge of the village and so there are no views of the Site from within the village. Originally the proposed development included panels adjacent to the woodland but due to the discovery of evidence of the buried remains of a Ring Fort, this area has been taken out of the application. The woodland and hedgerows screen the majority of the Site from view. Views are limited to a low part of the hedge.

Predicted Changes To The View Without Mitigation

- 5.136 In summer it will be possible to glimpse a very small area of panels where there is a low part of the hedge, but it will be barely perceptible. In winter it will be possible to glimpse some of the panels through the leafless branches.
- 5.137 The sensitivity of walkers is High and the magnitude of change Negligible in summer and Low in winter, resulting in a Negligible adverse effect on visual amenity in summer and Minor adverse in winter.

Proposed Mitigation And Residual Effect

- 5.138 It is proposed to plant a native hedge either side of the PRoW which will, once established, screen the panels in the far field from view. The density of branch structure should be sufficient to screen the panels in winter. The residual effect on the visual amenity of walkers on this stretch of the PRoW will be Negligible, in winter and summer.

View 9: Footway adjacent to dwellings at Benskins Close, on the western edge of Berden

The Existing View

- 5.139 The dwellings are single storey and views are limited from within by garden vegetation. The environs afford limited views over the open countryside and the Site. The upper section of the Pelham Substation is visible and the transmission lines which radiate from it. The recently built battery storage facility is also visible, although this will eventually be screened by landscaping.

Predicted Changes To The View Without Mitigation

- 5.140 The proposed solar farm occupies the part of the field which lies to the west of the properties but will stop short of the area of field in front of the properties to maintain their rural outlook. A hedge has recently been planted along the Stocking Pelham road (the rabbit guards are just visible in the photograph), and this will screen the remainder of the proposed development from view in summer. In winter it may be possible to glimpse areas of panels through the leafless branches, sensitivity is High and the magnitude of change Low, resulting in an adverse effect of Moderate significance.

Proposed Mitigation And Residual Effect

- 5.141 A native species hedge will be planted along the eastern boundary of the solar farm to act as a second layer of screening to the hedge recently planted along the road. The first hectare of the field beyond the road edge will be planted up with native trees to form a community woodland. It will include some standard trees for early screening. The permissive footpath will access the wood from the highway and then pass run along the inside of the hedge, paralleling the road to Stocking Pelham. Once established there will be a Negligible impact on visual amenity, in summer or winter. The planting will beneficially screen the line of transmission towers on the skyline.

View 10: The Pelham Road where it is met by PRow 5/62, also the location of the existing farm access

The Existing View

- 5.142 To those travelling along the Pelham Road, views of the Site are partially restricted by roadside vegetation and a slight bank. But gaps do allow some views to travellers. The landowner has recently planted a hedge alongside the road, which once established will block views of the Site in summer and only allow glimpsed views in winter.

Predicted Changes To The View Without Mitigation

- 5.143 The existing farm access will be retained for agricultural use by the landowner, but it will be upgraded to form the main point of access to the solar farm. The gate will be set 17m back from the edge of carriageway to allow an HGV to turn in without waiting for the gate to be opened. This 17m section will have a tarmac or concrete surface. Agricultural vehicles will head east on entering the Site and run parallel to the Pelham Road until the open, undeveloped part of the field is reached. A 10 m wide grass corridor will be retained for this purpose (and does not form part of the Site). The deer fencing, forming the northern edge of the solar farm, will be set around 32 m back from the edge of the Pelham Road, with the panels between 5 m and 20 m beyond. Construction and maintenance traffic for the solar farm will turn west on passing through the deer fencing.
- 5.144 Once the recently planted hedge along the road has established it will only be possible to see the solar farm in summer through the remodelled entrance. In winter it will be possible to glimpse the rear edges of the panels through the leafless branches. Sensitivity of road users is Medium and the magnitude of change in summer will be Low and Medium in winter, resulting in a Minor adverse effect in summer and Moderate in winter.

Proposed Mitigation And Residual Effect

- 5.145 It is proposed to plant a block of woodland in front of the deer proof fence. This will add a second layer of screening to road users which should effectively screen the solar panels from view in winter and summer. The entrance gate has been offset so that the view through the agricultural entrance will be blocked by the proposed hedge.
- 5.146 As a result, the effect on the visual amenity of road users will be Minor adverse in summer and winter (primarily due to the widened access rather than the solar array).

View 11: The Pelham Road east of View 10

The Existing View

- 5.147 This view illustrates another long gap in the existing hedgerow cover along the Pelham Road, allowing views into the Site. The landowner has planted a hedge along the road and once this has established it will screen the Site from view in summer and only allow glimpsed views through the leafless branches in winter.

Predicted Changes To The View Without Mitigation

- 5.148 The deer fence along the norther boundary will be set between 25m and 55m from the edge of the highway, but until the planted hedge has established, will be visible, with the panels behind. The sensitivity of road users is Medium, and the visual effect will be Medium, resulting in a Moderate adverse effect on visual amenity in summer and winter, declining to Negligible in summer and Minor adverse in winter once the existing hedge has established.

Proposed Mitigation And Residual Effect

- 5.149 It is proposed to plant the space between the deer fence and the hedge alongside the road with woodland planting. This will ensure that the solar farm will be fully screened from view in winter and summer. The residual effect on the visual amenity of road users will be Negligible, winter and summer.

View 12: The start of PRow 5/26 as it heads north from the Pelham Road

The Existing View

- 5.150 The footpath runs along the west side of the hedge, through the Site. Currently it is a rural outlook but is substantially adversely influenced by the electrical infrastructure which is clearly visible on the skyline.

Predicted Changes To The View Without Mitigation

- 5.151 A deer fence will be erected 15 m from the existing hedge, with the solar panels visible behind. Panels will also be erected on the east side of the hedge, but this broadens out into a 30 m wide block of woodland which will screen the panels from view. The sensitivity of walkers is High and the magnitude of change High, resulting in an adverse effect of Major significance.

Proposed Mitigation And Residual Effect

- 5.152 It is proposed to plant a native species hedge in front of the deer fence which, once established at a height of 2.5 m, will screen the proposed solar farm from view in summer, with glimpsed views through the leafless branches in winter. The magnitude of change will reduce to Low in summer and Medium in winter, resulting in a Moderate residual effect in summer and Moderate-Major adverse in winter.

View 13: From Crabb's Lane on the eastern side of Stocking Pelham

The Existing View

- 5.153 This view has been chosen to illustrate the lack of visibility between the village of Stocking Pelham and the Site. Views towards the Site are only possible from the few field gateways, but views of the Site are blocked by intervening tree and hedge cover, even in winter. Planning application 3/22/0806/FUL Stocking Pelham BESS is awaiting determination and will occupy the field to the south of this field (right). It comprises an acoustic barn housing inverters and external batteries.

Predicted Changes To The View Without Mitigation

- 5.154 The Proposed Development will be screened from view. There will be no visual effect to users of the lane or from within the properties along the lane. There will be no cumulative visual effect with the proposed BESS because it will not be possible to see the proposed solar farm.
- 5.155 The sensitivity of the viewer is High and the magnitude of change No change, resulting in no visual effect.

Proposed Mitigation And Residual Effect

- 5.156 A hedge will be planted along the west side of the solar farm, ensuring that it remains fully screened for the long term and in the control of the applicant.

View 14: PRoW 5/29 which crosses slightly elevated ground south of the Site

The Existing View

- 5.157 This PRoW crosses open elevated ground on the far side of the valley that lies to the north of the Site. The Site is visible through the gaps in the intervening hedges, although the view is marred by the overhead transmission lines which occupy the skyline. The battery storage facility can be glimpsed just beyond the southwest corner of the Site, seen set against the backdrop of the Pelham substation.

Predicted Changes To The View Without Mitigation

- 5.158 The panels will be visible between the gaps in the vegetation but will be seen from the rear where they will appear less prominent. The sensitivity of the viewer is High and the magnitude of change Medium, in summer and winter, resulting in an adverse effect of Moderate – Major significance, summer and winter

Proposed Mitigation And Residual Effect

- 5.159 It is proposed to plant a block of woodland along the northern edge of the solar farm, up to 50m in width. This will eventually screen the solar farm from view, but it may take 10 – 15 years to do so fully.
- 5.160 Once effective the residual effect on visual amenity will be Negligible in summer and winter.

View 15: Chalk Lane) (BOAT, 10/50), a distant view northeast of the Site

The Existing View

- 5.161 This is one of the few publicly accessible views from the landscape to the northeast of the Site. The majority of Chalk Lane runs between two hedge banks, preventing views over the wider landscape, but a short section at this location crosses elevated open ground before soon dropping down into a valley where views are lost. The Site is visible as a thin sliver on the horizon, but the horizon and view is dominated by the electrical infrastructure which radiates from the substation.

Predicted Changes To The View Without Mitigation

- 5.162 The panels will be visible as a thin sliver in the distance but seen from the rear they will appear as a dull grey tone and will not be particularly prominent.
- 5.163 The sensitivity of the viewer is High and the magnitude of change Low resulting in a Minor adverse visual effect.

Proposed Mitigation And Residual Effect

- 5.164 All of the proposed tree and hedge planting will reduce the visual effect of the Proposed Development, but particularly the woodland planting along the northern edge, which will eventually almost screen it entirely from view. The residual effect once the woodland has established will be Negligible, but it will take 10 – 15 years to achieve this.

Visual Effects to Nearby Residents

- 5.165 The majority of the proposed solar farm will not be visible from residential properties, primarily due to the high level of tree and hedge cover within Stocking Pelham and Berden. The only properties that may be affected are four bungalows at the entrance to Benskins Close and Mayberry, which lies on The Street. The eastern extent of the panels has been purposefully limited so that they do not extend in front of the properties at Benskins Close. A native hedge has already been planted on the opposite side of the road to these properties, which will significantly block views within 5 years. This will be augmented by the planting of a community woodland behind it. Since the bungalows do not afford elevated views from upper windows the mitigation should form an effective screen within 5-7 years.
- 5.166 Panels have now been removed from the nearest eastern field to Mayberry on The Street. Ground floor views and views from the garden will be screened by an existing evergreen garden hedge. The closest panels will be 465m away, but will lie behind a block of woodland and will only be barely visible through the leafless branches in winter. The sensitivity of the viewer is High and the magnitude of change Negligible resulting in a Negligible adverse effect on visual amenity, winter and summer. It is proposed to plant native trees along the eastern edge of the solar farm to reinforce the eastern boundary and provide an additional level of screening.
- 5.167 It is concluded that the proposed solar farm will have no effects of significance on the visual amenity of residents.

Summary Of Visual Effects

- 5.168 Table 5.10 summaries the predicted levels of visual effect before and after mitigation. Major effects which might cause concern are highlighted in red, although these are experienced by people walking along the public footpaths which pass through the proposed solar farm and so major adverse effects are to be expected. The proposed mitigating hedge planting will typically reduce these effects to moderate adverse (orange shading) in winter and minor adverse (green shading) in summer (the latter based on the fact that while the hedges will screen the panels from view, there will be a loss of openness).
- 5.169 The proposed solar farm will not result in any significant adverse effects on the visual amenity of residents since no properties are close to or will significantly overlook the proposed solar farm and any views will eventually be screened by the hedge planting.
- 5.170 The most significant views will be afforded to those travelling along the Pelham Road (Ginns Road) as it passes the Site and walkers crossing the high ground to the north. A hedge has recently been planted along the Pelham Road which will substantially screen any views of the panels from the road (within 5 years), and this will be augmented with linear blocks of woodland. This woodland will eventually screen the proposed development from the high ground to the north, although it will take 15+ years to be fully effective.
- 5.171 The proposed development will be partially visible from a small area of countryside to the northeast in the vicinity of Chalk Pitt Lane and Drover Lane but will be seen as a thin sliver of grey within a wide panorama with the existing transmission lines and substation forming a skyline backdrop.
- 5.172 It is concluded that the proposed development will not be particularly visible from the wider landscape and that these effects can be adequately mitigated. The only significant visual effects

will be confined to those using the PRoW network that passes through the proposed development. The likely extent of countryside from where the Proposed Development is likely to be visible is summarised on Figure 5.10.

Table 5.10: Summary of Visual Effects

Viewpoint	Location	Visual receptors	Visual effect with no mitigation	Mitigation and visual effect once mitigation effective
View 1: The Pelham Road as it heads east out of Stocking Pelham	<p>Direction of View: East</p> <p>Distance to nearest site boundary: 32 m</p> <p>Elevation: 114 m AOD</p> <p>Grid reference: TL 45676 29421</p>	Users of the road	Minor adverse in summer and Moderate adverse in winter	<p>Woodland and hedge planting</p> <p>Negligible in summer, Minor adverse in winter</p>
View 2: PRoW 5/27 as it heads north along the access drive to the Pelham Substation	<p>Direction of view: Northeast</p> <p>Distance to nearest site boundary: 5 m</p> <p>Elevation: 124 m AOD</p> <p>Grid reference: TL 45708 29178</p>	Walkers and workers accessing the substation	<p>Moderate-Major adverse effect in summer</p> <p>Major adverse in winter</p>	<p>Hedge planting</p> <p>Negligible in summer</p> <p>Minor adverse in winter</p>
View 3: PRoW 5/26 as it heads north towards the Pelham Road	<p>Direction of view: North</p> <p>Distance to nearest site boundary: Within the Site</p> <p>Elevation: 126 AOD</p> <p>Grid reference: TL 46113 28652</p>	Walkers	Major adverse summer and winter	<p>Hedge planting</p> <p>Minor adverse in summer</p> <p>Moderate-Major adverse in winter</p>
View 4: From PRoW 5/22	<p>Direction of view: Northwest</p> <p>Distance to nearest site boundary: 118 m</p> <p>Elevation: 122 m AOD</p> <p>Grid reference: TL 46520 28716</p>	Walkers and adjacent residential property at the base of the water tower.	Moderate adverse winter and summer	<p>Tree and hedge planting</p> <p>Negligible</p>
View 5: PRoW 5/21 as it passes through the Site	<p>Direction of view: West</p> <p>Distance to the site: Within the Site</p> <p>Elevation: 111 m AOD</p> <p>Grid reference: TL 46174 29182</p>	Walkers	Major adverse winter and summer	<p>Hedge planting</p> <p>Minor adverse in summer</p> <p>Moderate to Major adverse in winter</p>

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Viewpoint	Location	Visual receptors	Visual effect with no mitigation	Mitigation and visual effect once mitigation effective
View 6: Field Gate on The Street by Easingwell Pond	<p>Direction of view: West</p> <p>Distance to the site: 250 m</p> <p>Elevation: 108 m AOD</p> <p>Grid reference: TL 46842 29212</p>	Users of the lane, including walkers	Moderate adverse in summer and winter.	<p>Hedge planting</p> <p>Negligible in summer</p> <p>Minor adverse in winter</p>
View 7: The southern end of The Street near the Crump (SAM) and a residential property	<p>Direction of view: West</p> <p>Distance to nearest site boundary: 354 m</p> <p>Elevation: 120 m AOD</p> <p>Grid reference: TL 46919 28893</p>	Users of the lane including walkers and residents	Moderate adverse winter and summer	<p>Hedge planting</p> <p>Negligible in summer</p> <p>Minor adverse in winter</p>
View 8: PRow 5/21 as it leaves the edge of Berden	<p>Direction of view: Southwest</p> <p>Distance to the site: 245 m</p> <p>Elevation: 104 m AOD</p> <p>Grid reference: TL 46766 29363</p>	Walkers	Negligible in summer, Minor adverse in winter	<p>Hedge planting</p> <p>Negligible in winter and summer</p>
View 9: Footway adjacent to dwellings at Benskins, on the western edge of Berden	<p>Direction of view: South</p> <p>Distance to nearest site boundary: 48 m</p> <p>Elevation: 113 m AOD</p> <p>Grid reference: TL 46430 29747</p>	<p>Residents of single storey dwellings</p> <p>Road and footpath users</p>	Moderate adverse	<p>Woodland and hedge planting</p> <p>Negligible in winter and summer</p>
View 10: The Pelham Road where it is met by PRow 5/62, also the location of the existing farm access	<p>Direction of view: Southeast</p> <p>Distance to nearest site boundary: 11 m</p> <p>Elevation: 114 m AOD</p> <p>Grid reference: TL 46172 29672</p>	Walkers, and road users	<p>Minor adverse in summer</p> <p>Moderate adverse in winter</p>	<p>Hedge planting</p> <p>Negligible in summer</p> <p>Minor adverse in winter</p>
View 11: The Pelham Road east of View 10.	<p>Direction of view: Southwest</p>	Road users	Moderate adverse in summer and winter	Negligible in summer and winter

Viewpoint	Location	Visual receptors	Visual effect with no mitigation	Mitigation and visual effect once mitigation effective
	<p>Distance to nearest site boundary: 11 m</p> <p>Elevation: 112 m AOD</p> <p>Grid reference: TL 45913 29565</p>			
View 12: The start of PRoW 5/26 as it heads north from the Pelham Road.	<p>Direction of view: North</p> <p>Distance to nearest site boundary: Within the site.</p> <p>Elevation: 113 m AOD</p> <p>Grid reference: TL 45994 29582</p>	Walkers	Major adverse summer and winter	<p>Hedge planting</p> <p>Moderate adverse in summer</p> <p>Moderate-Major adverse in winter</p>
View 13: From Crabb's Lane on the eastern side of Stocking Pelham	<p>Direction of view: East</p> <p>Distance to nearest site boundary: 180 m</p> <p>Elevation: 128 m AOD</p> <p>Grid reference: TL 45548 28973</p>	Lane users	No effect	No effect
View 14: PRoW 5/29 which crosses slightly elevated ground south of the Site	<p>Direction of view: south</p> <p>Distance to nearest site boundary: 432 m</p> <p>Elevation: 116 m AOD</p> <p>Grid reference: TL 45761 29946</p>	Walkers	Moderate - Major in summer and winter	<p>Woodland and hedgerow planting</p> <p>Negligible in summer and winter</p>
View 15: Chalk Lane (Byway Open to All Traffic, 10/50), a distant view northeast of the Site.	<p>Direction of view: East</p> <p>Distance to nearest site boundary: 2.7 km</p> <p>Elevation: 108 m AOD</p> <p>Grid reference: TL 48552 31349</p>	Walkers	Minor adverse, summer and winter	<p>Woodland planting</p> <p>Minor/Negligible</p>

Future Monitoring

5.173 A Landscape and Ecological Management Plan (LEMP) has been prepared for the proposed development and is appended to this ES at Appendix 5.3. It sets out how the landscape will be managed to achieve landscape and ecological objectives and how progress will be monitored.

There is provision for the management tasks to be reviewed and changed in order to better meet the set objectives. The landscape planting should be monitored in accordance with good practice and at least for the five years after planting to ensure that any stock that dies or becomes diseased or damaged is replaced and the planting not only establishes but grows well to provide the necessary level of screening. The planting shall be monitored for excessive grazing by deer which limits the ability of the planting to achieve its screening potential.

Accidents and/or Disasters

- 5.174 Those maintaining the planted trees and shrubs shall undertake the work in accordance with the health and safety laws and guidance associated with the profession and so the chances of accidents should be negligible. One of the main risks is excavation of buried electrical cables when excavating tree planting holes. The Landscape contractor should be briefed on cable runs and be given an as built plan which locates the location of the runs and their depths. If necessary, the landscape contractor shall employ the use of a cable detector prior to undertaking excavating at each location.

Further Mitigation

- 5.175 The proposed mitigation will establish a robust landscape framework and so further mitigation is unlikely to be required in the future.

Potential Changes to the Assessment as a Result of Climate Change

- 5.176 Climate change is causing extreme weather events in the UK, including drought and more powerful gales which is increasingly adversely affecting tree cover as trees are weakened by drought or damaged by gales. Conversely the growth rates of some tree species such as poplar and willow are enhanced by increased CO₂ levels and a longer growing season. The Site is sufficiently elevated that it should not be affected by greater and more frequent flood events. Climate change may result in a change to the traditional types of crops being grown in the area.

Lighting Effects

- 5.177 No lighting is proposed as part of the development apart from emergency bulkhead safety lighting to some of the infrastructure (see paragraph 2.47) which will only be used on the rare occasions the facility might need a maintenance visit outside of daylight hours. The CCTV security system works on infrared technology.

Assessment of Cumulative Effects

- 5.178 Three potential solar farms are currently proposed in addition to this application and are at various stages through the planning process and so may or may not be realised as schemes. Nevertheless, the potential cumulative effect of the schemes is assessed. The schemes are:
- UTT/21/3356/FUL - Land Near Pelham Substation Maggots End Road Manuden (consent currently refused);
 - UTT/21/0688/FUL- Land At, Cole End Farm Lane, Wimbish (awaiting determination), and
 - UTT/21/2846/FUL- Chesterford Park, Little Chesterford, Essex (awaiting determination).
- 5.179 The Cole End Farm site lies 12.6 km to the northeast of Stocking Pelham and the Chesterford Business Park lies 14.39 km to the northeast. There is no intervisibility between these proposals and this Proposed Development. None of the proposals are visible from the major road network and so there will be no sequential cumulative effects as people travel through the surrounding landscape. The schemes are also sufficiently distant from Stocking Pelham that there will be no

perceived cumulative effects on landscape character. It is concluded that there will be no landscape or visual cumulative effects arising from these two proposals, should they and this Proposed Development be built out.

- 5.180 One Battery Electricity Storage Scheme (BESS) is proposed:
3/22/0806/FUL Stocking Pelham BESS, East Herts District Council, Battery storage system adjacent to the Site.
- 5.181 No other large scale industrial or infrastructure developments have been identified in the locality.

Visual Cumulative Effects

Direct Cumulative Visual Effects

- 5.182 This scheme at Maggots End Road lies just 478 m east of the Site at its closest, but the majority of this solar farm lies to the south of the Site. Its extent and its relationship with this Proposed Development is illustrated on Figure 5.9.
- 5.183 Overall, there will be no direct intervisibility between the two schemes because the Maggots End Road scheme will occupy a gentle south facing slope, while the Proposed Development will occupy a gentle north facing slope, with a strong band of tree and hedge cover running along the ridge between the two.
- 5.184 The only location where there may be some potential in direct inter-visibility between the two schemes is at Viewpoint 7 within this ES (Viewpoint 8 within the Pelham Spring Solar Farm Landscape and Visual Effect Assessment, Pegasus 2021). The viewer would have to look in opposite directions to see the two proposed solar farms and both views would be through gaps in the roadside hedge with each solar farm largely screened by intervening hedgerows. The Pegasus report assess the visual effect of the Maggots End Road scheme from this location as Minor adverse declining to Negligible once mitigation is effective. This ES chapter assesses the visual effect of the Proposed development to be Moderate adverse declining to Negligible in summer and Minor adverse in winter. Therefore, it is concluded that the overall indirect cumulative effect will be Negligible.

Sequential Cumulative Effects

- 5.185 There will be some sequential cumulative visual effects as people move through the landscape by roads and PRow. The only road where such effects will be experienced is from The Street as it continues south to a small hamlet at Brick House End, which is a no through road and so traffic use is very low. Users will only be able to glimpse the two solar farms from very few locations and both will be separated by intervening countryside. It is concluded that the sequential visual effects to road users will be Negligible.
- 5.186 There will be more significant effects to users of the PRow network. The PRow network in the area is extensive and certain stretches pass through both proposed solar farms. It is likely that approximately three square kilometres of the countryside through which the network passes will be visually influenced by the proposed solar farms without mitigation. Once the mitigation proposed for both schemes is effective, in summer the cumulative effect will be at worst Minor adverse, mainly due to a loss in openness within the landscape as the screening mitigation blocks views. In winter there will be a greater perception of the solar farms beyond the leafless hedges and so there will be a Moderate adverse cumulative effect.
- 5.187 The battery electrical storage system proposed adjacent to the Site is awaiting determination. It will occupy a field on the west side of the access road to the existing Pelham Substation, separated from the Site and track by a mature hedge which includes trees. The batteries will be housed in containers within a gravelled surface, but the inverters will be housed in a 6 metre high steel frame barn with metal cladding. In summer the existing vegetation is likely to screen the

proposed development from the land to the east, which would be occupied by the proposed solar farm, but in winter it will be possible to glimpse the barn through the leafless branches, particularly when passing along the PRow which runs up the access road. This will result in a visual adverse cumulative impact as walkers will pass between two, partially screened fields containing electrical infrastructure.

- 5.188 The landscape strategy for the Stocking Pelham BESS proposed planting a 5 m wide landscape buffer on the west side to reinforce the hedgerow along the Pelham Substation access track. This will, once established, screen the BESS from the PRow. At the same time, similar planting associated with the Proposed Development will screen the proposed solar farm from view. Once the mitigation proposed for both schemes is effective, in summer the cumulative effect will be Negligible, mainly due to a loss in openness within the landscape as the screening mitigation blocks views. In winter there will be a greater perception of the infrastructure beyond the leafless hedges and so there will be a Minor adverse cumulative effect.

Landscape Cumulative Effects

- 5.189 The three developments, this application, the Maggots End Solar Farm and the Stocking Pelham BESS if consented, would increase the amount of electrical infrastructure within the locality, increasing the perception that the landscape is adversely dominated by electrical infrastructure due to the substation and recent battery storage facility. The driver for this is the proximity to the existing substation, which has already had an adverse effect on landscape character. The aggregation of electrical infrastructure around existing substations is a trend occurring throughout the UK with solar and battery storage schemes dominating the trend, with often multiple schemes around each substation. There is a benefit to this in that it concentrates such infrastructure within one area which is already affected by electrical infrastructure, taking the pressure off more pristine landscapes. The substations and the transmission lines that radiate from them are a national infrastructure asset and concentrating new infrastructure around such assets makes maximum use of it; an important consideration in relation to climate change.
- 5.190 Therefore, while the proposed development will have an adverse cumulative effect on the local landscape this must be weighed against wider landscape, infrastructure and climate change benefits.

Inter-relationships

- 5.191 The landscape and visual effects of the solar farm may affect the setting of heritage assets in the vicinity. This is assessed in Chapter 6. The certain aspects of the proposed mitigation are designed to ensure that the setting of heritage assets will not be adversely affected. Photomontages have been prepared to illustrate the relationship of the solar farm with key heritage assets and these are presented in Appendix 5.2.

Decommissioning

- 5.192 At the end of its operational life or as set by a planning condition, the solar farm will be removed including all fencing, piles and underground cabling and the access tracks (apart from those that will assist in the ongoing agricultural management of the land). The substation and inverters will be removed, and the land returned to agriculture. The trees, hedges and woodland planted as part of the development will be retained, forming a beneficial long-term legacy, enhancing landscape character, sequestering carbon and increasing ecological biodiversity.

Summary of Effects

- 5.193 A summary of the likely landscape and visual effects is set out in Table 5.11. It is concluded that while the Proposed Development will result in some adverse landscape and visual effects the

significant effects will be confined to a relatively small area of countryside which is already significantly influenced by electrical infrastructure. Once mitigation is effective the effect to the majority of receptors will be either Negligible or Minor with only those using the footpaths which pass through the proposed solar farm experiencing Moderate adverse effects, largely due to winter views and the loss of the open character along the routes. While the effects will last for the operational life of the solar farm, they will be temporary, with the benefit of a legacy of increased tree and hedge cover across the Site.

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Table 5.11: Summary of Likely Landscape and Visual Effects

Receptor	Sensitivity of receptor	Description of impact	Duration / medium / long term	Magnitude of impact	Significance of effect	Beneficial / Not significant	Notes
Construction phase							
Topography	High	Changes to ground levels	Long term	Negligible	Negligible	Not significant	
Trees and hedges	High	Loss of trees and hedges	Long term	Negligible	Negligible	Not significant	
Landscape character of the Site	Medium	From farmland to construction site	Short term	High	Moderate-Major adverse	Significant	
Landscape character of the surrounding area	Medium	Change in the perception of the setting/area	Short term	Low	Minor adverse	Not significant	
Visual amenity walkers	Medium to High	Visibility of visually detracting features	Short term	High	Moderate to Major	Significant	Only for those PRoW which pass through the proposed solar farm.
Visual amenity residents	High	Visibility of visually detracting features	Short term	Overall Low	Minor adverse	Not significant	Primarily a few properties at Benskins Close and Mayberry on The Street
Visual amenity others	Medium	Visibility of visually detracting features	Short term	Medium	Moderate adverse	Not significant	
Operational phase							
Topography	High	Changes to ground level	Long term	Negligible	Negligible	Not significant	
Trees and hedges	Medium	Change to tree and hedge cover	Long term	Medium	Moderate beneficial	Not significant	Substantial tree and hedge planting
Landscape character of the Site	Medium	From farmland to a solar farm	Long term	High	Moderate -Major adverse	Significant	
Landscape character of the surrounding area	Medium	Change in the perception of the setting/area	Long term	Low	Minor adverse	Not significant	

BERDEN HALL FARM SOLAR FARM

Receptor	Sensitivity of receptor	Description of impact	medium / long term	Magnitude of impact	Significance of effect	significant / Not significant	Notes
Visual amenity walkers	Medium - High	Visibility of visually detracting features	Long term	High	Moderate to Major adverse	Significant	Mitigated by tree and hedge planting
Visual amenity residents	High	Visibility of visually detracting features	Long term	Overall Low	Minor adverse	Not significant	Mitigated by tree and hedge planting
Visual amenity others	Medium	Visibility of visually detracting features	Long term	Medium	Medium	Not significant	Mitigated by tree and hedge planting
Cumulative effects on landscape character	Medium	Perception of a change in character	Long term	Low	Minor adverse	Not significant	Mitigated by tree and hedge planting
Cumulative direct effects on visual amenity	Medium	Visibility of visually detracting features	Long term	Low	Minor adverse	Not significant	Mitigated by tree and hedge planting
Cumulative sequential effects on visual amenity	Medium	Visibility of visually detracting features when passing through a landscape	Long term	Low	Minor adverse	Not significant	Mitigated by tree and hedge planting

References

Ministry of Housing, Communities and Local Government (2021) National Planning Policy Framework

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf

The Landscape Institute and the Institute of Environmental Management and Assessment (2013) Guidelines for Landscape and Visual Impact Assessment 3rd Edition.

Uttlesford Local Plan 2005 <https://www.uttlesford.gov.uk/local-plan-2005>

Natural Character Area Profiles, Natural England



6 HERITAGE

Introduction

- 6.1 This chapter includes an assessment of significant effects from the Proposed Development on the sensitivity / value of known or potential heritage assets, and recommendations for mitigation, if deemed necessary after assessment of the effect of proposals.

Assessment Methodology

Legislative Context

- 6.2 The legislative context is set out in detail in **Appendix 1.6**. It considers:
- The Ancient Monuments and Archaeological Areas Act (1979) amended by the National Heritage Act (1983) and the National Heritage Act (2002);
 - The Planning (Listed Buildings and Conservation Areas) Act 1990; and
 - The Town and County Planning Act 1990.

Planning Policy Context

- 6.3 The planning policy context is also detailed in **Appendix 1.6**, and considers:
- The National Planning Policy Framework (NPPF; July 2021); and
 - The Uttlesford Local Plan (adopted in January 2005. In December 2007 all policies were saved and then resaved in 2012.).
 - ENV 2 – Development Affecting Listed Buildings
 - ENV 4 – Ancient Monuments and Sites of Archaeological Importance
 - ENV 9 - Historic Landscapes

Relevant Guidance

- 6.4 Relevant Guidance summarised in greater detail in **Appendix 1.6** and includes consideration of:
- Planning Practice Guidance - Conserving and enhancing the historic environment - last updated in February 2018 (PPG, ID:18a);
 - Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment (EH, 2008);
 - Historic Environment Good Practice Advice in Planning Note 3: The Setting of Heritage Assets (2nd edition, December 2017);
 - Guidelines for Landscape and Visual Impact Assessment (3rd Edition, Landscape Institute, 2013);
 - Historic England, February 2021. Advice Note 15: Commercial renewable energy development and the historic environment;
 - Chartered Institute for Archaeologists, January 2017. Standard and Guidance for Historic Desk-based Assessments, and
 - Medlycott, L. 2011. East of England Regional Research Framework.

Study Area

- 6.5 A study area of 1 km radius from the Proposed Development boundary was agreed in consultation with the Historic Environment Records (as held by The Essex and Hertfordshire County Councils), and by reference to the Zone of Theoretical Visibility (see **Chapter 5**).

Baseline Methodology

- 6.6 Data regarding known heritage assets (designated and undesignated) have been sought from a number of sources, including the Essex and Hertfordshire Historic Environment Records (HER), and the National Heritage List for England (maintained by Historic England). The Environment Agency LiDAR dataset (1 m DTM) was also consulted. The baseline also includes information from non-intrusive geophysical survey and aerial photography analysis.
- 6.7 Site visits were undertaken in February and May 2021 in order to check for the presence of heritage assets within the proposal site that have not been previously recorded and to examine the settings of heritage assets considered within this Heritage Statement.
- 6.8 The overall aim of the methodology is to ensure compliance with paragraph 194 of the NPPF, i.e. to describe the significance of any heritage assets affected by the proposed development, including any contribution made by their setting, as well as considering the potential for any as yet to be discovered archaeological evidence on the Site. Further detail is provided in the **Heritage Statement** and **Addendum** which form **Appendices 1.6** and **6.1** to this chapter.

Consultation

- 6.9 A summary of all consultation is provided in the table below.

Table 6.1: Consultation Responses Relevant to this Chapter

Date	Consultee and Issues Raised	How/ Where Addressed
9 th August 2022	Specialist Archaeological Advice by Place Services to UDC. The following recommendation for approval subject to planning condition was made, in line with the National Planning Policy Framework: “RECOMMENDATION: An Archaeological Programme of Trial Trenching followed by Open Area Excavation”	RPS consulted with Place Services directly on the required scope of the initial trial trench evaluation, and an Outline Written Scheme of Investigation is included in Appendix 6.2 .
11 th August 2022	Historic Buildings and Conservation Advice by Place Services to UDC Brief outline of the comments they made: The proposals are considered to result in a level of less than substantial harm to the setting of the Church of St Nicholas, Berden Hall and the Scheduled Monument, The Crump, Paragraph 202 of the NPPF being relevant.	Harm is towards the lowest end of the scale, and should be weighed against the public benefits of the proposal.
26 th August 2022	Historic England’s (HE) Advice to the Planning Inspectorate - brief outline of	

Date	Consultee and Issues Raised	How/ Where Addressed
	<p>the comments made regarding Archaeology:</p> <p>HE objected to the application on heritage grounds originally submitted.</p> <ol style="list-style-type: none"> <li data-bbox="603 488 1027 954">1. The main concerns were the impact of the scheme on the historic environment and consider it would result in harm to a scheduled monument ("The Crump"); harm to a nondesignated heritage asset of potentially equivalent significance as a scheduled monument ("The Rookery"); lack of specific assessment of the east-to-west section of road between Berden and Little London, to the east of the proposed development, a protected lane (ref. UTTLANE32), identified as part of the local historic landscape. <li data-bbox="603 990 1027 1124">2. HE recommended the applicant is asked to reconsider certain aspects of the proposed development in relation to the historic environment. <li data-bbox="603 1160 1027 1326">3. HE recommended that additional heritage viewpoints are provided to illustrate the application and provide critical assessment of the impact upon the significance of the highly-graded heritage assets. <li data-bbox="603 1361 1027 1608">4. HE also recommended the cumulative impact should be assessed further in terms of the impact on The Crump scheduled monument, given the scale of the proposed development and the scale of the proposed solar farm at Maggots End Road, to the south of "The Crump". 	<ol style="list-style-type: none"> <li data-bbox="1050 488 1452 542">1. Additional Assessment presented in Appendix 6.1. <li data-bbox="1050 1003 1452 1093">2. Site boundary revised to exclude field with "The Rookery" entirely from proposals. <li data-bbox="1050 1182 1452 1236">3. Additional Assessment presented in Appendix 6.1. <li data-bbox="1050 1339 1452 1393">4. This ES chapter assesses cumulative impact.
	<p>Brief outline of the comments they made regarding Built Heritage:</p> <ol style="list-style-type: none"> <li data-bbox="603 1796 1027 1989">5. HE had concerns that the proposed development would result in the erosion of the rural character of several highly-graded listed buildings, including the Church of St Nicholas, Berden Hall and also Berden Priory. 	<p>The Berden Priory Group has been included in the Heritage Statement and the ES chapter will assess the impacts and effects.</p>

Date	Consultee and Issues Raised	How/ Where Addressed
5 th September 2022	<p>UDC's response to the Planning Inspectorate highlighted the location of the Proposed Development in relation to a range of Listed Buildings, including Grade I (Church of St Nicholas), II* (Berden Hall) and several Grade II. The Crump, a 'ringwork' south of Berden, is a Scheduled Ancient Monument and is also in close proximity to the Proposed Development.</p> <p>The Council requested that the Inspector takes into consideration the impact the proposal would have on the setting of these heritage assets and to place importance upon the preservation of these assets, particularly the Scheduled Monument as this feature is of the highest designation and is of national significance.</p>	Additional Assessment presented in Appendix 6.1.

Assessment Criteria and Assignment of Significance

- 6.10 The criteria for determining the significance of effects is a two-stage process that involves defining the sensitivity/value of the receptors and the magnitude of the change from the Proposed Development. This section describes the criteria applied in this chapter to assign values to the sensitivity of receptors and the magnitude of change.
- 6.11 The NPPF defines “significance” in the context of heritage as “The value of a heritage asset to this and future generations because of its heritage interest. This interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset’s physical presence, but also from its setting.”
- 6.12 To assess the sensitivity/value of the receptors, this assessment has drawn guidance from Historic England (2017) which recommends making assessments under the categories of: evidential, historical, aesthetic and communal value. Additionally, Historic England also defines the role of research frameworks in identifying what is significant and providing research questions. The relevant regional research framework for this desk-based assessment is the East of England Regional Research Framework (Medlycott 2011).
- 6.13 The Design Manual for Roads and Bridges (LA 106 - Cultural heritage assessment) sets out the generally accepted methodology for grading the sensitivity / value of heritage assets, which is also replicated by the International Council on Monuments and Sites (ICOMOS, 2011 - see Table 6.2 below), particularly where a desk-based assessment is part of an Environmental Impact Assessment process, as is the case here.
- 6.14 Professional judgement is used in refining the assessment of significance of impacts from the Proposed Development, informed by the results of desk-based assessment and non-intrusive fieldwork.

Receptor Sensitivity/Value

Table 6.2: Example Definitions of Sensitivity or Value

Sensitivity/Value	Typical Descriptors
Very High	<ul style="list-style-type: none"> World Heritage Sites (including nominated sites). Assets of acknowledged international importance including Grade I listed buildings and Grade II* listed buildings of international importance. Assets that can contribute significantly to acknowledged international research objectives.
High	<ul style="list-style-type: none"> Scheduled Monuments (including proposed sites). Grade II* listed buildings if national importance Grade II Listed Buildings and other designated heritage assets such as Conservation Areas and Registered Parks and Gardens. Undesignated assets of schedulable quality and importance. Assets that can contribute significantly to acknowledged national research objectives.
Medium	<ul style="list-style-type: none"> Designated or undesignated assets that contribute to regional research objectives.
Low	<ul style="list-style-type: none"> Designated and undesignated assets of local importance including locally listed buildings. Assets compromised by poor preservation and/or poor survival of contextual associations. Assets of limited value, but with potential to contribute to local research objectives.
Negligible	<ul style="list-style-type: none"> Assets with very little or no surviving historic, architectural or archaeological interest.
Unknown	<ul style="list-style-type: none"> The importance of the resource has not been ascertained.

6.15 In summary, although the assessment of sensitivity / value for heritage assets is based on professional experience, it is guided by agreed definitions and standard methodologies.

6.16 The criteria for defining magnitude of change in this chapter is set out in Table 6.3 below:

Magnitude of Impact

Table 6.3: Example Definitions of Magnitude

Magnitude of Impact	Typical Descriptors
High	<p>Change to most or all key archaeological materials, such that the resource is totally altered. Comprehensive changes to setting (adverse). Substantial harm to a heritage asset.</p> <p>Large scale or major improvement or resource quality; extensive restoration or enhancement; major improvement of attribute quality (beneficial). Significant restoration of a heritage asset.</p>
Medium	<p>Changes to many key archaeological materials, such that the resource is clearly modified. Considerable changes to setting that affect the character of the asset (adverse). A high level of less than substantial harm to a heritage asset.</p> <p>Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality (beneficial). Beneficial restoration of a heritage asset.</p>
Low	<p>Changes to key archaeological materials, such that the asset is slightly altered. Slight changes to setting (adverse). A low level of less than substantial harm to a heritage asset.</p> <p>Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring (beneficial). Minor restoration or preservation of a heritage asset.</p>

Magnitude of Impact	Typical Descriptors
Negligible	Very minor changes to archaeological materials or setting (adverse). Very minor level of less than substantial harm to a heritage asset. Very minor benefit to, or positive addition of one or more characteristics, features or elements (beneficial). Very minor enhancement of a heritage asset.
No change	No loss or alteration or characteristics, features or elements; no observable impact in either direction. No impact on a heritage asset.

Significance of Effects

6.17 The significance of the effect upon heritage assets is determined by correlating the magnitude of impact and the sensitivity/value of the receptor, as set out in Table 6.4 below.

Table 6.4: Assessment Matrix

Sensitivity	Magnitude of Impact				
	No Change	Negligible	Low	Medium	High
Negligible	No change	Negligible	Negligible or Minor	Negligible or Minor	Minor
Low	No change	Negligible or Minor	Negligible or Minor	Minor	Minor or Moderate
Medium	No change	Negligible or Minor	Minor	Moderate	Moderate or Major
High	No change	Minor	Minor or Moderate	Moderate or Major	Major or Substantial
Very high	No change	Minor	Moderate or Major	Major or Substantial	Substantial

6.18 For the purposes of this assessment, any effects with a significance level of minor or less have been concluded to be “not significant” in terms of the EIA Regulations.

6.19 Where the matrix offers more than one significance option, professional judgement should be used to decide which option is most appropriate.

6.20 The broad definitions of the terms used should be in line with the following:

- **Substantial:** Only adverse effects are normally assigned this level of significance. They represent key factors in the decision-making process. These effects are generally, but not exclusively, associated with sites or features of international, national or regional importance that are likely to suffer a most damaging impact and loss of resource integrity. However, a major change in a site or feature of local importance may also enter this category.
- **Major:** These beneficial or adverse effects are considered to be very important considerations and are likely to be material in the decision-making process.
- **Moderate:** These beneficial or adverse effects may be important, but are not likely to be key decision-making factors. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse effect on a particular resource or receptor.
- **Minor:** These beneficial or adverse effects may be raised as local factors. They are unlikely to be critical in the decision-making process, but are important in enhancing the subsequent design of the project.
- **Negligible:** No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

Limitations of the Assessment

- 6.21 In any desk-based assessment a degree of uncertainty is attached to the baseline data sources. This includes:
- The HER can be limited because it often depends on “random” opportunities for research, fieldwork and discovery;
 - Lack of dating evidence for sites;
 - Documentary sources are rare before the medieval period and many historic documents are inherently biased; and
 - The extent of truncation caused by previous development impacts and landscaping works cannot be fully ascertained.
- 6.22 Within these potential limitations, the baseline assessment is considered robust for both Policy compliance and EIA purposes.

Baseline Environment

Built Heritage Assets

- 6.23 The full baseline assessment can be found in Section 3 of the Heritage Statement appended to this document. In summary, the Site does not form part of the settings of the following groups of listed buildings. As Grade II listed buildings, these built heritage assets are considered of **high sensitivity/value**.
- Dewes Green Road Group
 - Rose Lane Cottage (NHLE: 1170320)
 - The Old King’s Head (NHLE: 1112473)
 - Berden Group
 - Martin’s Green (NHLE: 1170281)
 - The Forge Cottage (NHLE: 1322441)
 - White House Farmhouse (NHLE: 1112469)
 - Post Office and Store (NHLE: 1170276)
 - Rose Cottage (NHLE: 1322442)
 - Brick House Lane Group
 - Rose Garth (NHLE: 1322443)
 - Brick House (NHLE: 1170302)
 - Crabb’s Green Group
 - Crabb’s Green Farmhouse (NHLE: 1101863)
 - Barn at Crabb’s Green Farm (NHLE: 1176566)
 - The Cottage (NHLE: 1101862)
 - Crabb’s Green Conservation Area
 - Ginns Road Group
 - Bennills (NHLE: 1101865)
 - Longcroft (NHLE: 1347751)

- Crabb's Lane Group
 - White Hart Farmhouse (NHLE: 1347752)
 - Barn at White Hart Farm (NHLE: 1176596)
 - Silver Birches (NHLE: 1176548)
 - Cockswood Farm (NHLE: 1176585)
- Rectory Group
 - The Old Rectory (NHLE: 1101864)
 - Old Rectory Cottage (NHLE: 1176574)
- Stockings Farmhouse (NHLE: 1347750)
- Berden Priory Group
 - Berden Priory (NHLE: 1112470)
 - Wellhouse and Treadmill to north of Berden Priory (NHLE: 1170289)

6.24 The following heritage assets share a limited degree of intervisibility with the Site and the proposed development has the potential to affect their settings and significance:

- Church of St Nicholas (NHLE: 1170264)
- Berden Hall Group
 - Berden Hall (NHLE: 1112468)
 - Granary North-East of Berden Hall (NHLE: 1306141)
- The Crump and Former Barn (Now Room) Adjoining to North-West (NHLE: 1112471)

Contribution of the Site to the Setting of the Church of St Nicholas (NHLE: 1170264)

6.25 The Church of St Nicholas is a Grade I listed building and as such is considered of **very high sensitivity/value**. The Site comprises the arable land which forms part of the extended setting of the church. Views of the church can be obtained from the northern half of the Site, but from the southern half any potential intervisibility is severed by the mature trees along the western edge of the village. Again, views of the church tower from the northern half of the Site show it within (not rising above) the trees, limiting the prominence of the tower in these views. The Site nevertheless makes a moderately positive contribution to the significance of the church by virtue of its openness and rural character.

Contribution of the Site to the Setting of the Berden Hall Group

6.26 The Site is located west of the hall (which is a Grade II* listed building and therefore of **very high sensitivity/value**), beyond the grassland meadows which are boarded by mature trees. Due to the extent and maturity of this planting, there is no intervisibility between the Hall, its barn (a Grade II listed building of **high sensitivity/value**), and the Site. Historically, the land that forms the Site was in the same ownership as Berden Hall, resulting in an historic connection between the Site and the listed buildings. However, as described above this relationship is not a visual one, and the Site therefore makes a limited contribution to the significance of the Hall and barn by virtue of the historic connection between the two and the retained open character of the Site.

Contribution of the Site to the Setting of The Crump and Former Barn (Now Room) Adjoining to North-West (NHLE: 1112471)

6.27 'The Crump' is a Grade II listed building and as such is of **high sensitivity/value**. The Site forms part of the arable land to the west of The Crump, but the Site boundary has been altered and now

sits some 600m from the crump, following an existing hedged and treed boundary. While previously some limited long distance views of the roof of the property could be obtained from within the Site, these are now largely obscured, preventing any real appreciation of the listed building's architectural interest. There is no known historical or functional association between the Site and The Crump, as such, the Site makes a neutral contribution to the significance of The Crump.

Setting of “The Crump” (Scheduled Monument), “The Rookery” (non-designated), and the historic lane between Berden and Little London (historic landscape)

- 6.28 In accordance with the criteria set out above, “**The Crump**”, a Scheduled Monument, is an asset of **high sensitivity/value**.
- 6.29 Although “**The Rookery**” is a non-designated asset, it was identified in consultation with Historic England as a non-designated heritage asset of potentially equivalent significance as a scheduled monument, and is therefore assessed as also being of **high sensitivity/value**.
- 6.30 The **historic lane** between Berden and Little London highlighted by Historic England as requiring specific attention in terms of historic landscape is an undesignated asset of local importance, and therefore of **low sensitivity/value**.
- 6.31 The Addendum (**Appendix 6.1**) undertakes additional assessment of visualisations also included in **Appendices 5.1** and **5.2** (LVIA chapter). It concludes that whilst the extensive agricultural landscape setting that surrounds these assets (“The Crump” (Scheduled Monument), “The Rookery” (non-designated), and the historic lane between Berden and Little London (historic landscape) makes a positive contribution to their significance, the Proposed Development forms only a small part of this extensive landscape, and in an area where there is already some electrical infrastructure.

Archaeological Deposits

- 6.32 The proposed Development site has potential for archaeological deposits to be present for all periods, and in particular, a high potential for deposits associated with late Iron Age to Roman occupation in the north of the Site, and early Medieval to Medieval and later in the south. The archaeological potential is set out in detail in a Heritage Statement and Addendum prepared for the Site (**Appendices 1.6** and **6.1**), including the results of aerial photography and LiDAR analysis, and a geophysical survey.
- 6.33 Should this potential be confirmed, the deposits associated with late to Iron Age to Roman, and post-Medieval periods in the north of the Site would be of **low sensitivity/value**, and those associated with the early Medieval and Medieval periods in the south would be of **up to medium sensitivity/value**.

Future Baseline Conditions

- 6.34 The 2017 EIA Regulations require consideration of climate change. The Site has been in agricultural (arable) use throughout the twenty-first century, and no significant change is anticipated in the temporary period of up to 40 years the Application relates to, other than the normal effects of ploughing and erosion on below ground archaeological deposits, where they exist.

Mitigation Measures Adopted as Part of the Project

- 6.35 Normal good practice guidance for the control of dust, noise and other pollutants will be adhered to in order to minimise the impact of construction on the historic environment.

- 6.36 The proposed landscape strategy will introduce additional screening around the Site, minimising any visual effects resulting from the project.

Assessment of Construction Effects

Built Heritage Assets

- 6.37 There would be **direct impacts** on the built heritage assets resulting from the construction phase. There may be secondary effects arising from dust and noise pollution, but due to the nature of the proposals this would be limited, and, as set out at 6.35, good practice guidance would be followed to minimise this effect further.
- 6.38 The presence of the solar panels would represent a small change in the extensive agricultural setting of the built heritage assets identified at 6.23 which have a **very high to high sensitivity/value**. This change would have an **indirect, negligible adverse magnitude of impact** resulting in effects of **minor adverse significance**.

Setting of “The Crump” (Scheduled Monument), “The Rookery” (non-designated), and the historic lane between Berden and Little London (historic landscape)

- 6.39 There would be **no direct impact** on “The Crump” (Scheduled Monument of **high sensitivity/value**), “The Rookery” (non-designated asset of **high sensitivity/value**), and the historic lane between Berden and Little London (historic landscape of **low sensitivity/value**).
- 6.40 The presence of the solar panels would represent a relatively small change in the extensive agricultural setting of these archaeological and historic landscape assets.
- 6.41 This change would have an **indirect, low adverse magnitude of impact** on archaeological assets of high and medium sensitivity/value, resulting in **effects of minor adverse significance** on the setting of these assets. In accordance with Local Policy ENV 9, proposals likely to harm historic landscape need to be weighed in the planning balance.
- 6.42 No trees or hedges will need to be removed to build of the solar farm, with the Proposed Development area retaining existing landscape features. The change to the wider landscape would be fully reversible after the 40 year application period.

Archaeological Deposits

- 6.43 Ground intrusive work would be required to accommodate new foundations, services and hard landscaping. This may truncate or completely remove any archaeological deposits of **low** and **medium sensitivity/value**, anticipated to be associated primarily with late Iron Age to Roman occupation in the north of the Site, and early Medieval to Medieval and later in the south, respectively
- 6.44 Given that the areas of impact would only partly remove archaeological deposits where they survive, the **magnitude of impact** would be **direct** and **medium adverse**, resulting in **permanent effects of minor adverse significance** on late Iron Age to Roman and post-Medieval archaeological deposits, and in **permanent effects of up to moderate adverse significance** on early Medieval and Medieval archaeological deposits, should they survive.

Further Mitigation

Built Heritage Assets

- 6.45 No further mitigation is proposed.

Archaeological Deposits

- 6.46 Archaeological deposits are a finite resource. Intrusive archaeological fieldwork is inherently destructive, and therefore not recommended on the scale of the Proposed Development without certainty of planning consent, to ensure deposits are not needlessly destroyed.
- 6.47 RPS consulted with Place Services directly on the required scope of the initial trial trench evaluation, and an Outline Written Scheme of Investigation is included in **Appendix 6.2**. This would be followed by targeted areas of excavation, and / options to avoid or reduce any impact on significant archaeological deposits, should they be present, in line with the guidance provided by Historic England (HE, 2021), and consistent with Local Policy ENV 4.

Future Monitoring

- 6.48 No monitoring is recommended as all impacts are anticipated on installation, and no additional effects are anticipated at the operational stage.

Accidents and/or Disasters

- 6.49 Potential construction accidents / disasters which could affect archaeological deposits within the Site have been considered, and none were found relevant for this assessment.

Assessment of Operational Effects

- 6.50 All impacts are anticipated on installation, and taking into account the anticipated maintenance regime set out in the Landscape and Ecology Management Plan, no additional effects are anticipated at the operational stage.

Further Mitigation

- 6.51 No further mitigation is required during the operational stage of the project given that all impacts on heritage assets are anticipated during the construction phase.

Future Monitoring

- 6.52 Future monitoring of the operational project with regards to heritage assets will not be required as all mitigation will have been implemented prior to and during the construction phase.

Accidents/Disasters

- 6.53 Potential operational accidents / disasters which could affect archaeological deposits within the Site have been considered, and none were found relevant for this assessment.

Potential Changes to the Assessment as a Result of Climate Change

- 6.54 No significant change is anticipated in the temporary period of up to 40 years the Application relates to, other than the normal effects of ploughing and erosion on below ground archaeological deposits, where they exist.

Assessment of Cumulative Effects

- 6.55 Three potential solar farms are currently proposed in addition to this application and are at various stages through the planning process and so may or may not be realised as schemes. Nevertheless, these are:
- UTT/21/3356/FUL - Land Near Pelham Substation Maggots End Road Manuden (refused);

- UTT/21/0688/FUL- Land At, Cole End Farm Lane, Wimbish (awaiting determination), and
- UTT/21/2846/FUL- Chesterford Park, Little Chesterford, Essex (awaiting determination).

- 6.56 The Planning Inspectorate advised that an Environmental Impact Assessment should be undertaken to fully consider cumulative effects on landscape and visual amenity, and this is included in **Chapter 5**.
- 6.57 In addition, and specifically with regards to heritage, Historic England recommended the cumulative impact should be assessed further in terms of the impact on “The Crump” scheduled monument, given the scale of the proposed development and the scale of the proposed solar farm at Maggots End Road (to the south of “The Crump”).
- 6.58 As identified in **Chapter 5** and **Figure 5.9**, overall there will be no direct intervisibility between the two schemes because the Maggots End Road scheme (refused) would have occupied a gentle south facing slope, while the Proposed Development would occupy a gentle north facing slope, with a strong band of tree and hedge cover running along the ridge between the two. The exception to this is from **Viewpoint 7** in **Appendix 5.1** (corresponding to Viewpoint 8 within the Pelham Spring Solar Farm Landscape and Visual Effect Assessment, Pegasus 2021).
- 6.59 The viewer would have to look in opposite directions to see the two proposed solar farms and both views would be through gaps in the roadside hedge with each solar farm largely screened by intervening hedgerows.
- 6.60 The Heritage Statement authored by Pegasus in support of the **Maggots End Road** scheme (refused) assessed **potential effect from that scheme on the setting and significance of “The Crump” Scheduled Monument**, and concluded that the proposed development at Maggots End Road was considered to result in **no harm** to the heritage significance of that asset.
- 6.61 This ES chapter assesses the potential effect from the Proposed Development to be indirect, minor adverse. Therefore, it is concluded that the overall **indirect cumulative effect** would be **minor**, should both schemes be consented, however noting that the Maggots End Road Scheme has been refused.

Inter-relationships

- 6.62 The landscape and visual effects of the solar farm affect the setting of heritage assets in the vicinity, and some aspects of assessment are inter-related, as set out above in the cumulative effects section.
- 6.63 Certain aspects of the proposed landscape mitigation set out in **Chapter 5** are designed to minimise adverse effects.
- 6.64 Photomontages have been prepared to illustrate the relationship of the solar farm with key heritage assets and these are presented in **Appendices 5.1** and **5.2**.

Decommissioning

- 6.65 At the end of its operational life or as set by a planning condition, the solar farm will be removed including all fencing, piles and underground cabling and the access tracks (apart from those that will assist in the ongoing agricultural management of the land). The substation and inverters will be removed, and the land returned to agriculture.
- 6.66 The trees, hedges and woodland planted as part of the development will be retained, forming a beneficial long-term legacy, enhancing landscape character, sequestering carbon and increasing ecological biodiversity.
- 6.67 All impacts are anticipated on installation, and will be the subject of mitigation at that stage, with no additional effects anticipated at the decommissioning stage.

Summary of Effects

Built Heritage

- 6.68 In summary, the proposed development would have **direct impacts** on the built heritage assets. The presence of the solar panels within their settings would represent a small change in the extensive agricultural setting of the built heritage assets identified at 6.23 which have a **very high to high sensitivity/value**. This change would have an **indirect, negligible adverse magnitude of impact** resulting in **permanent effects of minor adverse significance**.

Archaeology

- 6.69 In summary, and as set out in Table 6.6 below, the Proposed Development would have a **low magnitude adverse impact** on “The Crump” (Scheduled Monument of **high sensitivity/value**), “The Rookery” (non-designated asset of **high sensitivity/value**), and the historic lane between Berden and Little London (historic landscape of **low sensitivity/value**). This would result in **indirect effects of minor adverse significance** on the setting of these assets.
- 6.70 The Proposed Development would result in **permanent effects of minor adverse significance** on late Iron Age to Roman and post-Medieval archaeological deposits, and in **permanent effects of up to moderate adverse significance** on early Medieval and Medieval archaeological deposits, should they survive.
- 6.71 Further to additional consultation with the LPA advisors, which was also recommended by Historic England, the scope of the initial trial trench evaluation is set out in an **Outline Written Scheme of Investigation** included in **Appendix 6**. This will be followed by targeted areas of excavation, and / or options to avoid or reduce any impact on significant archaeological deposits, should they be present, in line with the guidance provided by Historic England (HE, 2021).

BERDEN HALL FARM SOLAR FARM

Table 6.5: Summary of Likely Environmental Effects on Heritage

Receptor	Sensitivity of receptor	Description of impact	Short / medium / long term	Magnitude of impact	Significance of effect	Significant / Not significant	Notes
Construction phase							
Church of St Nicholas (NHLE: 1170264, Grade I Listed Building)	Very High	Direct	Long term	Negligible	Minor adverse	Not significant	
Berden Hall (NHLE: 1112468, Grade II* Listed Building)	Very High	Direct	Long term	Negligible	Minor adverse	Not significant	
Granary North-East of Berden Hall (NHLE: 1306141, Grade II Listed Building)	High	Direct	Long term	Negligible	Minor adverse	Not significant	
The Crump and Former Barn (Now Room) Adjoining to North-West (NHLE: 1112471, Grade II Listed Building)	High	Direct	Long term	Negligible	Minor adverse	Not significant	

BERDEN HALL FARM SOLAR FARM

Receptor	Sensitivity of receptor	Description of impact	Short / medium / long term	Magnitude of impact	Significance of effect	Significant / Not significant	Notes
The Crump (Scheduled Monument)	High	Indirect	Long term	Minor adverse magnitude	Minor adverse	Not significant	
The Rookery (non-designated asset of potential schedulable quality)	High	Indirect	Long term	Minor adverse magnitude	Minor adverse	Not significant	
Historic lane between Berden and Little London (historic landscape)	Low	Indirect	Long term	Minor adverse magnitude	Minor adverse	Not significant	
Potential archaeological deposits associated with late to Iron Age to Roman, and post-Medieval periods	Low	Direct	Permanent	Moderate adverse magnitude	Minor adverse	Not significant	

BERDEN HALL FARM SOLAR FARM

Receptor	Sensitivity of receptor	Description of impact	Short / medium / long term	Magnitude of impact	Significance of effect	Significant / Not significant	Notes
Potential archaeological deposits associated with early Medieval and Medieval periods	Medium	Direct	Permanent	Moderate adverse magnitude	Moderate adverse	Significant	The receptor sensitivity/value could be up to medium, and the Proposed Development could result in potentially significant effects. Additional mitigation is recommended by condition, and set out in Appendix 6.1
Operational phase							
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

References

The following sources are referenced in this chapter:

- Ancient Monuments and Archaeological Areas Act 1979, (amended by the National Heritage Act 1983 & 2002, updated in April 2014)
- The Planning (Listed Buildings and Conservation Areas) Act 1990; and
- The Town and County Planning Act 1990.
- The National Planning Policy Framework (NPPF; July 2021); and
- The Uttlesford Local Plan (adopted in January 2005. In December 2007 all policies were saved and then resaved in 2012.).
- Planning Practice Guidance - Conserving and enhancing the historic environment - last updated in February 2018 (PPG, ID:18a);
- Chartered Institute for Archaeologists, 2021, Code of conduct: professional ethics in archaeology
- Chartered Institute for Archaeologists, Standard & Guidance for historic environment desk-based assessment 2014, updated 2020.
- Department for Digital, Culture, Media & Sport, 2013, Scheduled Monuments & nationally important but non-scheduled monuments
- Essex County Council, March 2012. Uttlesford Protected Lanes Assessment
- Highways Agency, Transport Scotland, Welsh Assembly Government and the Department for Regional Development Northern Ireland (2008) Assessment and Management of Environmental Effects. Design Manual for Roads and Bridges, LA 106 - Cultural heritage assessment (formerly HA 208/07, HA 60/92, HA 75/01).
- Historic England, 2017, Historic Environment Good Practice Advice in Planning Note 3: The Setting of Heritage Assets, 2nd edition, Historic England.
- Historic England, 2021, Historic England Advice Note 15: Commercial Renewable Energy and the Historic Environment, February 2021.
- Historic England (formerly English Heritage), Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment 2008 (new draft 2017)
- Landscape Institute, 2013, Guidelines for Landscape and Visual Impact Assessment, 3rd Edition, Landscape Institute and Institute of Environmental Management and Assessment.
- Maria Medlycott (ed.) 2011. Research and Archaeology Revisited: A Revised Framework for the East of England. East Anglian Archaeology Occasional Papers 24
- Ministry of Housing, Communities & Local Government, 2021, National Planning Policy Framework
- Ministry of Housing, Communities & Local Government Planning practice guidance, 2019, Historic environment
- Sightline Landscape, May 2022. Solar Farm near Stocking Pelham - Landscape and Visual Impact Assessment (Appendices 5.1 and 5.2)
- Sightline Landscape, February 2022. Solar Farm near Stocking Pelham Landscape and Ecology Management Plan, revision B

7 ECOLOGY

Introduction

- 7.1 The Chapter covers a summary of the legislation and policy relevant to biodiversity, and assesses the impacts of construction and operation of the development on Important Ecological Features (IEFs) identified during surveys and assessment. Mitigation measures, where required, are described, and an assessment of cumulative impacts is also undertaken.

Assessment Methodology

Planning Policy Context

- 7.2 The assessment has been prepared taking into account the following national and local policy with regards to designated sites, habitats and species:

National Planning Policy Framework (NPPF)

- 7.3 The National Planning Policy Framework (NPPF) (Ministry of Housing, Community and Local Government, 2021) sets out the national planning policies for England and is a material consideration in planning decisions.
- 7.4 The principle of sustainable development in the NPPF acknowledges the role of planning in protecting and enhancing the natural environment and helping to improve biodiversity. The NPPF recognises that achieving sustainable development involves pursuing positive improvements in the natural environment.
- 7.5 Chapter 15 of the NPPF ‘Conserving and enhancing the natural environment’ contains provisions for ensuring that planning can be sustainable from an environmental perspective. Specifically, paragraph 174 states that:

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

- 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);
- 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;
- maintaining the character of the undeveloped coast, while improving public access to it where appropriate;
- minimising impacts and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;
- 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, taking into account relevant information such as river basin management plans; and
- remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate’.

- 7.6 Paragraph 180 of the NPPF goes on to state that:

‘...When determining planning applications, local planning authorities should apply the following principles:

- if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the Site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;
- development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons 63 and a suitable compensation strategy exists; and
- development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate’.

7.7 Paragraph 182 of the NPPF states that ‘The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site.’

7.8 The NPPF is supported by the Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Effect within the Planning System, jointly issued by the Office of the Deputy Prime Minister (ODPM) and the Department for Environment, Food and Rural Affairs (Defra) (ODPM, Defra, 2005). This joint circular aims to provide ‘guidance on the application of the law in relation to planning and nature conservation as it applies in England’.

7.9 The Government Circular refers to the UK Biodiversity Action Plan (UKBAP), England Biodiversity Strategy and Local Biodiversity Partnerships. These documents outline strategic actions for biodiversity at both the national and local level.

Planning Practice Guidance (PPG)

7.10 The PPG was issued online in March 2014 and is updated periodically by government as a live document. The Natural Environment section of the guidance provides information on when biodiversity should be considered in an application. Biodiversity impacts and opportunities information should inform all development stages.

Uttlesford Local Plan (2005)

7.11 The relevant saved policies pertinent to biodiversity and nature conservation in the Uttlesford Local Plan (2005) are;

- GEN 7 – Nature Conservation
- ENV 7 – The Protection of the Natural Environment
- ENV 8 – Other Landscape elements of Importance for Nature Conservation

7.12 Policy GEN 7 – Nature Conservation states:

Development that would have a harmful effect on wildlife or geological features will not be permitted unless the need for the development outweighs the importance of the feature to nature conservation. Where the site includes protected species or habitats suitable for protected species,

a nature conservation survey will be required. Measures to mitigate and/or compensate for the potential impacts of development, secured by planning obligation or condition, will be required. The enhancement of biodiversity through the creation of appropriate new habitats will be sought.

7.13 As described in this chapter, measures to mitigate the potential adverse effects of the proposed development have been developed. These include a Code of Construction Practice (CoCP, Appendix 2.2), a Landscape & Ecological Management Plan (LEMP, Appendix 5.3) and a Skylark Mitigation Strategy (Appendix 7.3). These, together with a Biodiversity Net Gain calculation (Appendix 7.2) demonstrate an overall enhancement of biodiversity associated with the proposed development. The proposed development is therefore compliant with policy GEN 7.

7.14 Policy ENV 7 – The Protection of the Natural Environment states:

Development proposals that adversely affect areas of nationally important nature conservation concern, such as Sites of Special Scientific Interest and National Nature Reserves, will not be permitted unless the need for the development outweighs the particular importance of the nature conservation value of site or reserve.

Development proposals likely to affect local areas of nature conservation significance, such as County Wildlife sites, ancient woodlands, wildlife habitats, sites of ecological interest and Regionally Important Geological/ Geomorphological Sites, will not be permitted unless the need for the development outweighs the local significance of the site to the biodiversity of the District. Where development is permitted the authority will consider the use of conditions or planning obligations to ensure the protection and enhancement of the site’s conservation interest.

7.15 The proposed development would have no adverse effect of any areas of nationally important nature conservation concern. Potential impacts on Local Wildlife Sites (LWSs) and habitats are assessed in this chapter. Measures to avoid impacts are included in the CoCP. The proposed development is considered compliant with policy ENV 7.

7.16 Policy ENV8 – Other Landscape Elements of Importance for Nature Conservation states:

Development that may adversely affect these landscape elements

<i>Hedgerows</i>	<i>Plantations</i>
<i>Linear tree belts</i>	<i>Ponds</i>
<i>Larger semi-natural or ancient woodlands</i>	<i>Reservoirs</i>
<i>Green lanes and special verges</i>	<i>River corridors</i>
<i>Orchards</i>	<i>Linear wetland features</i>
	<i>Networks or patterns of other locally important habitats</i>

will only be permitted if the following criteria apply:

a) The need for the development outweighs the need to retain the elements for their importance to wild fauna and flora;

b) Mitigation measures are provided that would compensate for the harm and reinstate the nature conservation value of the locality.

Appropriate management of these elements will be encouraged through the use of conditions and planning obligations.

7.17 Included in the habitat list above, the only landscape element of importance for nature conservation potentially adversely affected by the proposed development are hedgerows. New hedgerows would be planted and existing hedgerows reinforced, as set out in the LEMP (Appendix 5.3). The proposed development is therefore compliant with policy ENV 8.

Relevant Legislation and Guidance

7.18 The assessment has been prepared taking into account the following national legislation and guidance with regards to designated sites, habitats and species:

- The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019;
- The Wildlife and Countryside Act 1981 (and as amended);
- The Countryside and Rights of Way Act 2000;
- The Natural Environment and Rural Communities Act 2006;
- The Environment Act 2021;
- UK Biodiversity Action Plan (UKBAP) 1994 and Essex BAP; and
- CIEEM Guidelines on Ecological Impact Assessment.

Study Area

7.19 The Site lies between the villages of Stocking Pelham to the west and Berden to the east and predominantly comprises arable fields, with field margins comprising hedges, dry ditches and set-aside strips. Two woodland compartments were also present.

7.20 The surrounding countryside is predominantly farmland, with the Stocking Pelham substation located to the south-west.

7.21 A desk-based assessment (data search) was undertaken for the Site and a 2 km buffer zone, the results of which are set out in Appendix 7.1.

7.22 A Phase 1 habitat survey and ecological scoping survey of the application boundary was undertaken in 2019, with two further site visits undertaken in 2020 and 2022 (Cherryfield Ecology, 2022). This was updated in 2022 with a survey of habitats using the UK-hab classification and habitat condition assessment for Biodiversity Net Gain calculations (see Appendix 7.2) and to update habitat survey information (see Appendix 7.1).

Baseline Methodology

Desk study

7.23 The Hertfordshire Environmental Records Centre (HERC) was contacted for records of designated sites and protected or otherwise notable species within 2km of the site in 2019 (Cherryfield Ecology, 2019). The data search was updated in October 2022 (Appendix 7.1).

7.24 This included a review of existing statutory sites of nature conservation interest, such as Sites of Special Scientific Interest (SSSI), Special Protection Area (SPA), Special Area of Conservation (SAC), National Nature Reserves (NNR), and non-statutory Local Wildlife Sites (LWS).

7.25 Locations of statutory designated sites were accessed via the government 'MAGIC' website (MagicMap, 2016). A 1:25,000 OS map was used to identify nearby features such as ponds or green corridors that could provide habitat or connectivity to other areas.

Habitats and species

7.26 A Phase 1 habitat survey and ecological scoping survey was carried out in 2019 (Cherryfield Ecology, 2019) with a further site visit conducted in 2020. This comprised a walkover survey to map the extent of habitats present using standard JNCC methodology (JNCC, 2016) and to note habitats with potential to support protected species or other species that might present a constraint to development. A further two site visits were undertaken in 2020 and 2022.

7.27 In September 2022 an updated habitat survey was undertaken. This used the UK-hab classification (Butcher et al., 2020) and included a condition assessment of habitats to facilitate the Biodiversity Net Gain assessment (Appendix 7.1).

Biodiversity Net Gain

7.28 A Biodiversity Net Gain (BNG) assessment was undertaken using Version 3.1 of the published Defra metric (Defra, 2022).

Consultation

7.29 Consultation on ecological issues was undertaken via the planning application process for the original application. A summary of responses is provided in Table 7.1.

Table 7.1: Consultation Responses Relevant to this Chapter

Date	Consultee and Issues Raised	How/ Where Addressed
05/09/22	Natural England No objection - Natural England considers that the proposed development will not have significant adverse impacts on statutorily protected nature conservation sites or landscapes	N/a
02/09/22	Place Services Ltd (on behalf of Uttlesford District Council) Holding objection due to insufficient ecological information on Priority species (farmland birds) There is insufficient information available to identify the likely impacts upon Priority farmland bird species, particularly Skylark <i>Alauda arvensis</i> which nest in arable fields. Although mitigation during construction and new foraging opportunities have been recommended in the Ecological Appraisal (Cherryfield Ecology, February 2022) there is no provision of open habitats to replace the Skylark nesting habitat that will be lost. Before we can lift our holding objection, an outline of the proposed Skylark mitigation, including compensation measures to be provided offsite in nearby agricultural land, must be submitted and agreed in principle with the LPA. The Ecological Appraisal (Cherryfield Ecology, February 2022) has not considered Priority habitats. Although none are located within the Site, Priority habitat Lowland Mixed Deciduous Woodland is present at the southern boundary of the Site. This Priority habitat is also part of the Local Wildlife Site (LoWS) Park Green. Pelham Centre Meadow LoWS is also located within 50m of the Site. Although the proposed works are unlikely to cause direct impacts to these sites and habitats within them, it is recommended that a Construction and Environmental Management Plan for Biodiversity (CEMP: Biodiversity) is produced to outline how they will be protected from indirect impacts such as dust during the construction phase. This CEMP should also include precautionary construction methods for Badger and a vegetation	An estimate of skylark territories potentially occurring on site has been made, and a Skylark Mitigation Strategy involving provision of skylark plots on offsite arable land has been produced (Appendix 7.3). Impacts on LoWS during construction are assessed in Section 7.101 - 7.105, and mitigation for potential construction impacts is proposed in the form of a CoCP to be produced prior to commencement. A Construction Ecological Mitigation Strategy is proposed to cover these issues (Section 7.86).

Date	Consultee and Issues Raised	How/ Where Addressed
	<p>clearance method statement that considers protected species</p> <p>The Biodiversity Net Gain Assessment (RPS Group, June 2022) showed an increase in habitat and hedgerow units at the Site. The assessment was based on the assumption that all existing habitats were of moderate condition as the Ecological Appraisal (Cherryfield Ecology, February 2022) did not provide enough details to determine this. A finalised Biodiversity Net Gain Assessment, based on accurate condition assessments, should be secured as a condition of any consent.</p>	<p>An updated habitat survey (Appendix 7.1) and BNG assessment (Appendix 7.2) have been produced.</p>

Assessment Criteria and Assignment of Significance

Sensitive receptors

- 7.30 It is impractical and inappropriate for an assessment of the likely ecological effects of a development to consider every species and habitat that may be affected. Instead, it should focus on sensitive receptors, otherwise termed 'Important Ecological Features' (IEFs). IEFs are species and habitats present within the zone of influence of the proposed development that are of sufficiently high value that an effect upon them as a result of the proposed development could be considered to be significant.
- 7.31 For the purposes of this assessment, sites, species populations, species assemblages and habitats have been valued using the following scale:
- International and European;
 - National;
 - Regional;
 - County;
 - Local; and
 - Site only
- 7.32 Criteria taken into account for the valuation of habitats and plant communities include Annex III of the EC Habitats Directive, guidelines for the selection of biological SSSIs and criteria used by the local authority and Wildlife Trust for the selection of sites for local designation.
- 7.33 Species populations are valued on the basis of their size, recognised status (such as through published lists of species of conservation concern and designation of Biodiversity Action Plan (BAP) status) and legal protection. For example, bird populations exceeding 1% of published information on biogeographic populations are considered to be of international importance, those exceeding 1% of published data for national populations are considered to be of national importance and so on.
- 7.34 In assigning values to species populations, it is important to take into account the status of the species in terms of any legal protection. However, it is also important to consider other factors such as its distribution, rarity, population trends and the size of the population which would be affected. For example, whilst the Great Crested Newt is protected under European law and therefore conservation of the species is of significance at the international level, this does not mean that every population of Great Crested Newt is internationally important. It is important to consider the particular population in its context. Therefore, in assigning values to species the

geographic scale at which they are important has been considered. The assessments of value rely on the professional opinion and judgement of experienced ecologists.

- 7.35 Plant communities are assessed both in terms of their intrinsic value and as habitat for protected species whose habitat is also specifically protected and for species of nature conservation concern which are particularly associated with them.
- 7.36 Due regard will also be paid to the legal protection afforded to species during the development of mitigation and compensation measures to be implemented during the project. For European protected species there is a requirement that the project should not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.
- 7.37 Assessing the value of features requires consideration of both existing and future predicted baseline conditions. Therefore, the description and valuation of ecological features takes account of any likely changes, including for example, trends in the population size or distribution of species, likely changes to the extent of habitats and the effects of other proposed developments or land use changes.

Assessment of significance

- 7.38 The assessment of the likely effects of the proposed development takes into account the:
 - Value and sensitivity (Table 7.2) of the sites, habitats and species which would be affected on a local, regional and national scale;
 - Type of effect - whether the proposals would result in a beneficial or adverse effect on the identified IEFs; and
 - Magnitude of the effect (size or intensity measured in relevant terms e.g. numbers of individuals lost or gained, area of habitat lost or created).
- 7.39 The magnitude of the effect (Table 7.3) takes into account the:
 - Extent or spatial scope of the effect;
 - Likely duration of the effect;
 - Reversibility of the effect - whether the effect is naturally reversible or reversible through mitigation action; and
 - Timing and frequency of the effect, in relation to ecological changes.
- 7.40 The significance of the effect (Table 7.4) upon ecology is determined by correlating the magnitude of the impact and the sensitivity of the receptor. Where a range of significance of effect is presented in Table 7.4, the final assessment for each effect is based upon professional judgement.
- 7.41 For the purpose of this assessment, any effects with a significance level of minor or less are considered to be not significant in terms of the EIA Regulations.

Table 7.2: Definitions of Sensitivity or Value

Value	Typical Descriptors
Very High	Very high importance and rarity, international scale and very limited potential for substitution.
High	High importance and rarity, national scale, and limited potential for substitution.
Medium	High or medium importance and rarity, regional / county scale, limited potential for substitution.
Low	Low or medium importance and rarity, local scale.

Value	Typical Descriptors
Negligible	Very low importance and rarity, local or site scale.

Magnitude of Impact

Table 7.3: Definitions of Magnitude

Sensitivity	Typical Descriptors
High	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements (Adverse). Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality (Beneficial).
Medium	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements (Adverse). Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality (Beneficial).
Low	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements (Adverse). Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring (Beneficial).
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements (Adverse). Very minor benefit to or positive addition of one or more characteristics, features or elements (Beneficial).
No change	No loss or alteration of characteristics, features or elements; no observable impact in either direction.

Table 7.4: Assessment Matrix (Complex)

Sensitivity	Magnitude of Impact				
	No Change	Negligible	Low	Medium	High
Negligible	No change	Negligible	Negligible or Minor	Negligible or Minor	Minor
Low	No change	Negligible or Minor	Negligible or Minor	Minor	Minor or Moderate
Medium	No change	Negligible or Minor	Minor	Moderate	Moderate or Major
High	No change	Minor	Minor or Moderate	Moderate or Major	Major or Substantial
Very high	No change	Minor	Moderate or Major	Major or Substantial	Substantial

Limitations of the Assessment

7.42 The assessment of impacts on ecology has been undertaken with reference to desk studies and site visits reported in Appendix 7.1 and Cherryfield Ecology (2022). The desk study data is third party controlled data, purchased for the purposes of this assessment only. RPS cannot therefore vouch for its accuracy and cannot be held liable for any error(s) in these data.

- 7.43 The desk study and habitat surveys are considered to provide sufficient information on designated sites and habitats to enable a robust assessment of impacts.
- 7.44 No additional surveys to assess presence / absence of protected species or other species of conservation importance were undertaken. The identification of potential species IEFs, and assessment of impacts thereon, has therefore been undertaken using information obtained from the desk study, Phase 1 habitat and ecological scoping and professional judgment. Where appropriate a precautionary approach has been adopted for assessment of IEF value, impact magnitude and implementation of impact avoidance, minimisation and mitigation measures.
- 7.45 Solar farm developments on farmland are generally relatively low-impact developments on ecology, given that habitat loss is mainly confined to arable land where the solar arrays are erected. The proposals involve retention of hedgerows, where ecological interest is usually concentrated in an arable landscape.
- 7.46 On this basis it is considered that although full species survey information is not available, a sufficiently robust assessment of impacts on species can be undertaken. A brief summary of assumptions made in relation to the identification of IEFs is presented in the Baseline Environment section below.

Baseline Environment

Designated sites

- 7.47 No statutory designated sites are present within 2km of the Site. The Site is within an Impact Risk Zone for SSSIs that are > 2 km from the Site boundary, but the development does not meet the criteria for likely impact on SSSIs requiring consultation with Natural England and on this basis SSSIs are excluded from the assessment.
- 7.48 Fourteen non-statutory designated sites are located within 2 km of the Site boundary. These sites are summarised in Table 7.5.

Table 7.5: Designated sites within 2 km

Site Name	Status	Area (ha)	Description	Distance (m)
Park Green	LWS	3.2	Registered common supporting a range of grasses and herbs species.	0
Pelham Centre Meadow	LWS	2.5	Meadow grassland supporting a wide variety of grasses and herbs	5
Stocking Pelham Field Centre	LWS	7.87	A predominantly grassland site but with a variety of other habitats present. The grassland supports neutral grassland indicator species. There are small areas of broadleaf woodland. A pond adjoins the hedgerow. The site is locally important for birds and mammals and supports protected species.	58
Berways Meadow	LWS	0.74	Unimproved neutral grassland supporting a species-rich assemblage of grasses and herbs.	83
Arnold's Spring	LWS	1.24	Not supplied by EFC	186
Crabbs Green Common	LWS	0.67	Common land on the edge of a rural village; consisting of rough, unimproved, but species poor, Boulder Clay grassland.	195
Silla Farm Northern Meadows	LWS	2.25	Two fields of neutral grassland surrounded by thick hedges, mainly of Hawthorn.	911
Hall Wood (Stocking Pelham)	LWS	5.06	Ancient semi-natural woodland mainly of Ash (<i>Fraxinus excelsior</i>) standards and coppice with Hazel (<i>Corylus avellana</i>) and occasional Pedunculate Oak (<i>Quercus robur</i>) and Field Maple (<i>Acer campestre</i>).	973

Site Name	Status	Area (ha)	Description	Distance (m)
East End Farm	LWS	0	Building and environs important for protected species.	1095
Battles's Wood LWS	LWS	9.5	Not supplied by EFC	1195
Shonk's Moat	LWS	1.81	Moated archaeological site supporting rough neutral grassland, scrub and ponds.	1326
Beeches Wood	LWS	17.09	Ancient semi-natural woodland of Ash (<i>Fraxinus excelsior</i>)/Field Maple (<i>Acer campestre</i>)/Hazel (<i>Corylus avellana</i>) coppice and Pedunculate Oak (<i>Quercus robur</i>)/Hornbeam (<i>Carpinus betulus</i>).	1578
Green Lane W. of Beeches Wood & Washall Green	LWS	0.99	Green lane partly bordered by part ancient hedges.	1602
Violets Lane	LWS	0.42	Old lane that is also a sunken winterbourne (River Ash) with a gravel bed between steep chalk banks, which support long established woodland type community hedges.	1985

- 7.49 Given the type of development it is not considered that potential impact pathways exist for non-statutory sites located > 100 m from the Site. On this basis, the following LWSs are identified as IEFs:
- Park Green
 - Pelham Centre Meadow
 - Stocking Pelham Field Centre
 - Berways Meadow

7.50 These are identified as importance at the county level and of medium value.

Habitats

- 7.51 The Site is 65.84 ha in size, of which the majority (84.34%) comprised arable fields. A further 6.72% of the Site comprised a temporary grass/clover ley sown on an arable field. Arable field margins sown with tussocky or a pollen/nectar mix comprised approximately 6.12% of the Site. Species present in the arable margins included Lucerne *Medicago sativa*, Bristly Oxtongue *Helminthotheca echioides*, abundant Cock's-foot *Dactylis glomerata* with herb species including Oxeye Daisy *Leucanthemum vulgare*, Chicory *Cichorium intybus*, Yarrow *Achillea millefolium*, Bird's-foot Trefoil *Lotus corniculatus* and Greater Burnet *Sanguisorba officinalis*.
- 7.52 Some field margins (1.48% of the Site) comprised semi-improved neutral grassland with abundant Yorkshire-fog *Holcus lanatus* or False Oat-grass *Arrhenatherum elatius*, with frequent Cock's-foot, and with herb species including Bird's-foot Trefoil, Fleabane *Pulicaria dysenterica*, Meadow Vetchling *Lathyrus pratensis*, Black Knapweed *Centaurea nigra*, Yarrow and Oxeye Daisy.
- 7.53 The arable and field margin / grassland habitats are considered to be of negligible ecological value, of importance at the site level only.
- 7.54 Two broadleaved woodland compartments occur on or adjacent to the Site. W1 (western parcel), within the Site boundary, is 0.49 ha in size, and comprises abundant Ash *Fraxinus excelsior* with frequent non-native Oak *Quercus* sp., Hazel *Corylanus avellana*, Beech *Fagus sylvatica* and occasional other broadleaved tree and shrub species.
- 7.55 W2 (eastern parcel), outside the application boundary but immediately adjacent to it is 0.55 ha in size, and comprises frequent Field Maple *Acer campestre* and Oak *Quercus robur* along with occasional tree species including Beech, non-native Oak and Hawthorn.

- 7.56 Ground flora species in both compartments were dominated by frequent Wilson's Honeysuckle *Lonicera nitida* and Bramble *Rubus fruticosus* agg, or bare ground.
- 7.57 These woodland compartments are considered to be of low ecological value, of importance at the local level.
- 7.58 Several native hedgerows are present on Site. Refer to Appendix 7.1 for full details. Species present were predominantly Hawthorn with a range of other woody species across the Site. All of the hedgerows consist of at least 80% native woody species and therefore qualify as UK BAP priority habitats and are habitats of principal importance. Some of these hedgerows have associated dry ditches.
- 7.59 The hedgerow habitat is considered to be of low ecological value, of importance at the local level.
- 7.60 Drainage ditches are located on several field boundaries within the Site. The ditches were all dry at the time of survey and did not contain species indicative of regular wet conditions.
- 7.61 The ditches are considered to be of negligible value, of importance at the site level.

Species

- 7.62 Records of protected or otherwise notable species within 2 km of the Site were obtained from the Hertfordshire Environmental Records Centre and the Essex Field Club. A summary of the datasearch results is provided below in Table 7.6. In order to simplify the results, only records of species from the last 10 years with a resolution of 100 m or lower are shown since locations given at a lower resolution do not allow accurate calculation of distance to the Site boundary. In addition, where multiple records of the same species were provided, Table 7.6 lists the closest record to the Site only.

Table 7.6. Data search results

Scientific Name	Common Name	Year of most recent record	Distance from site (km)	Conservation Status
<i>Bombus ruderatus</i>	Large Garden Bumblebee	2019	1.80	UKBAP
<i>Coenonympha pamphilus pamphilus</i>	Small Heath	2020	0.35	Sect.41, UKBAP, RLGB.Lr(NT)
<i>Thymelicus sylvestris</i>	Small Skipper	2019	0.52	Herts Wide Decl (B)
<i>Bufo bufo</i>	Common Toad	2017	0.51	Sect.41, UKBAP
<i>Triturus cristatus</i>	Great Crested Newt	2018	0.10	HSD4, WCA5/9.4b, Sect. 41, UKBAP
<i>Natrix helvetica</i>	Grass Snake	2019	0.51	WCA5/9.1k/l, Sect.41, UKBAP
<i>Anguis fragilis</i>	Slow-worm	2018	0.51	WCA5/9.1k/l, Sect.41, UKBAP
<i>Tyto alba</i>	Barn Owl	2017	0.51	WCA1i, Bern2, Herts HR;Herts LD1, WCA9
<i>Pyrrhula pyrrhula</i>	Bullfinch	2015	0.51	BAmb
<i>Turdus pilaris</i>	Fieldfare	2015	0.51	WCA1i, BRed
<i>Perdix perdix</i>	Grey Partridge	2017	0.51	Sect.41, UKBAP, BRed, HSCC.RT;Herts LD3
<i>Delichon urbicum</i>	House Martin	2016	0.51	HSCC.RT
<i>Passer domesticus</i>	House Sparrow	2015	0.51	Sect.41, UKBAP, BRed, HSCC.RT
<i>Falco tinnunculus</i>	Kestrel	2014	0.51	BAmb
<i>Alcedo atthis</i>	Kingfisher	2015	0.51	WCA1i, Bamb, HSCC.RT
<i>Vanellus vanellus</i>	Lapwing	2012	0.51	Sect.41, UKBAP, BRed, HSCC.RT;Herts LD2

Scientific Name	Common Name	Year of most recent record	Distance from site (km)	Conservation Status
<i>Poecile palustris</i>	Marsh Tit	2013	0.51	BRed, HSCC.RT
<i>Milvus milvus</i>	Red Kite	2015	0.51	WCA1i
<i>Turdus iliacus</i>	Redwing	2014	0.51	WCA1i, BRed
<i>Alauda arvensis</i>	Skylark	2015	0.51	Sect.41, BRed
<i>Sturnus vulgaris</i>	Starling	2013	0.51	BRed, HSCC.RT
<i>Apus apus</i>	Swift	2016	0.51	BAmb
<i>Strix aluco</i>	Tawny Owl	2015	0.51	Bamb
<i>Passer montanus</i>	Tree Sparrow	2018	0.51	Sect.41, LBAP;UKBAP, BRed, HSCC.RT;Herts LD3
<i>Streptopelia turtur</i>	Turtle Dove	2017	0.51	Sect.41, UKBAP, BRed, HSCC.RT;Herts LD3
<i>Meles meles</i>	Badger	2017	0.61	PBA
<i>Lepus europaeus</i>	Brown Hare	2015	0.51	Sect.41, UKBAP, HSCC.RT
<i>Micromys minutus</i>	Harvest Mouse	2013	0.24	Sect.41, UKBAP
<i>Erinaceus europaeus</i>	Hedgehog	2015	0.51	Sect.41, UKBAP, RLGB.VU, HSCC.RT
<i>Mustela nivalis</i>	Weasel	2019	0.20	HSCC.RT
<i>Plecotus auritus</i>	Brown Long-eared Bat	2013	1.26	HSD4, WCA5/9.4b, Sect. 41, UKBAP
<i>Pipistrellus pipistrellus</i>	Common Pipistrelle	2013	0.22	HSD4, WCA5/9.4b, CMS_A2
<i>Myotis nattereri</i>	Natterer's Bat	2012	1.26	HSD4, WCA5/9.4b, LBAP
<i>Myotis nattereri</i>	Natterer's Bat	2013	1.26	HSD4, WCA5/9.4b, LBAP

Abbreviations used in Table 7.6: WCA1i: Wildlife & Countryside Act Schedule 1, part 1; WCA5: Wildlife & Countryside Act Schedule 5; WCA9: Wildlife & Countryside Act Schedule 9; NERC: Natural Environment & Rural Communities Act Species of Principal Importance; UKBAP: UK Biodiversity Action Plan priority species; LBAP: Local Biodiversity Action Plan; HSD4: Habitats Directive Annex 4; PBA: Protection of Badgers Act 1992; RLGB_Lr(NT): Red List for Great Britain IUCN – Lower risk – near threatened; RLGB_VU: Red List for Great Britain IUCN – Vulnerable; BRed: Birds of Conservation Concern Status Red; BAmb: Birds of Conservation Concern Status Amber; Herts Wide Decl (B): Butterflies – Widespread Declining; Herts HR; Birds: Hertfordshire rare breeding species with less than 25 breeding pairs based on the 1988-92 atlas or subsequent records; HSCC.RT: Herts Species of Conservation Concern based on rarity or decline; Herts LD1: Birds - Local Decline - Recent local decline. Hertfordshire breeding species with greater than 25% decline between 1994 and 2000 based on the Hertfordshire BBS data; Herts LD2: Birds - Recent local decline. Hertfordshire breeding species with greater than 25% decline between 1994 and 2000 based on the Hertfordshire BBS data; Herts LD3: Birds - Local decline based on records submitted to the county Bird Report or the results of specific Herts Bird Club surveys.

Invertebrates

- 7.63 The field margins and woodlands are likely to support an invertebrate assemblage typical of farmland landscapes. It is not considered likely that the invertebrate assemblage would be more than negligible value, of importance at the site level only.

Great Crested Newts

- 7.64 No waterbodies capable of supporting breeding amphibians are present on site. However, the datasearch results show a positive GCN record dated 2018, from a waterbody at grid reference TL46487 28656, south of Park Green Lane, approximately 100 m from the south-east corner of the Site. Another record occurs at TL4769628930, approximately 500m east of the Site.
- 7.65 An eDNA survey of seven ponds on land adjacent to the western boundary was undertaken in 2021 as part of the ecological assessment for the proposed Stocking Pelham Battery Energy Storage System (Planning application reference 3/22/0806/FUL; Clarkson & Woods, 2022). Three

of the sampled waterbodies (grid references TL 45613 28840, TL 45579 28695 and TL 45506 28674) returned positive eDNA results. The closest of these ponds is c 118 from the Site boundary.

- 7.66 The majority of the Site comprises arable fields of very limited value to GCN. However, the proximity of recent positive GCN records means that there is some potential for GCN to be present in areas of suitable habitat (hedges/ditches and woodland). OS mapping shows a number of other waterbodies relatively close to the Site with habitat connectivity, and in the absence of survey information there is potential for GCN to be present in these waterbodies.
- 7.67 It is therefore assumed that there is low potential for GCN to be present on Site. Given the limited habitat available on site, it is considered that the GCN population is of low value, of importance at the local level.

Reptiles

- 7.68 The data search returned records of two reptiles (grass snake and slow-worm), both approximately 500m from the Site.
- 7.69 The majority of the Site (arable land) is not suitable for reptiles but there is some potential for reptiles to be present in the field margins, and it is therefore assumed that they are present on a precautionary basis. Given the limited habitat present on site, it is considered that the reptile population is of low value, of importance at the local level.

Birds

- 7.70 The Site is likely to support an assemblage of breeding farmland birds. The majority of the breeding bird assemblage would be associated with the hedgerows, field margins and woodland areas, and it is considered that the overall breeding bird assemblage is of low value and of importance at the local level.
- 7.71 Skylark were recorded on site during a site visit in 2018 (Cherryfield, 2022). As Skylarks are ground-nesting birds they will be nesting in the fields and therefore more potentially affected by the erection of solar panels than species associated with field margins.
- 7.72 An estimate of the number of Skylark territories has been made based on surveys undertaken by RPS on farmland in Norfolk for a solar farm development. Surveys of arable fields similar to those occurring on site indicated an average density of Skylark territories of 0.22 per hectare of arable land. Applying figure to the approximately 63.96 ha of arable land present on site results in an estimate of 14.07 (rounded down to 14) Skylark territories across the Site, and this figure is used when considering mitigation in the sections below.
- 7.73 As the Site is typical farmland, it is not considered that it would support an exception skylark population, and the skylark population is therefore considered to be of low importance, of value at the local level.

Bats

- 7.74 Cherryfield Ecology (2022) noted two trees with suitable features for roosting bats in the eastern woodland parcel. In the absence of survey information, it is assumed that bats are present in these trees for the purposes of assessing impacts. The potential roosting bats are considered to be of low importance, of value at the local level.
- 7.75 The woodland and hedgerows are likely to be used by foraging and commuting bats. In the absence of survey information, it is assumed that bats will be using these features. The potential foraging bats are considered to be of low importance, and of value at the local level.

Badgers

7.76 One active Badger sett has been recorded close to the Site. Badgers are considered to be of low importance and of value at the local level.

Other mammals

7.77 No habitat suitable for water vole or otter occurs on Site and these species are not considered to present a constraint.

7.78 No records of dormouse were recorded from the records search. The woodland areas on site are of small size and relatively isolated from woodlands outside the Site boundary. It is therefore considered that dormouse are not likely to be present and this species is not considered to present a constraint.

7.79 The Site is not considered likely to support other protected or otherwise notable mammal species likely to be affected by the development proposals.

Summary of Important Ecological Features

7.80 The Important Ecological Features (IEFs) identified as potentially requiring assessment of impacts (valued at local level or above) are summarised in Table 7.7 below.

Table 7.7. Summary of Important Ecological Features

Important Ecological Feature	Protection status	Value
Park Green LWS	Material consideration for planning	County
Pelham Centre Meadow LWS	Material consideration for planning	County
Stocking Pelham Field Centre LWS	Material consideration for planning	County
Berways Meadow LWS	Material consideration for planning	County
Broadleaved woodland	Material consideration for planning	Local
Hedgerows and dry ditches	Material consideration for planning	Local
Great Crested Newt	Legally protected	Local
Reptiles	Legally protected	Local
Breeding bird assemblage	Legally protected	Local
Breeding Skylark	Legally protected	Local
Roosting bats	Legally protected	Local
Foraging bats	Legally protected	Local
Badgers	Legally protected	Local

Future Baseline Conditions

7.81 In the absence of the proposed development, the Site would be maintained as it is currently in the short term, i.e. a series of agricultural fields with hedgerows and woodland.

7.82 It is anticipated that with climate change the area is likely to become both warmer and drier over time. This means that the Site may require additional irrigation that may make some of the crop production unviable economically. As such, there may be a change in arable land use over time. Over the lifetime of the development is it considered unlikely that there would be a change away from agriculture on the Site and, as such, a similar future ecological baseline would be anticipated.

Mitigation Measures Adopted as Part of the Project

7.83 All of the measures set out below to be adopted as part of the Project and taken into account in the assessment are known to be effective and adequate to mitigate the identified risks.

Construction Management

- 7.84 As described in Chapter 2: Project Description construction works will be undertaken in accordance with a CoCP (Appendix 2.2). The CoCP will be updated to a full Construction and Environment Management Plan, to be produced prior to the commencement of construction once a construction contractor is appointed, and submitted and approved by the LPA. Measures detailed in the CoCP/CEMP will include best practice measures to control noise, light, vibration, and airborne and waterborne pollutants, and will include measures intended to avoid or minimise impacts on habitats on and offsite and on nearby designated sites.
- 7.85 General measures / requirements will include:
- Details of all good-practice pollution prevention methods;
 - Typical working hours will be between 07:00 and 19:00. Therefore, lighting will likely be restricted to dusk and dawn in late autumn - winter. The use of temporary lighting will be minimised wherever practical and as required for health and safety, security or other reasons. Light fittings will be directional so as to minimise light spill on to retained habitat of value to biodiversity (i.e. Site boundary hedgerows, woodland and individual mature trees);
 - Works-free buffer zones around retained hedgerows, scrub, trees and water courses will be marked out on site using protection fencing or a suitable equivalent, e.g. high visibility tape (in accordance with BS 5837:2012 or subsequent equivalent). Protection zones will exclude all works, the tracking of vehicles, and any storage areas (including storage of vehicles machinery, equipment and soils); and
 - Details of all good practice dust suppression and surface water management methods to be adopted.

Construction Ecological Mitigation Strategy

- 7.86 A Construction Ecological Mitigation Strategy (CEMS) for the construction phase will be produced, to specify details of measures undertaken to avoid or minimise impacts on protected species known or considered possibly to be present. These will include:
- A specification for pre-commencement species surveys as appropriate
 - All necessary works will be overseen by an Ecological Clerk of Works (ECoW) who can also provide advice with respect to invasive species, as necessary;
 - Whenever practicable, to avoid impacts on breeding birds, clearance of vegetation of potential value to nesting birds (i.e. to facilitate access) will be completed outside of the bird-breeding season (considered to be between mid-February and August inclusive). However, should it not be possible to avoid this season, vegetation will be inspected/surveyed by an appropriately experienced ecologist immediately before clearance (i.e. the morning of clearance works, or late in the day prior to clearance works) in order to confirm the absence of active nests. Should an active nest be located in the vegetation to be cleared or close by (depending on the species of bird) measure will be set in place as advised by the ecologist to prevent damage or disturbance to the nest until it can be confirmed by the ecologist that the nest has been abandoned or any young have fully fledged and left the nest. Protective measures will include the establishment of a works-free buffer zone around the nest;
 - Due to the mobile nature of badgers, pre-construction surveys will be undertaken for badgers to check the status of the sett identified and to locate any new active setts that would need to be protected or would require a licence to disturb or close. However, should this not be practicable, measures described below will be set in place.
 - Similarly, although none are anticipated to require felling, any tree to be felled will be subject to a pre-construction check to determine its current bat roost potential. Any tree with such

potential will be subject to suitable surveys, as described in good practice survey guidelines (Collins 2016).

GCN

- 7.87 No potential GCN aquatic habitat is present on site. Potential GCN habitat adjacent to the Site will be protected from impacts arising from dust generation or surface water discharge during construction through the implementation of the measures set out in the CoCP.
- 7.88 The majority of the Site was considered either suboptimal or unsuitable terrestrial habitat for the population of GCN present with the majority suitable habitat retained. As there remains a possibility that GCN might be present in low numbers within areas affected by construction, or might enter construction areas over the course of the construction period, an application for a Natural England District Level Licence for GCN will be made.
- 7.89 The terms of this licence will include an appropriate payment to be determined by Natural England as mitigation for impacts on GCN during construction, and this licence would be obtained prior to commencement.

Reptiles

- 7.90 It is not anticipated that any significant areas of potential reptile habitat would need to be cleared to facilitate the proposed development. However, should small-scale clearance be necessary, this will involve the clearance of above-ground vegetation during the reptile active season (i.e. late March/April - October inclusive, dependent on local weather conditions) in two-phases to minimise the potential for injuries or fatalities. The first phase of clearance will comprise cutting vegetation to approximately knee height, then after 24 hours vegetation will be cut to ground-level. The ECoW will be present to capture any reptiles disturbed in the process and relocate them to appropriate retained habitat at a suitable distance from the works area. A final destructive search of the habitat will be undertaken under ECoW supervision.

Badgers

- 7.91 The active sett recorded in the vicinity of the Site would be protected from direct impacts following the methods set out in the CoCP. Any access track constructed close to this sett could result in some degree of disturbance of the sett. Any construction activities involving heavy machinery required within 30 m of the sett would therefore be restricted to outside the December – April (inclusive) period when dependent cubs are below ground.
- 7.92 If considered necessary following a resurvey of the Site to map the current badger activity pre-construction, any necessary licensing would be put in place for disturbance of setts for the duration of the works.
- 7.93 Other measures to protect badgers during construction will include the provision of escape routes from any holes (especially trenching for cables) within which badgers could potentially become trapped.

Landscape and Ecology Management Plan

- 7.94 A Landscape and Ecology Management Plan has been produced and is appended to this ES as Appendix 5.3. This document contains details of habitat creation and management to be undertaken during the operational phase of the development.
- 7.95 This includes details of proposed grassland seedmixes for areas under solar panels within the deer fence, and details of meadow grassland creation in accordance with the landscape masterplan.

7.96 In addition to mitigating the habitat losses that would result from the development as set out above, a scheme of habitat enhancement would ensure that the proposed development delivers a substantial net gain with respect to biodiversity. BNG calculations (Appendix 7.2) show that there would be a net gain of 88.77% above the baseline environment for area-based habitats and 135.53% for linear habitats (hedgerows). It should be noted that the additional enhancement to be delivered by the Project has not been considered within the assessment of effects described below. This is detailed, where necessary.

Skylark Mitigation Strategy

7.97 A Skylark Mitigation Strategy has been produced and appended to this ES as Appendix 7.3, to mitigate for impacts on Skylark (which also benefits other ground nesting farmland birds) as it is not considered likely that Skylarks will breed on land under solar panels.

7.98 The mitigation strategy has been based on the estimate of Skylark territories as set out in Section 7.72, and comprises the provision of a sufficient number of Skylark plots on arable land outside of the development boundary, in the locations shown within the Skylark Mitigation Strategy, to mitigate for the estimated potential loss of territories within the development site. This will be maintained throughout the operational lifetime of the project.

Decommissioning

7.99 Prior to the decommissioning of the development, a document similar to the CoCP will be produced, setting out measures to avoid or minimise impacts during the decommissioning phase. It is expected that this document will include similar measures to those identified above for the CoCP and CEMS.

Assessment of Construction Effects

7.100 This Section summarises the likely significant effects of construction on ecological receptors. The effects during decommissioning of the proposed development are expected to be no worse than the construction effects, therefore the assessment presented below represents the worst case.

Designated sites

7.101 Four LWSs (Park Green, Pelham Centre Meadow, Stocking Pelham Field Centre and Berways Meadow) are located within 100 m of the Site and therefore construction impacts on these sites have been considered.

7.102 The Institute of Air Quality Management (IAQM) Guidance on the assessment of dust from demolition and construction (IAQM, 2014) sets out 50 m as the distance from the Site boundary and 50 m from the Site traffic route(s), within which, there could be potential dust effects on ecological receptors. Park Green and Pelham Centre Meadow are both adjacent to the Site boundary and could therefore be affected by dust generation in the absence of mitigation.

7.103 Considering the dust control measures that will be set out in the CoCP, it is expected that there would be negligible impacts on designated sites as a result of dust generation. Potential dust generation effects would be short-term in duration and of negligible magnitude.

7.104 Considering the light, noise and pollution control measures that will be set out in the CoCP, it is expected that there would be negligible impacts on any designated sites. Any effects would be short-term in duration and of negligible magnitude.

7.105 The impact on LWSs (medium sensitivity) would therefore be of **negligible** significance, which is not significant in EIA terms.

Habitats

- 7.106 As set out above, woodland, hedgerows and dry ditches on site would be protected during development through suitable buffers and fencing.
- 7.107 Considering the dust, noise, lighting and pollution control measures that will be referred to in the CoCP, it is expected that there would be negligible impact on such habitats from airborne/dust pollutants. Any effects would be short-term in duration and of negligible magnitude.
- 7.108 Therefore, the impacts of construction on these habitats (low sensitivity) is expected to be negligible, which is not significant in EIA terms.

GCN

- 7.109 Taking into account the retention of areas considered to be of highest potential for terrestrial GCN (hedgerows and woodland), and the compensation to be provided via the District Level Licence application payment, the impacts of construction on GCN (low sensitivity) is expected to be of negligible magnitude, which will be of **negligible** adverse effect in the short term and not significant in EIA terms.

Reptiles

- 7.110 Taking into account the retention of the majority of areas considered to be of highest potential for terrestrial reptiles (hedgerows, field margins and woodland), and the measures to be set out in the CEMS and outlined above, the impacts of construction on reptiles (low sensitivity) are expected to be of negligible magnitude, which will be of **negligible** adverse effect in the short term and not significant in EIA terms.

Breeding Birds and Skylark

- 7.111 Considering the retention of areas woodland and hedgerows, the use of directional lighting during construction, and pre-construction surveys to protect bird nests, together with the habitat creation and management measures set out in the LEMP, the impact of construction on the breeding bird assemblage (low sensitivity) is expected to be negligible adverse, which would be a **negligible** adverse effect in the long term and not significant in EIA terms.
- 7.112 In addition to the above measures, the Skylark Mitigation Strategy sets out measures to mitigate for the estimated loss of skylark territories via the provision of Skylark plots on farmland outside the Site boundary. The impact of construction on skylark (low sensitivity) is expected to be negligible adverse, which would be a **negligible** adverse effect in the long term and not significant in EIA terms.

Bats

- 7.113 Taking into account the retention of all boundary features and other features that would be of value to foraging bats (woodlands, ponds etc.), retention of all known trees of potential value to roosting bats, the use of directional lighting to minimise potential disturbance and pre-construction surveys, the magnitude of the impacts of construction on bats (low sensitivity) would be negligible which is of **negligible** significance and not significant in EIA terms.

Badger

- 7.114 Taking into account the retention of the known setts, pre-construction surveys, the use of directional lighting, and the need for a Natural England licence should an active sett need to be disturbed, the impacts of construction on badgers (low sensitivity) is expected to be up to low adverse, which will be a minor adverse effect in the short-term and not significant in EIA terms.

Further Mitigation

- 7.115 No additional mitigation measures are considered necessary with respect to construction.

Future Monitoring

- 7.116 Monitoring during construction with respect to ecology will be set out in the CoCP and CEMS and will include checks on known badger setts and other IEFs as considered necessary following completion of pre-commencement surveys.

Accidents and/or Disasters

- 7.117 Accidents and disasters of relevance to ecology would include pollution incidents. These are prevented and mitigated through the adoption of the CoCP and associated pollution incident management procedures.

Assessment of Operational Effects

- 7.118 The operational phase of the proposed development is assumed to commence when construction ceases.

Designated sites

- 7.119 Once constructed, solar farms are passive developments, with little human activity of consequence, and no consistent lighting (there will be motion-activated security lighting around the substation). As such, no direct impacts on nearby Local Wildlife Sites are expected from the proposed development, and as such is considered to be **no change**, which is not significant in EIA terms.

Habitats

- 7.120 As with designated sites, the impacts from the proposed development during operation would be minimal. As such, no impacts on the woodlands or hedgerows on Site are expected from the proposed development.
- 7.121 The planting of species-diverse, native woodland, trees and hedgerows and management of these habitats in accordance with the LEMP to benefit biodiversity, would ensure an overall gain in these habitats. Therefore, the impact of operation on these habitats, woodland and hedgerows (low sensitivity) is expected to be low beneficial, which would be a minor beneficial effect in the long-term and is not significant in EIA terms.

Species

GCN

- 7.122 The new habitat creation including areas of wildflower meadow and woodland planting, and the strengthening of planting within hedgerows/tree lines as mitigation screening for visual effects, means that the overall impact of operation on GCN (low sensitivity) is expected to be low beneficial, which would result in a **minor beneficial** effect in the long-term, which is not significant in EIA terms.

Reptiles

- 7.123 The new habitat creation including areas of wildflower meadow and woodland planting, and the strengthening of planting within hedgerows/tree lines as mitigation screening for visual effects, means that the overall impact of operation on reptiles (low sensitivity) is expected to be low

beneficial, which would result in a **minor beneficial** effect in the long-term, which is not significant in EIA terms.

Breeding Birds and skylark

- 7.124 The new habitat creation including wildflower grassland, woodland and hedgerows will provide some mitigation for the loss of low-quality breeding bird habitat to be removed during construction (i.e. the loss of the arable fields). The impact of operation on the overall breeding birds (low sensitivity) is expected to be medium beneficial, the effect of which would be of minor beneficial significance in the long-term and not significant in EIA terms.
- 7.125 The Skylark Mitigation Strategy is intended to provide compensation for loss of estimated skylark territories in the arable fields. As such, the impact of operation on skylark is expected to be no change in the long term and not significant in EIA terms.

Bats

- 7.126 During operation the additional habitat creation including hedgerows, woodland and meadow grassland would benefit invertebrates and in turn foraging bats. In addition, the planting of new woodland and hedgerows, would provide enhanced habitat corridors / ecological networks across Site which would be of value to foraging and commuting bats. With the lack of constant operational lighting, the impact of operation on bats (low sensitivity) is expected to be low beneficial, which would result in a minor beneficial effect in the long-term, which is not significant in EIA terms.

Badger

- 7.127 The creation of the grassland habitat and woodland habitat on Site will benefit badger in the area, creating new foraging habitat that is of a higher quality than the existing arable landscape. Therefore, the magnitude of impact of operation on badgers (of low sensitivity) is expected to be up to low beneficial, which will be a minor beneficial effect in the long-term and not significant in EIA terms.

Further Mitigation

- 7.128 No additional mitigation measures are considered necessary with respect to the operation of the proposed development.

Future Monitoring

- 7.129 The LEMP sets out a programme of post-construction monitoring to ensure that the new habitat creation provided as mitigation for effects (both those of an ecological nature and those associated with other technical disciplines) is established and then maintained successfully. This will focus on the botanical component, on the basis that the successful implementation of this will have associated benefits for the animal species that they support.

Accidents/Disasters

- 7.130 Accidents and disasters of relevance to ecology during the operational phase would be limited to pollution incidents from fuel spills from vehicles during site maintenance visits. These would be prevented and mitigated through the adoption of the drainage strategy for the Site.

Potential Changes to the Assessment as a Result of Climate Change

- 7.131 Taking into account the information identified in the future baseline section above, future changes to the baseline conditions would not change any of the assessments for the operational phase set out above.

Assessment of Cumulative Effects

- 7.132 This section considers the effects that could occur as a result of the proposed development and other cumulative developments within the area.
- 7.133 In correspondence between UDC and the Planning Inspectorate, UDC identified some renewable energy development proposals for cumulative assessment. These are summarised in Table 7.8.

Table 7.8. Cumulative effects

Development	Distance from site	Potential for cumulative impacts
UTT/21/0688/FUL – Land at Cole End Lane, Wimbish (Application granted)	13 km	No potential for cumulative construction impacts given distance to Site. No potential for cumulative operational impacts given distance to Site.
S62A/22/0004 (UTT/22/1474/PINS) - Land East of Parsonage Road, and South of Hall Road, Takeley (Application granted)	12 km	No potential for cumulative construction impacts given distance to Site. No potential for cumulative operational impacts given distance to Site.
UTT/21/2846/FUL – Green Energy Hub, Chesterford Park, Great Chesterford (Application granted)	14 km	No potential for cumulative construction impacts given distance to Site. No potential for cumulative operational impacts given distance to Site.
UTT/22/0007/FUL – Land East of School Lane, Felsted (Application granted)	10 km	No potential for cumulative construction impacts given distance to Site. No potential for cumulative operational impacts given distance to Site.
East Herts DC 3/22/0806/FUL – Stocking Pelham Battery Energy Storage System	Adjacent to west boundary	If construction phases overlapped, disturbance impacts would extend over a slightly larger area but given the small size of the BESS relative to the Berden Hall Farm proposals, it is not considered that significant cumulative effects would occur. For operation, the BESS was not considered suitable for skylark (Clarkson & Woods, 2022) and therefore cumulative impacts on this species are not considered likely. There would be a slightly greater loss of low-quality habitat for GCN but given the mitigation proposed for Berden Hall Farm, significant cumulative effects are not considered likely. No other likely cumulative effects are considered likely to occur.

Inter-relationships

- 7.134 Relationships between landscape (particularly screening of visual impacts) and ecology have been taken into account in the production of the LEMP. No further inter-relationships are likely.

Summary of Effects

- 7.135 Predevelopment, the Site comprises intensively farmed arable fields with hedgerows and two woodland compartments. All of the habitat features of ecological sensitivity within the Site would be protected during construction and have been incorporated into the Site layout.
- 7.136 Overall, when the mitigation proposed is included, the proposed development would have an overall minor beneficial long-term impact on biodiversity.
- 7.137 A summary of the results of the impact assessment on ecology features is provided in Table 7.9 below.

BERDEN HALL FARM SOLAR FARM

Table 7.9: Summary of Likely Environmental Effects on Ecology

Receptor	Sensitivity of receptor	Description of impact	Short / medium / long term	Magnitude of impact	Significance of effect	Significant / Not significant	Notes
Construction phase							
Designated sites (Park Green Pelham Centre Meadow Stocking Pelham Field Centre and Berways Meadow LWSs)	Medium	Dust, noise, lighting and surface water pollution	Short term	Negligible	Negligible adverse	Not significant	
Woodland, hedgerows and dry ditches	Low	Dust, noise, lighting and surface water pollution	Short term	Negligible	Negligible adverse	Not significant	
GCN	Low	Habitat loss / disturbance / mortality	Short term	Negligible	Negligible adverse	Not significant	
Reptiles	Low	Habitat loss / disturbance / mortality	Short term	Negligible	Negligible adverse	Not significant	
Breeding birds and skylark	Low	Habitat loss / disturbance	Short term	Negligible	Negligible adverse	Not significant	
Bats (foraging and commuting)	Low	Disturbance	Short term	Negligible	Negligible adverse	Not significant	
Badgers	Low	Disturbance	Short term	Negligible	Negligible adverse	Not significant	

BERDEN HALL FARM SOLAR FARM

Receptor	Sensitivity of receptor	Description of impact	Short / medium / long term	Magnitude of impact	Significance of effect	Significant / Not significant	Notes
Operational phase							
Designated sites (Park Green Pelham Centre Meadow Stocking Pelham Field Centre and Berways Meadow LWSs)	Medium	No change	N/A	No change	No change	Not significant	
Woodland, hedgerows and dry ditches	Low	Habitat gain	Long term	Low	Minor beneficial	Not Significant	
GCN	Low	Habitat gain	Long term	Low	Minor beneficial	Not Significant	
Reptiles	Low	Habitat gain	Long term	Low	Minor beneficial	Not Significant	
Breeding birds and skylark	Low	Habitat gain	Long term	Low	Minor beneficial	Not Significant	
Bats (foraging and commuting)	Low	Habitat gain	Long term	Low	Minor beneficial	Not Significant	
Badgers	Low	Habitat gain	Long term	Low	Minor beneficial	Not Significant	

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8 OTHER ENVIRONMENTAL MATTERS

Introduction

- 8.1 As set out in Volume 1, Chapter 4: EIA Methodology, the scope of this ES includes the following key topics:
- Landscape and Visual Impact (Volume 1, Chapter 5)
 - Heritage (Volume 1, Chapter 6)
 - Ecology (Volume 1, Chapter 7)
- 8.2 Supporting appendices are also provided in this ES to support the above chapters. These include:
- Construction Traffic Management Plan (Volume 3, Appendix 2.1);
 - Code of Construction Practice (Volume 3, Appendix 2.2);
 - Landscape and Ecology Management Plan (Volume 3, Appendix 5.3);
- 8.3 This chapter provides an overview of the remaining environmental matters raised during consultation and correspondence listed in Table 4.1, viz:
- Loss of Best and Most Versatile Agricultural Land
 - Flood Risk and Surface Water Drainage
 - Noise
 - Access and Traffic
 - Highway Safety and Neighbourhood Amenity
 - Aircraft Safety
 - Contaminated Land
- 8.4 In all cases, no significant effects are considered likely.

Loss of Best and Most Versatile Agricultural Land

- 8.5 The loss of best and most versatile agricultural land is included as a worst case assessment on the basis the Site would be taken out of agricultural production for the 40 year duration of any planning consent. Should it be appropriate and practical to allow sheep grazing within the solar farm (see paragraph 2.36) there would be no loss of agricultural land.
- 8.6 Paragraph 174 of the NPPF (2021) provides for the protection of soils and recognises “*the wider benefits from natural capital and ecosystems services – including the economic and other benefits of the best and most versatile agricultural land, ...*”.
- 8.7 The footnote to paragraph 175 of the NPPF (2021) states that “*Where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality*”.
- 8.8 Policy ENV 5 of the adopted Uttlesford Local Plan (2005)– Protection of Agricultural Land although pre-dating the NPPF reflects it, stating that:

Development of the best and most versatile agricultural land will only be permitted where opportunities have been assessed for accommodating development on previously developed sites or within existing development limits. Where development of agricultural land is required, developers should seek to use areas of poorer quality except where other sustainability considerations suggest otherwise.

- 8.9 Planning Practice Guidance (see paragraph 3.56 above) sets out the particular factors a determining authority will need to consider. With regard to agricultural land, they mirror several aspects of Policy ENV 5; they include:
- a. encouraging the effective use of land by focussing large scale solar farms on previously developed and non agricultural land, provided that it is not of high environmental value;
 - b. where a proposal involves greenfield land, whether (i) the proposed use of any agricultural land has been shown to be necessary and poorer quality land has been used in preference to higher quality land; and (ii) the proposal allows for continued agricultural use where applicable and/or encourages biodiversity improvements around arrays. See also a speech by the Minister for Energy and Climate Change, the Rt Hon Gregory Barker MP, to the solar PV industry on 25 April 2013 and written ministerial statement on solar energy: protecting the local and global environment made on 25 March 2015.
 - c. that solar farms are normally temporary structures and planning conditions can be used to ensure that the installations are removed when no longer in use and the land is restored to its previous use.
- 8.10 The soils present within the Site have been surveyed and are described in the Agricultural Land Classification (ALC) report prepared by SOYL was submitted with the original planning application (see paragraph 1.9 and Appendix 1.2). The ALC assesses the quality of farmland to enable informed choices to be made about its future use within the planning system. The SOYL report stated that in terms of ALC, overall, some 37% of the Site comprises grade 2, 35% grade 3a and 28% grade 3b land. Annex 2 of the NPPF (2021) defines “*best and most versatile land*” as land in grades 1, 2 and 3a of the Agricultural Land Classification”. Thus, some 72% of the Site area is underlain by best and most versatile (BMV) agricultural land.
- 8.11 However, it should be noted that the SOYL survey (Appendix 1.2) was undertaken at the earliest iteration of the design layout (see Chapter 3), which included the smallest field of the initial development area located on the eastern side of the current layout. Reference to Map 4 of the SOYL report indicates that field, which is no longer part of the current design, comprised approximately 2.85 ha (49%) Grade 2, 1.81 ha (32%) Grade 3a and 1.07 ha (19%) Grade 3b.
- 8.12 The survey also excluded the area on the eastern side of proposed development which now is proposed to include 1 ha of new woodland and 2.7 ha of meadow. Although not surveyed reference to Map 4 of the SOYL report suggests that that area comprises entirely BMV land (Grades 2 and 3a). Similarly, the SOYL survey excluded the area (3.08 ha) at the south-west corner of the Site which Map 4 suggests is likely to comprise a mixture of Grades 3a and 3b. Assuming a 50/50 split between Grades 3a and 3b at the south-west corner, that and the other adjustments suggests that the current development area of 65.84 ha comprises some 47.6 ha (72%) of BMV land.
- 8.13 The Addendum to the Planning, Design and Access Statement submitted with the original planning application (Appendix 1.9) showed the Uttlesford District Council boundary overlaid with the provisional Agricultural Land Classification map (MAFF, 1988) together with the location of twelve renewable energy developments consented within the District; seven solar farms, two battery storage facilities and three anaerobic digestion plants. It noted that the combined total output of the seven solar farms is 88.8 MWs, of which 77 MWs (87%) has been consented and built on ALC Grade 2 land.
- 8.14 The Addendum went on to the note that “*typically, 1MW of solar will occupy 4 acres (1.62 ha) of land, using this calculation, we can deduce that if this scheme (the proposed development) were to be consented there would be up to 355 acres of land (143.67 ha) within Uttlesford occupied by solar farms, this would account for 0.34% of farmland within the district*”. The Addendum states that 80.4% of land within the Uttlesford District is ALC Grade 2 (51,573.0 ha) and a further 17% (10,954.5 ha) is Grade 3. Unfortunately, the Grade 3 statistic is not differentiated into Grade 3a (BMV) and 3b (non-BMV), however, assuming a 50/50 split as above suggests that, based on the

provisional ALC map, some 88.9% of land in Uttlesford District is comprised of best and most versatile agricultural land.

- 8.15 The proposed development is only partially compliant with Local Plan Policy ENV 5 – Protection of Agricultural Land and Planning Practice Guidance. First, planning permission is sought for 40 years from the time of the first exportation of electricity, after which the Site would be de-commissioned and the land returned to full agricultural use. The effect on agricultural land is therefore temporary and reversible. Second, the proposed development allows for continued agricultural use and provides biodiversity improvements around the perimeter of the solar arrays (species rich field margins and new and reinforced hedgerows) and off site with the creation of skylark nesting plots. Third, the amount of land given over to solar farm development in Uttlesford District, including the current proposed development amounts to less than one half of one percent of agricultural land.
- 8.16 With regard to the use of poorer quality agricultural land, Appendix 1.2 reports that there is only 11.95 ha of ALC Grade 4 and some 5,477 ha of ALC Grade 3b land (assuming a 50/50 split between ALC Grade 3a and 3b) within Uttlesford. In addition, given the typical patchwork of ALC grades (see, for example, Map 4 of the ALC report; Appendix 1.2) it is very difficult not to include a high percentage of best and most versatile agricultural land within any large scale development. Nevertheless, only some 72% of the proposed development would be on best and most versatile agricultural land, significantly less than the District value of 88.9%.
- 8.17 Under the Town and Country Planning (Development Management Procedure) (England) Order 2015 (DMPO) Natural England is a statutory consultee on development that would lead to the loss of over 20 ha of BMV agricultural land, where the development is not in accordance with an approved plan.
- 8.18 Natural England were consulted formally by the Planning Inspectorate in September 2022 on the original planning application. Natural England raised no objection to the proposed development stating that *“we consider that the proposed development, if temporary as described, is unlikely to lead to significant permanent loss of BMV agricultural land, as a resource for future generations. This is because the solar panels would be secured to the ground by steel piles with limited soil disturbance and could be removed in the future with no permanent loss of agricultural land quality likely to occur, provided the appropriate soil management is employed and the development is undertaken to high standards”*.

Flood Risk and Surface Water Drainage

- 8.19 Uttlesford Local Plan Policy GEN 3 – Flood Protection states:
Within the functional floodplain, buildings will not be permitted unless there is an exceptional need. Developments that exceptionally need to be located there will be permitted, subject to the outcome of flood risk assessment. Where existing sites are to be redeveloped, all opportunities to restore the natural flood flow areas should be sought. Within areas of flood risk, within the development limit, development will normally be permitted where the conclusions of a flood risk assessment demonstrate an adequate standard of flood protection and there is no increased risk of flooding elsewhere.

Within areas of the floodplain beyond the settlement boundary, commercial industrial and new residential development will generally not be permitted. Other developments that exceptionally need to be located there will be permitted subject the outcome of a flood risk assessment.

Outside flood risk areas development must not increase the risk of flooding through surface water run-off. A flood risk assessment will be required to demonstrate this. Sustainable Drainage Systems should also be considered as an appropriate flood mitigation measure in the first instance.

For all areas where development will be exposed to or may lead to an increase in the risk of flooding applications will be accompanied by a full Flood Risk Assessment (FRA) which sets out the level of risk associated with the proposed development. The FRA will show that the proposed development can be provided with the appropriate minimum standard of protection throughout its lifetime and will demonstrate the effectiveness of flood mitigation measures proposed.

- 8.20 A site specific Flood Risk Assessment (FRA) was undertaken for the proposed development as part of the original planning application and is reported herein at Appendix 1.4. Whilst the FRA was undertaken at the time of the original planning application and the site area subsequently has been reduced by some 5.74 ha (see paragraph 3.78) the conclusions of the FRA remain valid. They are as follows.

Flood Risk

- 8.21 The Environment Agency (EA) map for planning shows that the Site is located in Flood Zone 1, where the probability of fluvial or tidal flooding is low.
- 8.22 The EA map for Surface Water Flooding indicates that most of the Site is at 'Very Low' risk of flooding. Limited linear areas within the Site are defined as being at 'Low', 'Medium' and 'High' risk of surface water flooding. The location of the areas at risk of surface water flooding appear to coincide with topographical lows in the terrain which form a land drain path.
- 8.23 The susceptibility to groundwater flooding is low.
- 8.24 The risk of flooding from reservoir failure has been assessed as low.

Hydrological Appraisal

- 8.25 The percentage increase in impermeable area is negligible and ordinarily would not require any surface water management scheme. The incorporation of appropriate management techniques will mitigate potential increase in runoff from the proposed development.
- 8.26 The proposed development design, as well as surface water and soil management measures outlined in Section 8 of Appendix 1.4, will ensure that there is negligible alteration to local drainage patterns and flow directions and manage suspended sediments from entering the drainage channels.

Surface Water and Soil Management Measures

- 8.27 SuDS techniques will be incorporated into the design, when and where required, and will work in conjunction with existing field drainage to manage the discharge of any excess water from the Site.
- 8.28 Where construction has resulted in soil compaction, the areas between panel rows would be tilled / scarified to an appropriate depth and then re-seeded with an appropriate vegetation cover.
- 8.29 All areas of the Site, where appropriate, will have vegetation cover at all times.
- 8.30 Any existing field or tile drainage system will be restored, where affected by construction will be maintained by the Applicant for the life of the proposed development.
- 8.31 Access tracks will be constructed out of permeable materials (crushed stone or reinforced grass).
- 8.32 The solar panels will be raised to a minimum height of 900 mm. The panels will be located away from the defined floodplain and will not cause any blockage of the overland flow route.
- 8.33 In conclusion the FRA demonstrates:
- The Site is at low risk of flooding from fluvial and/or tidal flooding;

- It would neither exacerbate existing flooding problems nor increase the risk of flooding on Site or elsewhere;
- Surface water runoff will be mitigated by maintenance of a vegetation cover; and
- With appropriate surface water and soil management measures there is negligible alteration to local drainage patterns direction within the Site.

8.34 In summary, the proposed development is at ‘Low’ risk of flooding and with appropriate surface water and soil management measures would cause negligible effects on the hydrological regimes.

Noise

8.35 Intrusive or unacceptable noise levels can be a serious cause for concern by local residents, particularly in quiet rural locations. Various policies in the adopted Uttlesford Local Plan (2005) include reference to noise; Policy E 4 – Farm Diversification: Alternative Use of Farmland, Policy ENV 11 – Noise Generators and Policy GEN 4 – Good Neighbourliness.

8.36 The potential effect of the proposed development on Policy E 4 – Farm Diversification: Alternative Use of Farmland is described in paragraphs 3.50 to 3.54. With specific reference to noise the policy states:

Alternative uses for agricultural land will be permitted if all the following criteria are met:

b) The development would not result in a significant increase in noise levels or other adverse impacts beyond the holding.

8.37 The supporting text to Uttlesford Local Plan (2005) Policy ENV 11 – Noise Generators states (at paragraph 5.22) that “it is equally important that new development involving noisy activities should if possible be sited away from noise sensitive land uses”. In full, the policy states that:

Noise generating development will not be permitted if it would be liable to affect adversely the reasonable occupation of existing or proposed noise sensitive development nearby, unless the need for the development outweighs the degree of noise generated.

8.38 Policy GEN 4 - Good Neighbourliness states that

Development and uses, whether they involve the installation of plant or machinery or not, will not be permitted where:

a) noise or vibrations generated, or

b) smell, dust, light, fumes, electro magnetic radiation, exposure to other pollutants;

would cause material disturbance or nuisance to occupiers of surrounding properties.

8.39 In the earlier discussion of Policy E 4 – Farm Diversification: Alternative Uses of Farmland, paragraph 3.52 stated that “a report of a noise impact assessment of the proposed development accompanied the original planning application (see Appendix 1.7), details of which are set out in Chapter 8. The report concluded that “that levels of sound arising from the operation of the facility will not result in any significant adverse impacts at any of the nearby NSRs” (noise sensitive receptors, such as residential properties). “Sound arising from the operation of the facility is therefore acceptable in accordance with the relevant British Standards, national and local planning policy”. During construction noisy activities would be controlled by the implementation of the requirements of the CEMP agreed with the local authority”.

8.40 The important points of the Local Plan policies pertaining to noise to note are the reference to “a significant increase in noise levels”, “affect adversely the reasonable occupation of existing or proposed noise sensitive development nearby” (e.g. residential properties) and “would cause material disturbance or nuisance to occupiers of surrounding properties”.

- 8.41 The Noise Impact Assessment for the proposed development (Appendix 1.7) sets out the policy context, technical guidance and standards used for undertaking noise surveys and assessments.
- 8.42 An environmental sound survey was undertaken on site to establish the baseline sound conditions at the nearest noise sensitive receptors of the Site. The data obtained were from 15-minute interval continuous recordings over 7 days at two long-term sound level survey locations using standard acoustic monitoring equipment. The monitoring locations were: location LT1, located in a field near Berden, at a distance of approximately 100 m to the east of the red line boundary of the Site, and location LT2, located at a distance of approximately 90 m from the existing battery storage facility in the south-west corner of the Site.
- 8.43 The purpose of each long-term monitor was to capture sound levels considered representative at each of the selected noise sensitive receptors (primarily residential properties). The equipment was calibrated on site before and after monitoring with no significant deviation noted. Any data obtained during adverse weather conditions (e.g. rain and wind) was discarded.
- 8.44 The measured background sound levels were ranging from 33 dB $L_{A90,T}$ (night-time) to 38 dB $L_{A90,T}$ (daytime) at LT1 and 34 dB $L_{A90,T}$ (night-time) to 37 dB $L_{A90,T}$ (daytime) at LT2.
- 8.45 The measured residual sound levels at LT1 and LT2 were ranging from 39 dB $L_{A90,T}$ (night-time) to 50 dB $L_{A90,T}$ (daytime) at LT1 and 36 dB $L_{A90,T}$ (night-time) to 46 dB $L_{A90,T}$ (daytime) at LT2.
- 8.46 The assessment considered the early morning (05:00-07:00), the daytime (07:00-23:00) and night-time (23:00-07:00) hours.
- 8.47 The noise sources within the proposed development that were considered for the noise impact assessment are the standalone solar PV inverters and the new substation. Generally, noise from inverters increases with increased sunlight, whereas the transformer at the substation gives a steady noise emission over time.
- 8.48 A 3-D noise model was created to model operational noise from the Site using proprietary noise modelling software (SoundPLAN v8.2). The software takes into account topography as well as screening, ground and atmospheric effects and directivity. Data for the proposed electrical infrastructure were obtained from a similar operational solar farm in the UK. The 3-D noise model considered the proposed development and also the cumulative scheme, i.e. the proposed development and the adjacent battery storage facility operational.
- 8.49 The results of the assessment showed that there is a low risk that the sound from the proposed development and the cumulative scheme will result in adverse impacts during all assessment time periods (early morning, day-time and night time). Therefore, adverse impacts/effects would be very unlikely, significant, or otherwise at all NSRs. The report concluded that “*sound arising from the operation of the proposed development is therefore acceptable in accordance with the relevant British Standards, national and local planning policy*”.

Access and Traffic

- 8.50 Uttlesford Local Plan (2005) Policy GEN 1 – Access states that:

Development will only be permitted if it meets all of the following criteria:

a) Access to the main road network must be capable of carrying the traffic generated by the development safely.

b) The traffic generated by the development must be capable of being accommodated on the surrounding transport network.

c) The design of the site must not compromise road safety and must take account of the needs of cyclists, pedestrians, public transport users, horse riders and people whose mobility is impaired.

d) It must be designed to meet the needs of people with disabilities if it is development to which the general public expect to have access.

e) The development encourages movement by means other than driving a car.

- 8.51 Details of the current traffic flows on the local road network in the vicinity of the Site together the predicted traffic flows during construction and operation of the proposed development are set out in the Access Technical Note (Appendix 1.3) and the revised CTMP (Appendix 2.1). The CTMP also sets out the proposed route for construction traffic from the M11/A120. Information on access and parking, transport management, and construction access and construction vehicles are summarised in Chapter 2, specifically in paragraphs 2.20 g), 2.22 to 2.28 and 2.74 to 2.80.
- 8.52 The details demonstrate that the access to and from the main road network proposed development is capable of carrying the traffic generated by the development safely, both during construction and operation.
- 8.53 No traffic is generated by the proposed development and the design of the Site access does not compromise local road safety and takes into account the needs of cyclists, pedestrians, public transport users, horse riders and people whose mobility is impaired. Indeed, as part of the proposed development a new public right of way would be constructed between Berden and Stocking Pelham parallel to Ginns Road.
- 8.54 Given the nature of the proposed development paragraphs d) and e) of Policy GEN 1 do not apply.

Highway Safety and Neighbourhood Amenity

- 8.55 One of the matters raised during consultation and correspondence (see Table 4.1) was the potential effect glint and glare from the proposed solar arrays may have on road users and, under neighbourhood amenity, local residents.
- 8.56 There is no specific policy within the adopted Uttlesford Local Plan (200%) dealing with such matters. However, Planning Practice Guidance (see paragraph 3.56 d) does refer to *“the proposal’s visual impact, the effect on landscape of glint and glare (see guidance on landscape assessment) and on neighbouring uses and aircraft safety”*.
- 8.57 The Glint and Glare study of the proposed development was submitted to UDC as part of original planning application (see Appendix 1.5). Although the area and boundary of the Site has been modified slightly since that study its conclusions remain valid. They are as follows.

Assessment Results – Roads

The modelling has shown that solar reflections are geometrically possible towards all 18 of the assessed road receptors along approximately 1.8km of Ginns Road. A review of the available imagery and site plans has shown that all views of the reflecting panels from this section of road will be significantly screened by existing and proposed vegetation surrounding the site.

Any solar reflections experienced along the local roads surrounding the proposed development are considered a low impact in accordance with the guidance presented in Appendix D.

Assessment Results – Dwellings

Views of the reflecting panels are considered possible at one surrounding dwelling for which solar reflections are predicted to be experienced for more than three months per year and 60 minutes per day. A mitigation requirement has not been identified for this dwelling because:

- *The separation distance between the dwelling and closest reflecting panel is sufficiently large; and*

- *Effects will coincide with direct sunlight, which is a far more significant source of light compared to a solar reflection.*

Aircraft Safety

- 8.58 Another matter raised during consultation and correspondence (see Table 4.1) was the potential impact of the proposed development on aircraft safety.
- 8.59 There is no specific policy within the adopted Uttlesford Local Plan (2005) dealing with aircraft safety, specifically the potential effect glint and glare from reflective surfaces could have on aircraft operations. However, Planning Practice Guidance (see paragraph 3.56 d) does refer to:

“the proposal’s visual impact, the effect on landscape of glint and glare (see guidance on landscape assessment) and on neighbouring uses and aircraft safety”

- 8.60 The Glint and Glare study of the proposed development was submitted to UDC as part of original planning application (see Appendix 1.5). Although the area and boundary of the Site has been modified slightly since that study its conclusions remain valid. They are:

For aviation activity associated with London Stansted Airport, significant impacts are not predicted because:

- *Any solar reflections from the proposed development will be outside a pilot’s primary field of view (50 degrees either side of the approach bearing) along the 2-mile approach path towards runway thresholds 04 and 22, which is acceptable in accordance with the associated guidance and industry best practice.*
- *Visibility of the proposed development is not anticipated from the ATC Tower, considering the separation distance and intervening screening.*

For aviation activity associated with Nuthampstead Airfield, significant impacts are not predicted because any solar reflections from the proposed development will be outside a pilot’s primary field of view along the 2-mile approach path towards runway thresholds 05 and 23. This is acceptable in accordance with the associated guidance and industry best practice.

Contaminated Land

- 8.61 Policy ENV 14 – Contaminated Land of the adopted Uttlesford Local Plan 2005 states that:
- Before development, where a site is known or strongly suspected to be contaminated, and this is causing or may cause significant harm, or pollution of controlled waters (including groundwater) a site investigation, risk assessment, proposals and timetable for remediation will be required.*
- 8.62 The Site is not known as, or strongly suspected to be contaminated. The history of the Site has been one of agriculture and the ALC report (Appendix 1.2), whilst reporting the results of a soil survey for agricultural land classification purposes, makes no mention of any contamination or the presence of made ground which could be indicative of potential contaminants.

Conclusion

- 8.63 On the basis that the appropriate mitigation measures and best practice procedures outlined in this chapter and supporting technical documents are employed, it is considered that the construction and operation of the proposed development would not lead to any significant effects with regard to the environmental topics discussed above.

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