Design Statement

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Longfield Solar Energy Farm Ltd

Meeting the urgent national need for new sources of renewable energy.

Longfield
Solar Farm

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1. Executive Summary

A strategic approach to design

1.1.1 Longfield Solar Farm (the Scheme) is proposed in order to help meet the urgent need for renewable energy that is required for the Government's objectives and commitments for the energy system and tackling climate change, as set out in the National Policy Statement for Energy [REF-1].

1.1.2 Solar at scale has an important role to play in the renewable energy mix. However, experience has shown that host local communities have understandable concerns about the location, design and operation of projects of this kind. Longfield Solar Energy Farm Limited (the Applicant) is sensitive to such concerns and this has been key to the strategic approach that has been taken to the development of the Scheme and its design. This strategic approach to design for the Scheme has been closely informed by two rounds of public consultation. These have included many one-to-one meetings with those people most likely to be affected by the Scheme. Public consultation has also shown that local communities and their representatives would like Longfield Solar Farm to set new standards as an "exemplar" scheme.

1.1.3 The Applicant has embraced this challenge both in the design and eventual operation of the Scheme. This has laid down a long-term vision for the Scheme in order to achieve a high quality scheme that delivers urgently needed energy benefits, whilst respecting its surroundings and taking opportunities to enhance biodiversity and connectivity.

1.1.4 Overall, the Scheme seeks to deliver the following vision: "Longfield Solar Farm will be a high quality and innovative solar farm. It will deliver a substantial amount of renewable energy to the national electricity transmission system whilst being sensitive to its surroundings. It will be carefully sited and designed, taking account of nearby receptors, improve connectivity for pedestrians and cyclists, improve landscape connectivity and structure, and enhance biodiversity."

1.1.5 As such, the Applicant sees itself as being a long-term partner of the local community, along with the landowner, throughout the lifetime of the Scheme. Therefore the Applicant has sought to create a Scheme that its neighbours can not only live with, but eventually appreciate for the benefits that it will bring at a local level, whilst delivering on the national need for renewable energy. The Applicant will work closely with the community to ensure they meet local requirements, through the establishment of an active community liaison group.

1.1.6 The delivery of a sensitive, high quality scheme that also delivers local benefits is central to the strategic approach to the design of the Scheme.

1.1.7 The Applicant will deliver this overall vision for the Scheme by achieving a series of Design Objectives. This Design Statement describes the Design Objectives, how they have been identified and how they will be achieved.

2. Introduction

2.1.1 The Applicant is applying for a Development Consent Order (DCO) for the Scheme. The Scheme comprises the construction, operation, maintenance and decommissioning of a solar photovoltaic (PV) array electricity generating facility, electrical storage facility and export connection to the National Grid via an extension to the existing Bulls Lodge Substation. A detailed description of the Scheme can be found in Chapter 2, The Scheme, of the Environmental Statement (ES) [EN/010118/APP/6.1].

2.1.2 The DCO Application ('The Application') will be determined by the Secretary of State for Business, Energy and Industry Strategy because the Scheme is classified as a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008, with a total generating capacity exceeding 50 MW.

2.1.3 This Design Statement is submitted as part of the Application. Its purpose is to describe the design of the Scheme and to explain how it has responded to its context and how it has identified and met its Design Objectives.

2.1.4 Good design has been a fundamental consideration from the outset of the project. This Design Statement sets out how good design has been embedded in the Scheme vision and objectives, how these have influenced the overall siting and aesthetics of the Scheme as a whole and how this has been considered in the functionality of each element. The development of the design for the Scheme has been an iterative process and the proposed design has evolved as constraints and opportunities have emerged over time, following various stages of assessment work and consultation. This Design Statement addresses the operational phase of the Scheme, except where specifically stated. The construction and decommissioning phases will also be carefully designed and controlled, as explained by Chapter 2, the Scheme, of the Environmental Statement (ES) [EN010118/APP/6.1], the Outline Construction Environmental Management Plan [EN010118/APP/7.10] and the Decommissioning Strategy [EN010118/APP/7.12].

2.1.5 The remainder of this Design Statement comprises the following sections:

Section 3, Good Design, introduces the context of what constitutes 'good design' as set out in policy and guidance relating to large scale energy infrastructure.

Section 4, Context, presents an overview of the Order limits and their surroundings. The character and features identified in this section inform the development of the Design Objectives identified in the following section.

Section 5, Design Objectives, establishes the overall vision and objectives that have guided and informed the iterative design process. The Design Objectives set out how the Scheme will deliver the overall vision whilst being sensitive to the character and features identified in Section 4.

Section 6, Design Evolution, describes the development of the design, showing the evolution of the Scheme at different design stages in response to the gathering of information and feedback from stakeholders and ongoing design work.

Section 7, Design Masterplan, illustrates how the design of the Scheme meets its objectives.

Section 8, Commitments, explains how the delivery of the design features and commitments presented in this document will be secured by the DCO.

Appendix A
Outline Design Principles, sets out detailed principles and parameters with which the detailed design of the Scheme will be required to comply.

Appendix B
Biodiversity Design Strategy, illustrates design approaches that could be incorporated to further enhance biodiversity on and around the Scheme.

3. Good design

3.1.1 In developing our proposals for the Scheme, we need to establish what constitutes good design. This section considers relevant guidance and policy on the design of major energy infrastructure.

3.1.2 National Policy Statement for Energy (EN-1) [REF-1] sets out the Government's policy for delivery of major energy infrastructure. This is to help deliver the Government's climate change objectives by clearly setting out the need for new low carbon energy infrastructure to contribute to climate change mitigation.

3.1.3 EN-1 [REF-1] states that, "applying 'good design' to energy projects should produce sustainable infrastructure sensitive to place, efficient in the use of natural resources and energy used in their construction and operation, matched by an appearance that demonstrates good aesthetic as far as possible." Although it is, "acknowledged, however that the nature of much energy infrastructure development will often limit the extent to which it can contribute to the enhancement of the quality of the area."

3.1.4 Good design is also a requirement of the draft revised Over-arching National Policy Statement for Energy (Draft EN1) [REF-2] which was published for consultation in September 2021. Draft EN1 states that, "Applicants need to consider the importance of 'good design' criteria. Such consideration of 'good design' criteria should be demonstrated when submitting applications for energy infrastructure projects to the Secretary of State."

3.1.5 The National Planning Policy Framework (NPPF) [REF-3], most recently updated in July 2021, sets out the Government's planning policies for England and how these should be applied. Good design is described in paragraph 126. It explains that "the creation of high quality, beautiful and sustainable buildings and places is fundamental to what the planning and development process should achieve. Good design is a key aspect of sustainable development, creates better places in which to live and work and helps make development acceptable to communities."

3.1.6 Good design is also referenced in guidance relevant to the Scheme. The Landscape Institute's Infrastructure Technical Guidance Note 04/20 [REF-4] explains that, "the design of major infrastructure is inherently multi-disciplinary, requiring the involvement of specialists drawn from across a broad range of professions and stakeholders. Achieving good design therefore requires a collaborative approach, where all planning and design elements of the project are integrated. This requires a common vision and purpose and a culture of openness to new ideas and perspectives."

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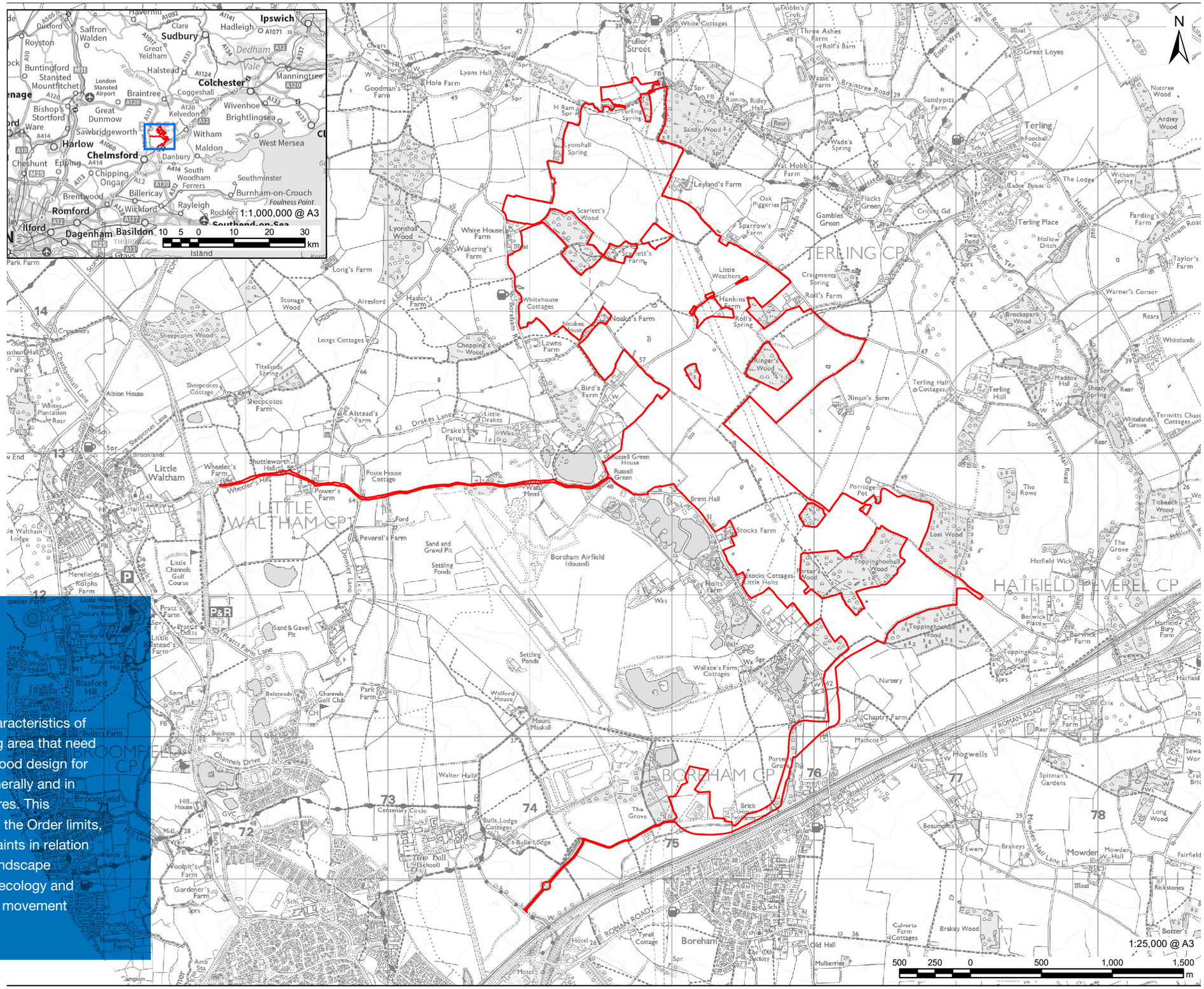
Order limits

The Order limits are shown in red.



4. Context

Introduction

4.1.1 This section describes the characteristics of the Order limits and the surrounding area that need careful consideration in achieving good design for the Scheme. It summarises this generally and in relation to specific topics and features. This comprises the baseline condition of the Order limits, as well as opportunities and constraints in relation to: renewable energy generation, landscape character and green infrastructure, ecology and biodiversity, hydrology, access and movement and cultural heritage.

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4.2 Order limits and surroundings

4.2.1 The Order limits cover approximately 453 hectares (ha) of land, located within the administrative areas of Chelmsford and Braintree in the county of Essex.

4.2.2 They comprise small to moderately sized agricultural fields, mainly under arable production, that span a largely flat, plateaued landscape interspersed with trees, hedgerows, tree belts and small blocks of woodland. The hedgerows within the Order limits range between lengths of dense tall vegetation (shrub and tree species) and thin lines of vegetation with sporadic trees present, although the former is a dominant feature. A network of Public Rights of Way (PRoW) and farm access tracks cross the Order limits. The northernmost part of the Order limits extends into the River Ter valley. From the base of the valley, the landform rises steeply northward to the edge of the Order limits. This is the landscape in which the solar farm will need to sit sensitively. The design should endeavour to be sensitive to its rural setting and seek to avoid or reduce impacts on footpaths and the River Ter valley.

4.2.3 Overhead powerlines carried by tall pylons extend from the west of Boreham, across most of the Order limits and to the west of Sandy Wood, where the alignment of the pylons diverts to the west and east of Fuller Street. The A12 and B1137 frame the site boundary to the south and south west, along with the railway line connecting Chelmsford and Witham. In the surrounding area, Terling Road, Terling Hall Road and Boreham Road are the main north to south transport routes, providing access between the villages. Smaller local roads cross parts of the Order limits from west to east. Braintree Road is the main road network to the north, extending between Terling and Fuller Street. The electricity wires, pylons and roads affect the character of the Order limits and may be relevant considerations in seeking to sensitively locate the various components of the Scheme.

4.2.4 There are no designated heritage assets within the Order limits, although several listed buildings are located near to their edges. In addition, Terling Conservation Area is approximately 650m to the south-east and Boreham Conservation Area is approximately 750m to the south. The design of the Scheme should seek to avoid direct impacts on heritage assets and to preserve their setting as far as possible.

4.2.5 The nearest residential properties are individual houses located close to the boundary of the Order limits. These include a series of homes located along the western boundary of the Order limits: White House Farm; Whitehouse Cottages; Lawns Farm; Birds Farm; Stocks Farm; Stocks Cottages; Russell Green House; 1 Boreham Road; the property opposite Sparrow's Farm; a property on Terling Hall Road south of the junction with Waltham Road; Terling Hall; Terling Hall Cottages; Thatched Cottage; and Buftons. In addition, Sparrow's Farm and Rolls Farm are located close to the north eastern boundary of the Order limits, on Terling Hall Road. Noake's House; Noake's Barn; Hedgerow Cottage; Little Weathers and Scarlett's Farm are located on pockets of land that are excluded from, but surrounded by, the Order limits. The impact of the Scheme on views from residential properties should be an important consideration in it's design.

4.2.6 Extensive desk-based surveys and field work have been undertaken throughout an iterative design process between January 2020 and January 2022. The key findings of this analysis are presented throughout section 4. These helped the Applicant to gain a detailed understanding of the conditions within and near to the Order limits, which has in turn helped inform the Design Objectives and the response of the design to those objectives.

The following sections provide an appraisal of the baseline that has helped inform the development of the Design Objectives in terms of the following features:

a. Renewable energy generation.
b. Landscape.
c. Ecology and biodiversity.
d. Cultural heritage.
e. Hydrology.
f. Access and movement.

4.2.7 A more detailed appraisal of the baseline situation is presented in each of the topic chapters (Chapters 6 to 16) of the Environmental Statement [EN010118/APP/6.1].

4.3 Renewable energy generation

Baseline analysis

4.3.1 The characteristics of the land lend themselves to the generation of renewable energy. It is well secluded, with level topography and adequate transport links to enable the construction of a significant solar farm. It is also situated in a higher irradiation area (i.e. an area that receives a lot of energy from the sun, compared to the UK overall), which means that it is in an area of the UK that is suited to efficiently generating a large amount of energy from irradiation.

4.3.2 Woodland blocks have a potential shadowing effect on land to their north. In turn this has the potential to impact energy generation in those areas. The design of the Scheme should take account of this in seeking to maximise energy generation.

4.4 Landscape character and green infrastructure

Baseline analysis

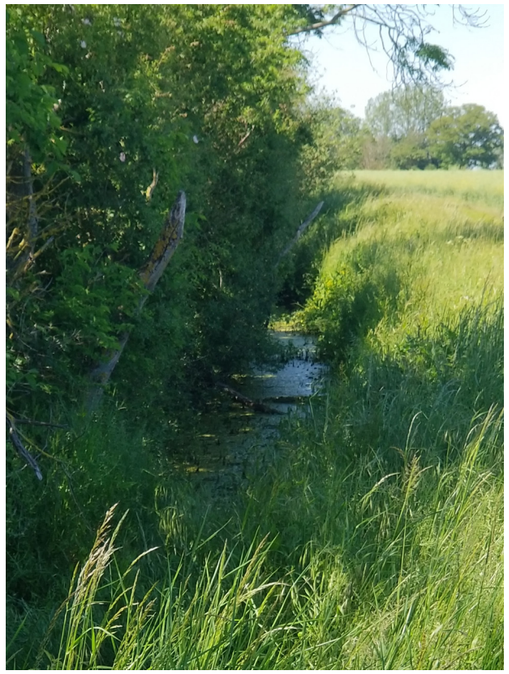
4.4.1 The Applicant has defined 13 Local Landscape Character Areas (LLCA) based on the characteristics of the landform and landscape in small geographic areas. These are shown on the next page. The purpose of defining the LLCA is to enable a sensitive assessment of the landscape effects of the Scheme and to inform the development of the design. The Solar Farm Site is located within three of these LLCA.

4.4.2 The northern part of the Order limits is located within LLCA 03, Ter Valley North. This comprises the sloping hills of the River Ter valley, with the River Ter flowing from north west to south on the valley floor. Small to medium sized woodland blocks on the valley slopes diversify the land cover and landscape pattern across the pasture and arable fields. Sandy Wood is located on the southern side of the valley, providing a sense of enclosure. There are some more tranquil areas away from the A131 and pylons with associated overhead lines that cross the valley.

4.4.3 The central section of the Solar Farm Site is within LLCA 02, Western Farmland Plateau. This comprises gently undulating landforms across large to medium scale fields, giving a sense of openness across the rural landscape. Dispersed settlements and scattered farmsteads contribute to the historic character of the area, as does the network of winding, quiet and narrow rural lanes. Field boundaries are marked by fragmented hedgerows with hedgerow trees or grass banks and ditches. Clumps of medium and small woodlands, including some ancient woodland, create a more diverse landcover. Access across the LLCA is provided via PRoW, including the Essex Way. Pylons with associated overhead lines cross the farmland, creating a prominent existing electricity transmission feature on the skyline.

4.4.4 The southern part of the Solar Farm Site is within LLCA 07, Toppinghoehall Woods. This comprises a predominantly flat landform across large scale arable fields, promoting a sense of openness. Settlement is typically limited to individual properties along Waltham Road. Field boundaries are predominantly marked by grass banks or ditches, further contributing to the sense of openness. Large deciduous woodlands, including some ancient woodland, are found across the LLCA. There is limited recreational access. The night sky around the location is relatively light on account of the LLCA's proximity to Chelmsford and the A12. Pylons with associated overhead lines cross the farmland, creating a prominent existing electricity transmission feature on the skyline.

4.4.5 Most of the land within the Order limits is currently used for arable farming. The majority of agricultural land within the Order limits is of a lower quality, being not classified as 'best and most versatile' (BMV) agricultural land. A sizable minority within the Order limits, however, is classed as BMV.



4.4.6 Considering these baseline conditions, the following opportunities were identified that could be addressed by the Scheme:

a. A number of hedgerows across the Order limits are fragmented and could be improved through new planting.

b. Woodland blocks are typically isolated, surrounded by agricultural fields. Opportunities could be sought to create new linkages through new tree planting, enhancing connectivity.

c. There is little new tree or scrub planting within the Order limits. Opportunity could be sought to diversify the age and species of the planting stock within the Order limits.

d. There is a notable difference in the level of tranquillity and enclosure between the north and south of the Order limits, as set out in LLCA 02, being remote from major buildings and highways and open in nature, and LLCA 07, being near to the A12 dual carriageway and housing some mature woodland blocks which create a sense of enclosure. This presents an opportunity to site larger elements, such as the Battery Energy Storage System (BESS) and the Longfield Substation, in the southern part of the Order limits, benefiting from the existing sense of enclosure and natural screening and avoiding direct impacts of these items on the most tranquil and open parts of the Order limits.

e. There are a number of valuable landscape features within the Order limits, such as ancient woodland and watercourses. The Scheme should seek to avoid and reduce effects on such elements through adherence to minimum offsets and seek to enhance these where possible.

f. The northernmost part of the Order limits includes sloping topography which is considered sensitive to landscape change. Impacts on this more sensitive landscape could be reduced through the siting of the most significant built structures within the plateaued landscape, off LLCA 02 and 07, where possible.

g. There are a number of isolated residential properties in proximity to the Order limits. The layout of the Scheme should take opportunities to be sensitive to residential views, avoiding or reducing change wherever possible. The Applicant has liaised closely with residents of these properties to understand and take account of their concerns.

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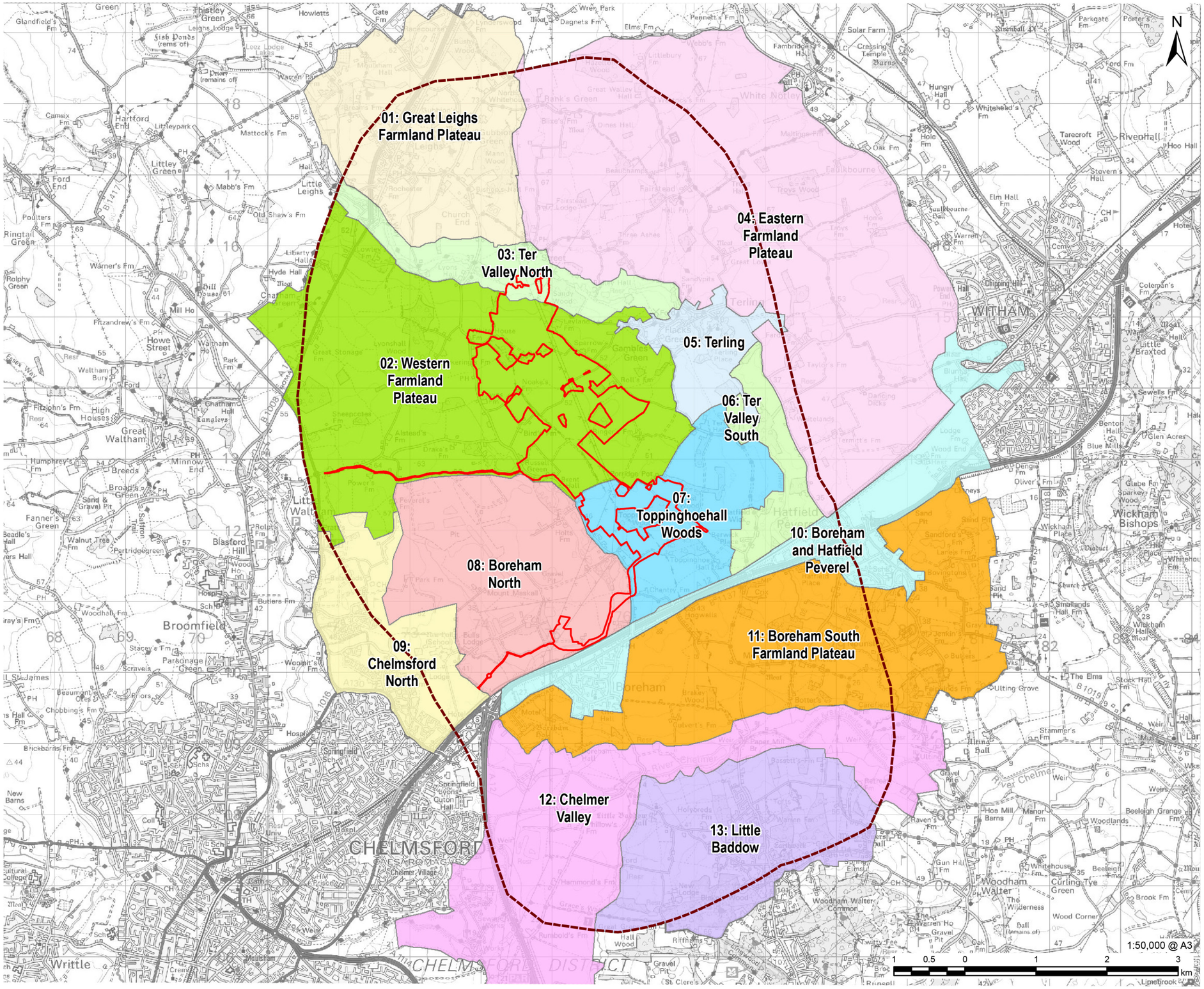

Local landscape character areas (LLCA)

LEGEND

- Order Limits
- Study Area

Local Landscape Character

- 01 - Great Leighs Farmland Plateau
- 02 - Western Farmland Plateau
- 03 - Ter Valley North
- 04 - Eastern Farmland Plateau
- 05 - Terling
- 06 - Ter Valley South
- 07 - Toppinghoehall Woods
- 08 - Boreham North
- 09 - Chelmsford North
- 10 - Boreham and Hatfield Peverel
- 11 - Boreham South Farmland Plateau
- 12 - Chelmer Valley
- 13 - Little Baddow

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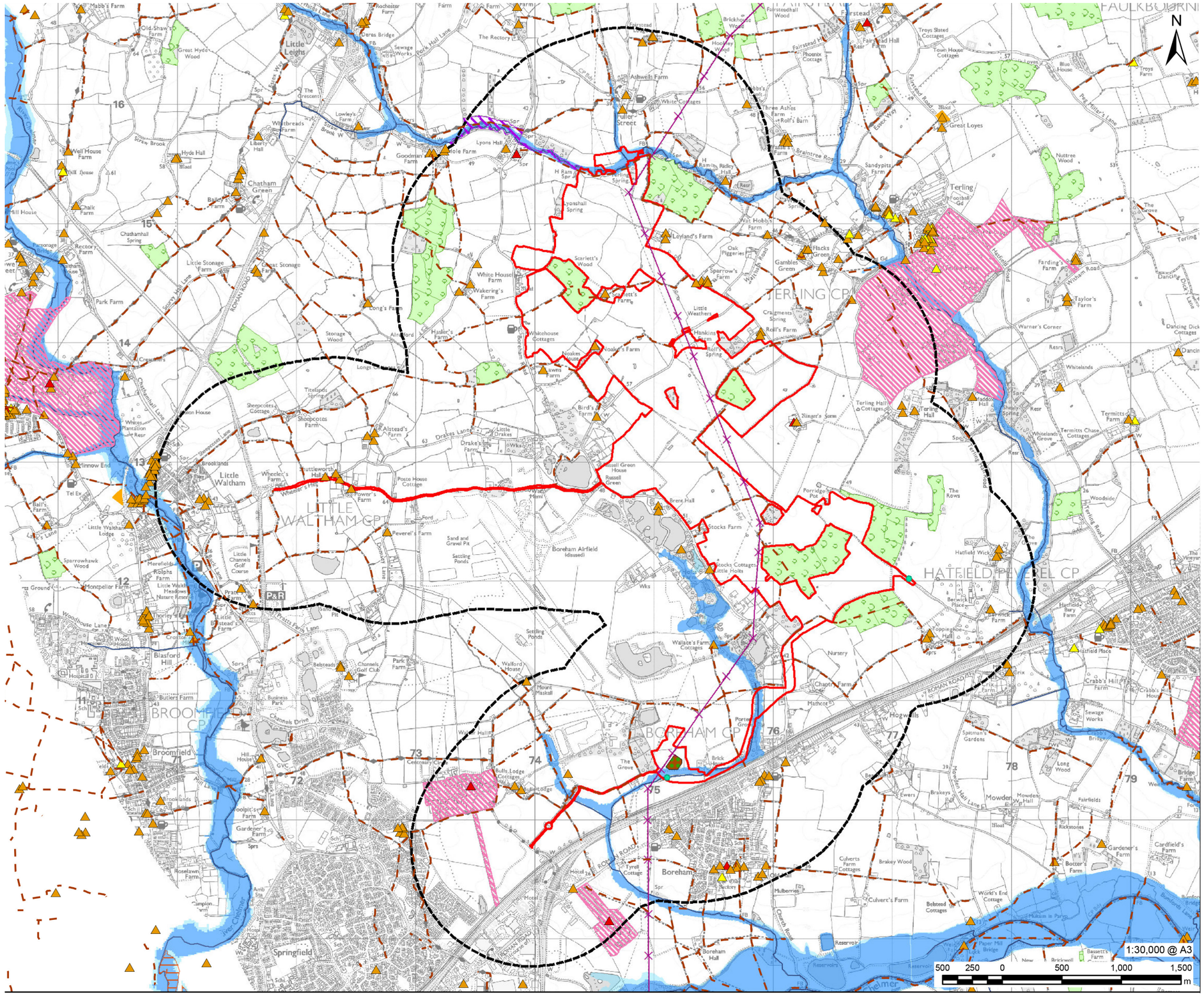


The context for the Scheme

LEGEND

- Order Limits
- 1km Scheme Buffer
- Drainage Outfall
- Grade I Listed Building
- Grade II Listed Building
- Grade II* Listed Building
- Towers
- Public Right of Way
- River
- Overhead Lines
- Substations
- Ancient Woodland
- Local Nature Reserve
- Site of Special Scientific Interest
- Parks and Gardens
- Scheduled Monuments
- Flood Zone 3
- Flood Zone 2

4.5 Ecology and biodiversity

Baseline analysis

4.5.1 Land within the Order limits is generally of low biodiversity value and habitats present are of poor quality.

4.5.2 The Order limits largely comprise arable farmland with small areas of improved and poor semi-improved grassland (particularly at the north end of the site in the River Ter valley). Fields are separated by hedgerows, many of which are species-rich and support trees, including mature pollard oaks. Several woodland blocks, managed for timber production, are located outside but adjacent to the Order limits. A number of field ponds are also present scattered across the site.

4.5.3 These habitats are generally in poor condition. Arable field margins support some rare and scarce plant species, but the majority of the arable areas do not. Grasslands are managed as cattle-grazed pasture or are mown. The grazing continues through the spring and summer, which tends to supress flowering and therefore seeding of species in the sward. The same is true of mowing which, in addition, can also leave arisings which return nutrients to the soil and smother re-growing vegetation beneath. Although many of the hedgerows have been allowed to grow tall, routine management by flail cutting is causing hedgerow bases to become more gappy. The hedgerows are not generally protected from cropping areas by wide margins. Oak pollards are not in active management. Ponds are generally heavily shaded by trees and scrub, with no submerged macrophytes observed in any pond. The many support little or no emergent and marginal vegetation.

4.5.4 The Scheme represents an opportunity to enhance the quality and range of habitats on site and deliver a substantial net gain in biodiversity. It also affords the opportunity to trial different biodiversity management and enhancement techniques and to contribute to the collective understanding of how solar farms can be managed to most effectively enhance biodiversity.

4.6 Cultural heritage

Baseline analysis

4.6.1 A number of designated and non-designated built heritage assets within or in close proximity to the Order limits have been identified, including:

a. Ringers Farmhouse (grade I listed).
b. Church of St Mary the Virgin (grade I listed) Great Leighs.
c. Toppinghoe Hall (grade II listed) and associated listed buildings.
d. Scarlett's Farmhouse (grade II listed).
e. Barn of Noake's Farm (grade II listed).
f. Sparrows Farmhouse (grade II listed) and associated listed farm buildings.
g. Little Russells (grade II listed).
h. Rolls Farmhouse (grade II listed) and associated listed barn.
i. White House Farm (non-designated).

4.6.2 The design of the Scheme should avoid direct impacts on these assets and seek to preserve the setting of, and key relationships, between these assets during the construction, operational and decommissioning phases, noting that impacts of the Scheme on the setting of assets would be reversed following decommissioning.

4.6.3 Analysis of the baseline, including the results of intrusive and non-intrusive surveys, has not identified any archaeological assets warranting preservation in situ. A number of assets were identified that require further recording commensurate with their significance.

4.7 Hydrology

Baseline analysis

4.7.1 The vast majority of the Order limits is not at risk of flooding. Only the very northern part of the Order limits, in the bottom of the River Ter valley and land along the route of the Boreham Brook Tributary, are in areas of flood risk.

4.7.2 A flood risk assessment (FRA) has been prepared to assess the flood risk from all sources, before and after development, to ensure there is no increase in flood risk from any source.

4.7.3 The River Ter Main River passes through part of the northern part of the Order limits and a tributary of the River Chelmer, the Boreham Brook Tributary, crosses the Order limits in their south west corner.

4.7.4 The design of the Scheme should seek to avoid the construction of above ground infrastructure in areas at risk of flooding.There is also the opportunity to implement sustainable drainage systems (SuDS) to ensure that the Scheme does not increase the risk of flooding elsewhere. The SuDS could be designed in such a way that they also deliver a biodiversity enhancement.

4.8 Access and movement

Baseline analysis

4.8.1 The highway network locally to the Order limits is sufficient for construction and operational traffic to access the Scheme, with the provision of minor widening works to Wheeler's Hill, Cranham Road and Waltham Road within the existing highway boundary. The highway network affords the ability for all vehicles to travel to and from the Order limits without having to use Protected Lanes. Consideration of the baseline identified the following opportunities that could be addressed by the Scheme in order to bring tangible benefits to the community:

a. There is potential to improve connectivity with existing PRoW, Essex Way and National Cycle Route 50 and to provide additional routes (permissive paths) for non-motorised users within the Solar Farm Site to facilitate connections across the Order limits during the operational phase. In particular, existing PRoW could be connected with permissive routes to create a north-south Green Corridor.

b. Care should be taken in the design of the Scheme around PRoW and permissive paths, particularly in terms of corridor widths and landscaping, to deliver as safe and pleasant an experience for users as possible. There could be potential to provide future pedestrian/cycle linkage(s) to improve connectivity between the Chelmsford Garden Community and the Order limits, which could then link with additional routes (permissive paths) to be provided within the Solar Farm Site.

c. There is potential to utilise the A12(T), Boreham Interchange and the Radial Distributor Road (RDR) to access both the Bulls Lodge Substation Site and the Solar Farm Site, once the ongoing improvements and construction works have been completed.

Design objectives

5.1 Vision

5.1.1 As described in the strategic approach to design in Section 1, the Applicant has sought to deliver the substantial positive benefits of the Scheme whilst being sensitive to the potential for any negative impacts. Through carefully developing the design in response to the baseline analysis and the opportunities identified, the Applicant has delivered a design that responds positively to its location, delivers substantial benefits, keeps negative impacts to the minimum and makes valuable enhancements to the local area.

5.1.2
Overall, the Scheme seeks to deliver the following vision:

"Longfield Solar Farm will be a high quality and innovative solar farm. It will deliver a substantial amount of renewable energy to the national electricity transmission system, whilst being sensitive to its surroundings. It will be carefully sited and designed, taking account of nearby receptors, will improve connectivity for pedestrians and cyclists, improve landscape connectivity and structure, and enhance biodiversity."

5.2 Objectives

5.2.1 The Applicant has encapsulated the design vision in a number of key design objectives which inform the design of the Scheme. These objectives have been informed to an important degree by the consultation process on the Scheme.

Objective 1: Efficiently generate a large amount of renewable energy for supply to the National Electricity Transmission System. In doing so, also make a substantial contribution to the decarbonisation of electricity generation and achieving net zero carbon emissions, in line with the Government's commitments.

Design response

5.2.2 The design of the Scheme has sought to generate a substantial amount of renewable energy, whilst carefully managing impacts on receptors, and delivering other benefits where opportunities are identified.

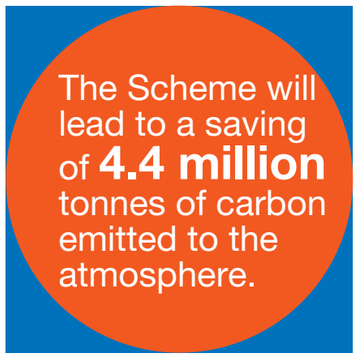
5.2.3 By generating a substantial amount of renewable energy, the Scheme is expected to lead to a saving of 4.4 million tonnes of carbon emitted to the atmosphere. This value has been established in Chapter 6, Climate Change, of the ES [EN010118/APP/6.1] by comparing the carbon intensity in generation which is projected for the Longfield Solar Farm, against a standard gas fired Combined Cycle Gas Turbine (CCGT).

In achieving this benefit, the Scheme design:

a. Includes fixed, south facing, PV arrays as the Applicant considers that this would generate a large amount of energy and would offer good potential for biodiversity enhancements below and between the PV arrays.

b. Locates the BESS and the Longfield Substation to the north of Toppinghoehall Wood, which creates shading. By using this area for works other than PV arrays, the Applicant has also reduced the potential impact of the shading from the woodland on the generation output of the Scheme.

c. Retains flexibility to select the most efficient technology. Solar generation technology is developing at a fast pace, with better, more efficient and more cost-effective solar PV arrays coming to market each year. The Applicant is therefore seeking to retain the flexibility to choose the precise technology close to the point of the construction of the Scheme. This will enable the optimum production of renewable energy and subsequently reduce cost for the end user. The final technology installed will be required to remain within the parameters defined by the draft DCO [EN010118/APP/3.1], Works Plan [ENO10118/APP/2.2] and Outline Design Principles (see Section 8).



Objective 2: The Scheme will be sensitively sited in the landscape

Design response

5.2.4 This objective has informed the design of the Scheme through:

a. The overall layout having undergone extensive review in order to respond to the landscape character baseline. The northern part of the Order limits is identified as the most tranquil. Larger elements of the Scheme, comprising the BESS and Longfield Substation, have been placed in the south of the Solar Farm Site.

b. The grid connection route comprising below ground cables, as opposed to overhead lines, thereby avoiding the introduction of new tall, linear features in the landscape, which would increase the extent of the Scheme's visibility.

c. The Order limits including areas of both openness and enclosure. The proposed planting design has responded to this varied character by allowing views to remain open, where tall screening would not be appropriate.

d. Small fields being excluded from the 'developable area', demonstrating the design's response to the existing scale of the landscape.

e. Land parcels to the far north and far south having been removed from the Order limits to consolidate the proposed development into a single continuous site, thereby avoiding the sense of a disparate and sprawling development.

f. Land north of the River Ter being excluded from the developable area to respond to the changes in landform and avoid change in the River Ter valley.

g. Siting of the Scheme to maximise the amount of existing vegetation that can be retained within the Order limits.

h. The layout being designed to avoid impacts on valuable landscape features through the incorporation of minimum offsets from ancient woodland, woodland, hedgerows, PRoW and waterbodies.

i. Retaining the existing pattern and scale of the landscape by retaining and enhancing existing field boundaries.

j. Excluding development from steep landforms, such as the River Ter valley, to limit the perception of the Scheme and avoid modification of landform.

k. Siting the proposed BESS in a visually contained section of the Order limits, limiting the height to 4.5m and following the existing shape of adjacent woodland to avoid creation of a new mass in the landscape.

Objective 3: The Scheme will be sensitive to views from people's homes and other viewpoints

Design response

5.2.5 This objective has informed the design of the Scheme through:

a. The Grid Connection Route comprising below ground cables, as opposed to overhead lines. This would avoid the introduction of new tall linear features in the landscape which would increase the extent of the Scheme's visibility.

b. Utilising and augmenting existing vegetation to reduce the visual impact of the Scheme on people's views.

c. The inclusion of extensive new planting to screen the Scheme from people's views.

d. The siting of large-scale elements of the Scheme in the south of the Order limits, where Toppinghoehall Wood provides existing screening.

e. An offset that has been included along Boreham Road in order to provide space for improvements of existing hedgerows in response to landscape planning guidelines and to provide visual screening.

f. Advanced mitigation planting that will be undertaken in advance of the commencement of construction. This would deliver visual screening benefits earlier and reduce the period when the Scheme would be potentially visible from some receptors.

g. Proposed planting design that responds to the existing character by allowing views to remain open where tall screening planting would not be appropriate.

h. Proposed fencing that has been designed to reduce its visual prominence. This has been achieved by avoiding heavy duty materials where possible, instead using wooden posts and wire.

i. Land between PRoW and permissive paths and PV arrays that will incorporate hedgerows and trees where possible in order to screen views of the solar farm or ancillary infrastructure. Open areas will be incorporated into the PRoW and permissive path network at strategic locations to enable more distant views.

j. A bespoke approach to be taken to the arrangement of the PV arrays close to residential properties. This includes the retention of key view corridors free from PV arrays and solar farm and associated infrastructure. The form and extent of offsets from residential properties has been determined to respond to the existing character of such views to reduce the potential for adverse change and taking account of discussions with residents. This is described on page 32.

A bespoke approach has been taken to the arrangement of the proposed panels close to residential properties.

White House Farm
The historic field boundary that divides the western end of the field to the north of White House Farm would be reinstated with a new native hedgerow. No PV arrays are proposed in the western parcel of the field, thereby retaining a clear view north from White House Farm.

1 & 2 Whitehouse Cottages
An offset of c. 75m has been incorporated into PDA 5 from Boreham Road, protecting gable end views from 1 Whitehouse Cottages.

A hedgerow is proposed along the boundary of the land in which PV arrays are proposed to be installed to help screen the solar farm from views from 2 Whitehouse Cottages.

Scarlett's Farm
Field parcels to the north and south of Scarlett's Farm have been excluded from the construction of solar farm equipment and will instead be used for biodiversity enhancement and permissive paths. This will help retain the character of views of those fields from Scarlett's Farm.

Hedgerow Cottage, Noake's House & Noake's Barn
The field to the north west of Hedgerow Cottage, Noake's House and Noake's Barn has been excluded from development of PV arrays or solar farm or ancillary infrastructure. A new native hedgerow is proposed along the boundary of the proposed PV arrays to the north east. This will help retain more of the short distance views from the properties and screen the solar farm beyond the new hedgerow from view.

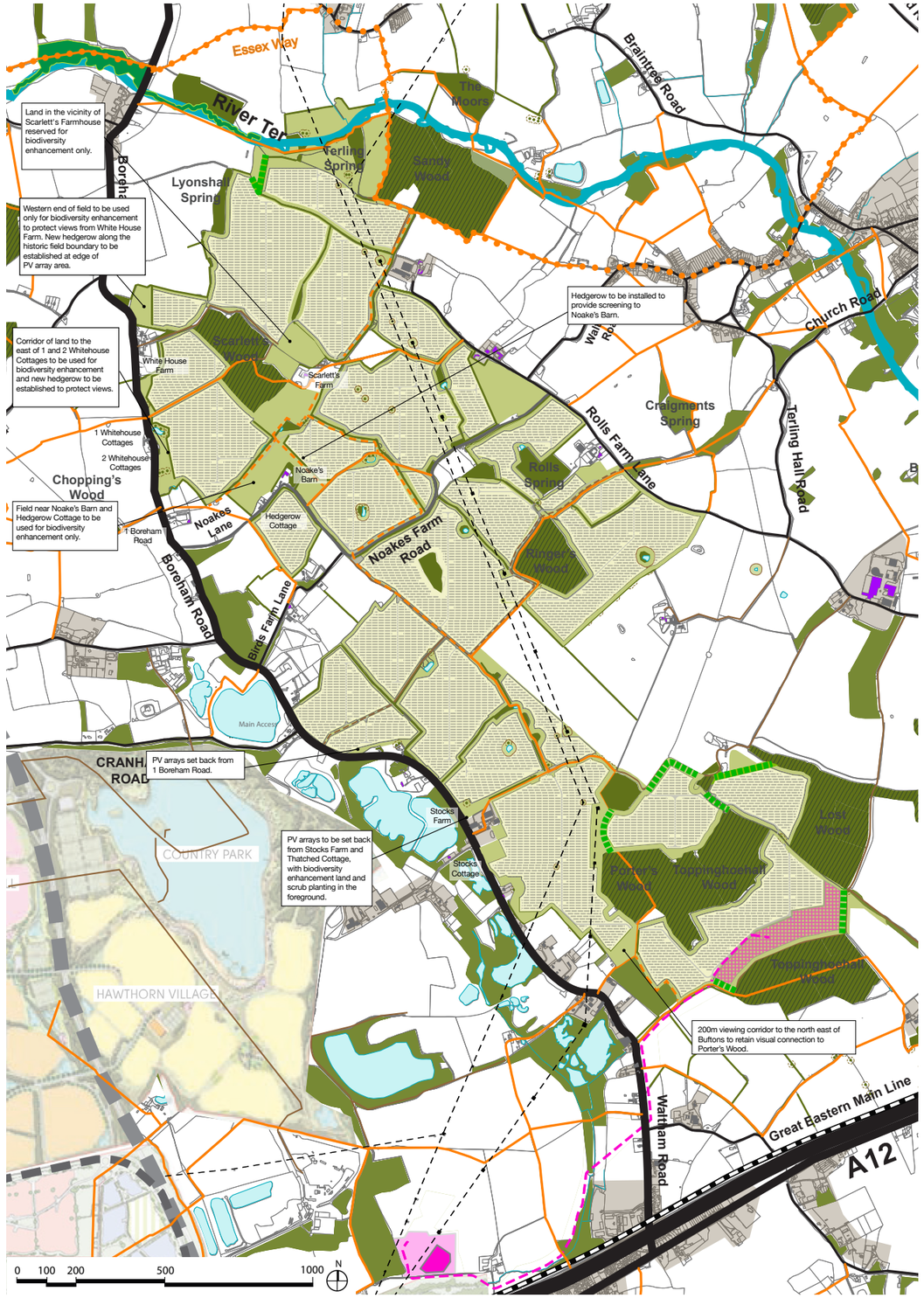
1 Boreham Road
The development of PV arrays or solar farm or ancillary infrastructure in the field north of Boreham Road is proposed to be set back from the property to reduce the impact on views from the property through gaps in vegetation around its curtilage.

Stocks Farm
Strategic parcels of land to the north, south and east of Stocks Farm are to be used only for biodiversity enhancement, with development of PV arrays or solar farm or ancillary infrastructure within the fields to the north and east being set back from the property behind a proposed new hedgerow in order to protect short distance views and to screen the solar farm.

Stocks Cottages and Thatched Cottage
Development of PV arrays or solar farm or ancillary infrastructure has been set back from Stocks Cottages and Thatched Cottage, with biodiversity enhancement including scrub planting taking place in the area between the properties and the solar farm or ancillary infrastructure, in order to protect shorter distance views. A hedgerow between the properties and the PV arrays is proposed in order to provide screening.

Buftons
A strategic 200m viewing corridor to the north east of Buftons will remain clear of the development of PV arrays or solar farm or ancillary infrastructure. This retains visual connection between Buftons and Porter's Wood.

Little Weathers/White Oaks
Fields behind this property have been excluded from the development of PV arrays or solar farm equipment. This change retains the existing open views experienced by residents from the rear of the property.



Key landscape mitigations

Objective 4: Any lighting will be sensitively designed to reduce any potential impact

Design response

5.2.6 The proposed lighting has been designed to avoid and reduce the potential for adverse impacts. The following mitigation has been embedded in the design:

a. Except at the entrance, no visible lighting will be utilised at the site perimeter. Infrared lighting will be provided by the CCTV/security system to provide night vision functionality for CCTV.

b. Lighting at solar stations will be manually operated and used only when work is required outside of daylight hours or in emergency situations.

c. Lighting at the Longfield Substation will be Passive Infra Red (PIR) operated, calibrated to detect vehicles and personnel.

d. Lighting at the BESS entrances and adjacent to the access track within the BESS will be operated by PIR calibrated to trigger on detection of a vehicle and person, with the option of manual control.

Objective 5: The Scheme will enhance the local green infrastructure network

5.2.7 Green infrastructure within the Order limits, including woodland and hedgerows, is fragmented and isolated. The Scheme affords the potential for connection and enhancement of green infrastructure.

Design response

5.2.8 This objective has been addressed through the design of the Scheme through integration of enhancement of the local green infrastructure network, improving ecological and recreational connectivity across the Order limits. In particular, the design includes the following elements, which achieve this:

a. Embedding new green infrastructure as a core design element, improving ecological and recreational connectivity across the site. This includes a new north/south green route and east/west green links via new permissive paths. In addition, a series of green focal points at areas of ecological interest along the green route such as Sandy Wood and the River Ter valley, Scarlett's Farm Wood and Toppinghoehall Wood will be created.

b. Extensive new planting being incorporated into the design.

c. This includes the examples illustrated on page 35.

Objective 6: The Scheme will enhance local biodiversity

5.2.9 Land within the Order limits is generally of low biodiversity value. The Scheme has the potential to enhance the biodiversity value of the Order limits.

Design response

5.2.10 This objective has informed the design of the Scheme, including through:

a. The retention of all ancient woodland, mature/ veteran trees, roadside verges and ponds, with protection buffers around these habitats.

b. Inclusion of a minimum undeveloped stand-off of 15m to any ancient woodland (outside of the Order limits) or to any veteran tree.

c. Woodland buffers and native tree belts being established to supplement the retained existing woodland and tree belts.

d. Areas adjacent to existing ponds and woodland being encouraged to naturally regenerate. There will be no routine management of these areas. Natural regeneration will further increase biodiversity and provide an opportunity to observe the gradual structural transition from grassland to canopy woodland habitats.

e. The installation of bird and bat boxes on existing trees within the Order limits. This will increase the availability of nesting and roosting features and enhance the value of area within the Order limits for bird and bat species.

f. Grassland and wildflower planting mixes below and between solar panels to enhance the range of fauna, enhancing biodiversity and providing resource for pollinators.

g. Facilitating the safe movement of mammals across the Order limits, including access under perimeter fences for smaller species.

h. Grassland and wildflower planting mixes below and between solar panels to enhance the range of fauna, enhancing biodiversity and providing resource for pollinators.

5.2.11 In addition to the measures set out above, a Biodiversity Design Strategy is included as Appendix B to this Design Statement [EN010118/APP/7.3] to illustrate the design approaches that could be incorporated to further enhance biodiversity on and around the Scheme. As set out in the draft DCO [EN010118/APP/3.1], Requirement 9 will necessitate the submission and approval of a detailed Landscape and Ecology Management Plan (LEMP) to deliver the provisions as set-out in the Outline LEMP [EN010118/APP/7.13] and to confirm how any approaches and measures set out in the Biodiversity Design Strategy have been incorporated into the design. The Applicant will also collaborate with an academic partner to develop a biodiversity trial area within Project. It is anticipated that different methods of planting under and around PV arrays would initially be trialled to investigate which methods may be most effective in the context of current, operational and future needs of the land. It is the Applicant's ambition that this would add to the accumulated knowledge on biodiversity enhancements and land use at solar farms and help to inform the solar industry, including other future schemes.

Objective 7: The Scheme will be sensitive to heritage assets and their setting

5.2.12 The design of the Scheme should seek to avoid direct impacts on heritage assets and preserve their setting.

Design response

5.2.13 This objective has informed the design of the Scheme, including through:

a. Siting the Longfield Substation and BESS, being large structures, in the southern end of the Order limits where it is contained by four areas of woodland and screened from built heritage assets.

b. Careful refinement of the Order limits and extent of PV arrays in the vicinity of heritage assets so as to reduce impact on the setting of the assets. Existing woodland and hedgerows have been used wherever possible to provide screening between heritage assets and proposed PV arrays and solar farm or ancillary infrastructure.

c. New native woodland buffers, biodiverse grassland margins and new hedgerows will be employed within the setting of the assets to screen PV arrays from the assets and soften the landscape.

d. The approach to extent, layout and design of the Scheme in the vicinity of listed buildings is summarised below.

- Large areas of the proposed PV array works area in the vicinity of the grade I listed Ringers Farmhouse (the highest value designated heritage asset near to the Order limits) have been taken out of the Order limits during the design development process. Two fields to the north of Ringers Farmhouse, a total area of approximately 6 ha, have been removed from the Scheme to better reveal the intervisibility of the asset from within the surrounding landscape.
- It is proposed to extend the woodland screening to the south-west of the Church of St Mary the Virgin northwards with the addition of a native woodland buffer at least 25m in depth.
- Large areas of the proposed PV array works area in the vicinity of Toppinghoe Hall and its associated listed buildings have been taken out of the Order limits. A buffer of new native woodland planting is planned between Top-pinghoehall Wood and Lost Wood to screen the proposed BESS and Longfield Substation from the assets.
- An area of just over 12 ha to the north and south of Scarlett's Farmhouse, and respecting existing field boundaries, will be reserved for biodiversity enhancement only. This will link with 7 ha biodiversity enhancement land to the north and west of the Barn of Noake's Farm, which has also had proposals for PV array works removed during the design development process. This will create a corridor approximately 1.2km long between Boreham Road and the northern extent of the biodiversity enhancement area, helping to preserve the setting of, and relationship between, these assets. Existing hedgerows to the north west, north east, south east and south west of the biodiversity enhancement land and to the east of Scarlett's Farmhouse's grounds will be 'gapped up' and maintained to a minimum height of 2.5m to enhance the existing screening.
- To the south and south east of Sparrow's Farmhouse (and associated listed farm buildings) and Little Russells, an area of land measuring approximately 5 ha has had proposals for PV array works removed during the design development process. Leaving this parcel undeveloped will preserve the view of the assets from the lane that runs west from Terling Hall Road and will leave a stretch of Terling Hall Road approximately 260m long, with agricultural land on both sides as the group is approached from the south, maintaining the current experience of the viewer approaching from this direction.
- Hedgerow to be enhanced to help screen Rolls Farmhouse from the PV arrays and deer fencing within it.
- To the north of White House Farm, proposals for PV array works have been restricted to allow uninterrupted views from the farmhouse across the fields.

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Key heritage mitigations

Objective 8: The Scheme will safeguard the water environment, be safe from flooding and will not increase flood risk elsewhere, taking account of the impacts of climate change

Design response

5.2.14 The design of the Scheme should ensure that the Scheme is safe from flooding, and does not increase the risk of flooding elsewhere, taking account of the impacts of climate change.

5.2.15 This objective has informed the design of the Scheme through review of flood risk mapping and preparation of an FRA (Appendix 9A) the ES and drainage strategy [EN010118/APP/6.2]:

a. The Scheme layout has been designed to avoid locating any above ground equipment, building or structures within areas at risk of flooding, i.e. all solar panel areas are located in Flood Zone 1 (land not at risk of flooding), with no fluvial flood compensation required.

b. The very small areas of the Solar Farm Site that lie within Flood Zones 2 and 3, are reserved for compatible uses as set out in the NPPF [REF-3], such as biodiversity enhancement.

c. The grid connection route lies partially within Flood Zones 2 or 3. The cable will be buried below ground, so will have no impact on flood risk within or outside of the Order limits.

d. Where the grid connection cable is required to cross a watercourse, this will be buried below the watercourse and be constructed by directional drilling. Proposals for new culverts have been avoided.

e. An outline drainage strategy has been prepared to ensure that there is no increased risk of surface water flooding, on or off site as a result of the Scheme proposals. The proposed drainage strategy for the Scheme utilises the existing topography and natural drainage regime to ensure that any overland flows are not increased compared to baseline conditions. Small gaps between the panels on the arrays, with field edge swales in salient locations, will ensure that the rainfall draining from the panels is fragmented and that excessive 'sheet' runoff is avoided and reduced where possible off site, to provide betterment. The drainage strategy takes account of climate change.

f. The detailed design of any drainage features will consider their ability to enhance the biodiversity.

g. Surface water run-off rates will be limited to greenfield rates, as existing.

Objective 9: The Scheme will retain all existing Public Rights of Way and will enhance the network of foot and cycle paths

Design response

5.2.16 The Scheme design shall retain existing rights of way and enhance connectivity via new permissive paths.

a. Existing PRoW will be retained in all instances, with no closures or permanent diversions proposed. During construction, the movement of construction vehicles through the Order limits will be physically separated from existing PRoW and any PRoW crossing points will be carefully managed. There will only be a few temporary and localised PRoW diversions to accommodate the installation of the Grid Connection Route. A separate PRoW Management Plan has been prepared and is submitted as Appendix 13C of the ES [EN010118/APP/6.2]. This provides further information and details of how these will be safely managed.

b. Connectivity will be improved for non-motorised users within the Order limits through provision of a Green Corridor and new permissive paths within the Solar Farm Site to enhance connectivity with existing PRoW, the Essex Way and National Cycle Route 50. A proposed Green Corridor will intersect with various east-west routes (both existing PRoW and proposed permissive paths) to maximise connectivity within the Solar Farm Site.

c. The new permissive paths will enhance connectivity close to the Chelmsford Garden Community, with the potential for a future convenient pedestrian/cycle connection from the Order limits to the Garden Community when this comes forward.

Objective 10: Access to the Scheme will be safe and will not adversely impact the highway network

Design response

5.2.17 This objective has informed the design of the Scheme through:

a. A proposed new single point of access to the Solar Farm Site on Waltham Road, which will be utilised during the construction, operational and decommissioning phases of the Scheme. This is designed to reduce vehicle trips on the surrounding highway network, by allowing vehicles to utilise internal routes to access the whole of the Solar Farm Site.

b. Two proposed new points of access for the Bulls Lodge Substation Extension Site on the private road to the east of the RDR during the construction phase of the Scheme to provide access to both the construction site (western access) and the construction compound (eastern access). The western access will be retained during the operational phase, whereas the eastern access will be removed at the end of the construction phase. The existing access for Bulls Lodge Substation will be retained at all times.

c. Provision of adequate visibility splays at all new access points, commensurate with existing vehicle speeds or speed limits.

d. Local highway improvements (verge clearance, hedge cutting and/or carriageway widening) will be implemented along Wheeler's Hill, Cranham Road and Waltham Road to support HGV movements.

6. Design Evolution

6.1 Introduction

6.1.1 This section presents a summary of the evolution of the design of the Scheme, and is illustrated by the proposed Scheme design as it stood at the non-statutory consultation stage (November/December 2020), and at statutory consultation stage (June/July 2021). It describes the main changes between those two design stages and between the statutory consultation design and the final design masterplan which is illustrated in Section 7 of this Design Statement. A more detailed description of these design stages is set out by Table 3-2 of Chapter 3, Alternatives and Design Evolution, of the Environmental Statement [EN010118/APP/6.1].

6.2 Stage 1 – Non-statutory consultation design (November/December 2020)

6.2.1 At the start of the project through to the EIA Scoping and non-statutory consultation stages, the draft Order limits comprised 582 ha of land and had been defined largely on desk-based data, preliminary environmental surveys and discussions with the landowner. The preliminary layout showed possible locations for the main elements of the Scheme, including three possible locations for the National Grid (NGET) substation locations, one of which would serve as the point of connection to the National Grid Electricity Transmission System (NETS). No decision on the location of the BESS or the Longfield Substation had been made.

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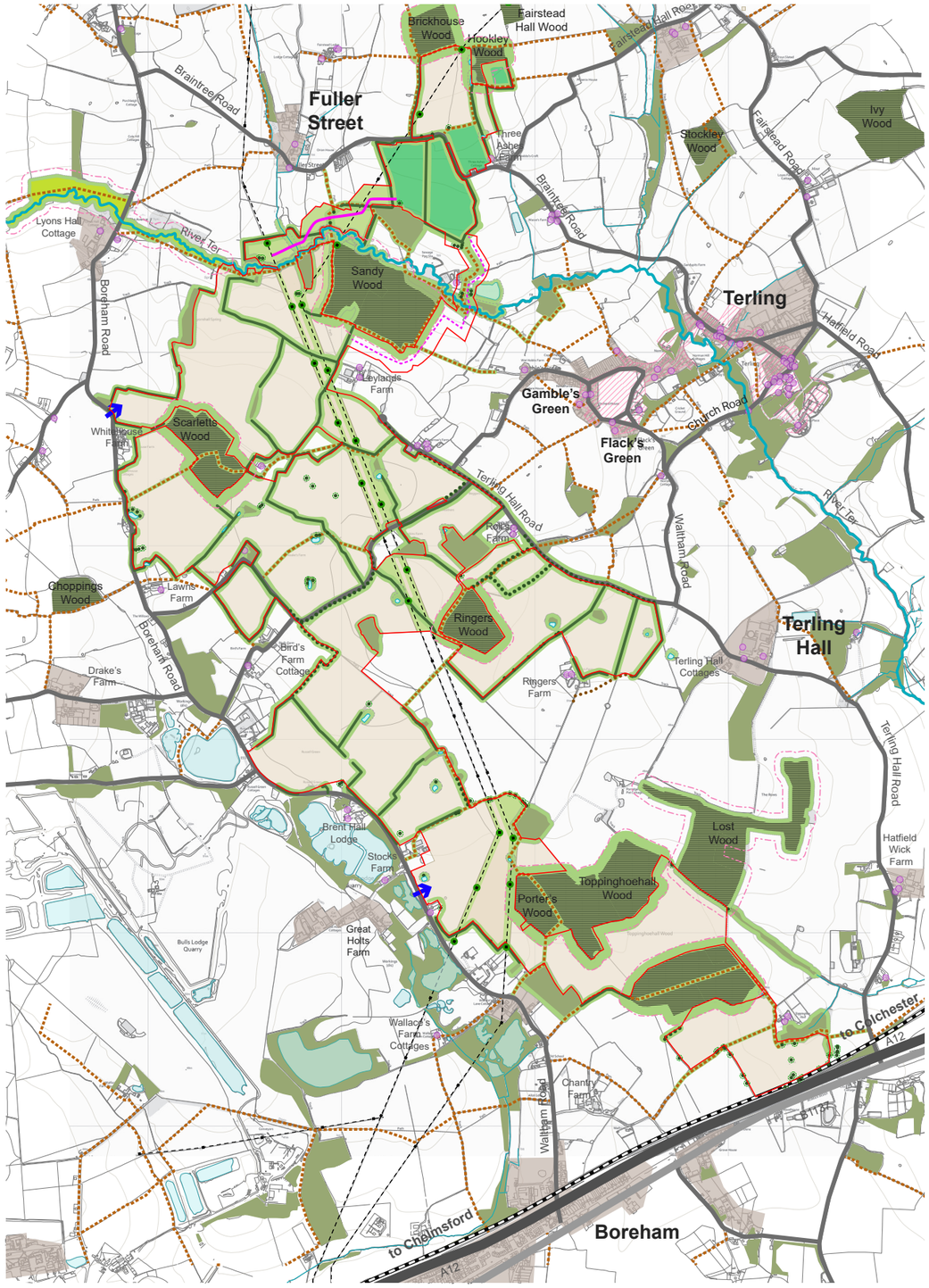

Stage 1 - Non-statutory consultation design

6.3 Stage 2 – Statutory consultation design (March/April 2021)

6.3.1 The statutory consultation stage scheme had been further refined from the design as it stood at the non-statutory consultation stage. The main changes included that some land had been removed from the statutory consultation site boundary to reduce the amount of high grade agricultural land within the boundary of the scheme and to avoid areas identified as having higher archaeological potential. Land north of the River Ter was also removed from the statutory consultation site boundary in order to preserve landscape character of the area, and proposals to access the statutory consultation site from multiple locations were dropped in favour of a single point of access in order to reduce impacts on local roads and Protected Lanes.

6.3.2 The design decision to site the larger elements of the Scheme, comprising the Longfield Substation and the BESS, within the field that is mostly surrounded by Toppinghoehall Wood, in order to benefit from visual screening by existing mature woodland blocks, had also been made.

6.3.3 The point of connection to the NETS had also been confirmed as Bulls Lodge Substation, which would be extended to accommodate the connection. This avoided the introduction of a second substation into the landscape.

6.3.4 The design at this stage also included the following principles which had been developed to reduce and mitigate the potential impacts of the scheme:

- Provision of buffers and offsets from ponds, hedgerows and PRoW.
- Grassland and wildflower planting mixes below and between PV panels to enhance the range of fauna, enhancing biodiversity and providing resource for pollinators.
- New green infrastructure embedded as a core design element, improving ecological and recreational connectivity across the Order limits. This includes a new north/south green route, and new permissive paths.
- Substantial tree, hedgerow and woodland planting was proposed to increase connectivity.
- The proposed maximum height of solar PV tables was reduced in sensitive areas, such as close to residential properties and heritage assets.

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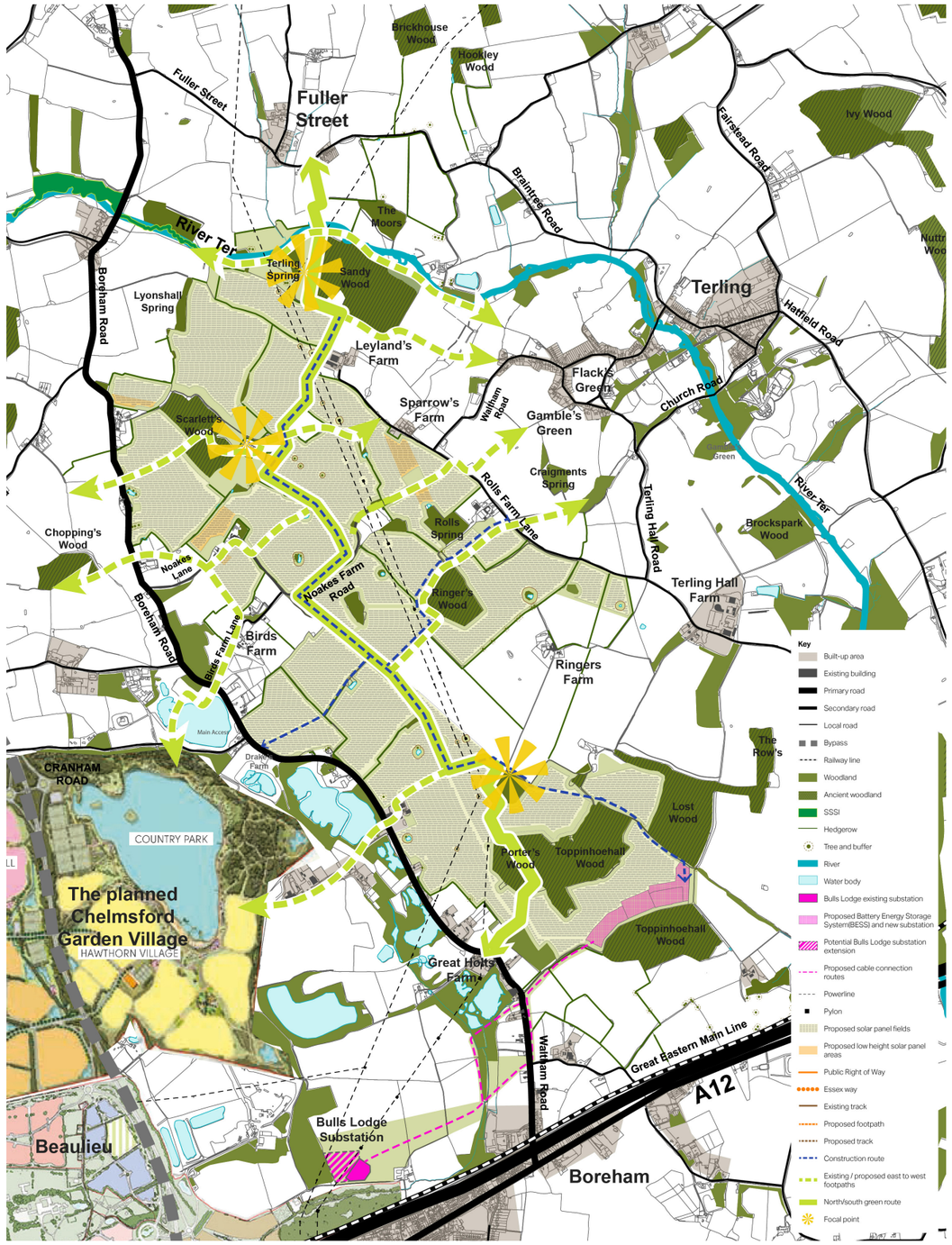

Stage 2 - Statutory consultation design

6.4 Stage 3 – Final Design Masterplan

6.4.1 The final design masterplan for the Scheme is illustrated page 48-49. This was informed by feedback from the previous non-statutory and statutory consultation phases and by ongoing liaison with stakeholders. Compared to the statutory consultation stage scheme, the Order limits have been further refined, including amendments to further reduce the amount of high quality agricultural land included within the Order limits, and to increase the stand-off between the boundary of the Order limits and the grade I listed Ringer's Farmhouse in order to preserve more of its setting.

6.4.2 In addition, proposals for plots of land within the Order limits were changed from proposed development of PV arrays and other solar farm and associated infrastructure to proposed use for biodiversity enhancement in order to reduce the likely impact on views from residential properties and to reduce the likely impact on the setting of heritage assets. This included areas where lower height panels were proposed in the statutory consultation phase design, as it was considered that the complete removal of proposals for PV arrays in these areas would be more effective and the resultant reduction in generation capacity may be warranted by the benefits to the setting of designated heritage assets and residential views. The proposed Grid Connection Route was also refined to avoid and reduce potential impact on the operation of Bulls Lodge Quarry. Proposals for landscape planting and biodiversity enhancement were also developed in greater detail.

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6.4.3 The final design masterplan, overleaf, illustrates the Scheme incorporating the features and approaches described in this Design Statement. These deliver the design objectives that this Design Statement sets out. The layout of PV arrays and other infrastructure within the PV array works areas that is shown by the

masterplan is for illustrative purposes only.

7. Design Masterplan

7.1.1 The final design masterplan represents the culmination of all of the contributory design elements at this stage of the development of the Scheme. It has shown particular regard to commentary made during statutory and voluntary consultation and engagement.

7.1.2 Throughout the development of the Scheme design and as described in the Scheme evolution and elsewhere, the Applicant has looked to develop an exemplar scheme that shows due sensitivity to its surroundings and to the community that will be asked to host it. This means building in key benefits to the scheme that local people can take advantage of from the outset and to mitigate impacts as best as possible.

Final Design Masterplan

Key

- Built-up area
- Existing building
- Listed building
- Primary road
- Secondary road
- Local road
- Proposed bypass
- Radial Distributor Road (RDR1)
- Railway line
- Woodland
- Ancient woodland
- SSSI
- Structural planting to connect existing woodlands and hedgerows
- Hedgerows
- No Solar - Set Aside and habitat creation to preserve visual amenity and / or landscape character
- Main Entrance
- Tree and buffer
- River
- Water body
- Bulls Lodge existing substation
- Proposed Battery Energy Storage System(BESS) and new substation
- Bulls Lodge substation extension
- Proposed cable connection routes
- Powerline
- Pylon
- Proposed solar panel e lds
- Public Right of Way
- Essex way
- Existing track
- Proposed footpath
- Proposed track

1. Main Entrance
2. BESS and Longfield Substation
3. Grid Connection Route
4. Bulls Lodge Substation Extension
5. No solar - set aside and habitat creation to preserve visual amenity and/or landscape character
6. Structural planting to connect existing woodlands and hedgerows

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8. Commitments

8.1 Introduction

8.1.1 A number of elements of the detailed design for the Scheme cannot be confirmed until the tendering process for the design and construction of the Scheme has been completed. For example, due to the rapid pace of technological development in the solar PV and energy storage industry, the Scheme could utilise technology which does not currently exist and therefore sufficient flexibility needs to be incorporated into the DCO (should development consent be granted) to accommodate this.

8.1.2 At the same time, certainty that the Scheme will be delivered as described in this Design Statement and as assessed by the Environmental Statement (ES) [EN010118/APP/6.1] is also required. In order to provide this, the Scheme will be required by its consent to comply with the DCO, Works Plan [EN010118/APP/2.1] and Outline Design Principles (Appendix A to this Design Statement [EN010118/APP/7.3]). These documents secure the development of the Scheme as is shown in the masterplan and described in the Application. The role of the DCO, Works Plans and Outline Design Principles in defining the Scheme is outlined in the following paragraphs.

8.1.3 In addition, the Outline Landscape and Ecology Management Plan (OLEMP) [EN010118/APP/7.13], sets out how the landscape and ecological features of the design described in this Design Statement will be delivered. Similarly, the Longfield SuDs Strategy (Appendix 9C of the ES [EN010118/APP/6.2]) and the Bulls Lodge Substation Extension Drainage Strategy (Appendix 9D of the ES [EN010118/APP/6.2]) describe commitments for site drainage and how they will be delivered. The PRoW Management Plan which is submitted as Appendix 13C of the ES [EN010118/APP/6.2] sets out details of the proposals for PRoW. Delivery of the commitments set out in these documents will also be secured by requirements of the DCO. These will commit the Applicant to developing a detailed landscape and ecology management plan and a detailed surface water drainage scheme which accord with the relevant outline plans referred to above.

8.2 DCO

8.2.1 The DCO, in particular Schedules 1 and 2, will define the Scheme. These will set out the works that are consented by the DCO, including what is allowed to be built and how it must be constructed. Schedule 1 will define the development authorised by the DCO, set out in numbered works packages that comprise the Scheme and Schedule 2 will set out "Requirements" in accordance with which the Scheme must be developed. These will include a requirement that sets out that the Scheme must be developed in accordance with the Outline Design Principles and a requirement that requires approval of the detailed design of the Scheme by the relevant Host Authority. A draft DCO [EN010118/APP/3.1] is provided with the Application as well as an Explanatory Memorandum [EN010118/APP/3.2], which sits alongside the DCO and includes an explanation for how the provisions of the draft DCO secure and control how the development authorised by the DCO can be built and operated.

8.3 Works Plan

8.3.1 The Works Plan [EN010118/APP/2.2] define the locations in which each of the works packages defined by Schedule 1 of the DCO will be able to be located within the Order limits. The DCO (if granted) would not permit any work item outside of the land in which it is shown to be located by the Works Plans.

8.4 Outline Design Principles

8.4.1 The Outline Design Principles, Appendix A to this Design Statement [EN010118/APP/7.3], set out commitments that the design of the Scheme is required to adhere to. These have been developed in order to secure the delivery of the design described by this Design Statement and the parameters assessed by the ES [EN010118/APP/6.1]. This has taken account of the design measures that are set out in this Design Statement.

8.5 Delivery of the design objectives

8.5.1 The table below sets out how the delivery of each of the design measures outlined in this Design Statement will be secured.

Design Measure	Summary	How is delivery secured?
Objective 1: Efficiently generate a large amount of renewable energy for supply to the National Electricity Transmission System. In doing so, also make a substantial contribution to the decarbonisation of electricity generation and achieving net zero carbon emissions, in line with the Government's commitments.		
1a	Fixed, south facing PV arrays	**Outline Design Principles (Appendix A to this Design Statement [EN010118/APP/7.3])** define the type of PV arrays to be used.
1b	Use of more shaded land to the north of Toppinghoehall Wood for BESS and the Longfield Substation (with a 15m stand-off)	**Works Plan [EN010188/APP/2.2]** permits only the BESS and Longfield Substation compounds to be located adjacent to the north of the southern section of Toppinghoehall Wood.
1c	Flexibility to select the most efficient technology, within defined parameters	**Outline Design Principles (Appendix A to this Design Statement [EN010118/APP/7.3])** define parameters for the component parts of the Scheme.
Objective 2: The Scheme will be sensitivity sited in the landscape		
2a	Layout takes account of and respects the landscape character of the Order limits	**Works Plan [EN010118/APP/2.2]** defines where elements of the Scheme may be located.
2b	Grid Connection Route comprises below ground cables	**Outline Design Principles (Appendix A to this Design Statement [EN010118/APP/7.3])** require the Grid Connection Route cable to be below groundlevel.
2c	Proposed planting taking account of the need to retain openness of key views	The **OLEMP [EN010118/APP/7.13]** sets out where planting is proposed.
2d	Small fields excluded from the developable area	**Works Plan [EN010118/APP/2.2]** defines where PV arrays and solar farm and associated infrastructure may be located.
2e	Land parcels adjacent to the Order limits in the north and south have been excluded from the Order limits	**Works Plan [EN010118/APP/2.2]** defines the Order limits.
2f	Land north of the River Ter to not be used for the development of PV arrays and solar farm or associated infrastructure	**Works Plan [EN010118/APP/2.2]** defines where PV arrays and solar farm and associated infrastructure may be located.
2g	Scheme sited to maximise vegetation retention	**Vegetation Removal Plan (Figure 10-15 of the ES) [EN010118/APP/6.3]** sets out vegetation to be removed.
2h	Minimum offsets from PV arrays and solar farm and associated infrastructure to ancient woodland, woodland, hedgerows, PRoW and waterbodies associated infrastructure	**Works Plan [EN010118/APP/2.2]** defines where PV arrays and solar farm and associated infrastructure may be located, and set out minimum offsets to ancient woodland, woodland, hedgerows, PRoW and waterbodies.

Objective 2: The Scheme will be sensitively sited in the landscape cont.

2i	Retaining existing field boundaries	**Vegetation Removal Plan (Figure 10-15 of the ES) [EN010118/APP/6.3]** sets out vegetation to be removed. The **OLEMP [EN010118/APP/7.13]** identifies hedgerows to be enhanced
2j	Excluding development from the River Ter Valley	**Works Plan [EN010118/APP/2.2]** defines where PV arrays and solar farm and associated infrastructure may be located.
2k	Siting BESS in a visually contained area of the Order limits, follows the existing shape of the adjacent woodland boundary	**Works Plan [EN010118/APP/2.2]** defines the location of the BESS. Outline Design Principles **(Appendix A to this Design Statement [EN010118/APP/7.3])** limit the BESS height to 4.5m.

Objective 3: The Scheme will be sensitive to views from people's homes and other viewpoints

3a	Grid Connection Route comprises below ground cables	**Outline Design Principles (Appendix A to this Design Statement [EN010118/APP/7.3])** require the Grid Connection Route cable to be below ground.
3b	Utilising and augmenting existing vegetation to reduce visual impact on people's views	The **OLEMP [EN010118/APP/7.13]** identifies hedgerows to be enhanced.
3c	Extensive new planting to provide screening for people's views	The **OLEMP [EN010118/APP/7.13]** sets out where planting is proposed.
3d	Siting BESS and Longfield Substation in a part of the Order limits that benefits from existing screening by Toppinghoehall Wood.	**Works Plan [EN010118/APP/2.2]** defines the location of the BESS and Longfield Substation.
3e	Offset from Boreham Road to PV arrays and solar farm and associated infrastructure to enable hedgerow enhancement and provide screening	**Works Plan [EN010118/APP/2.2]** defines where PV arrays and solar farm and associated infrastructure may be located. OLEMP identifies hedgerows to be enhanced.
3f	Advanced mitigation planting will be undertaken in advance of the commencement of construction	The **OLEMP [EN010118/APP/7.13]** identifies advanced mitigation planting.
3g	Proposed planting taking account of the need to retain openness of key views	The **OLEMP [EN010118/APP/7.13]** sets out where planting is proposed.
3h	Fencing design to use wooden posts and wire	**Outline Design Principles (Appendix A to this Design Statement [EN010118/APP/7.3])** set a parameter for fencing.
3i	Land between PRoW/permissive paths and PV arrays will incorporate hedgerow and trees where possible. Open areas to be incorporated into the PRoW and permissive path network	The **OLEMP [EN010118/APP/7.13]** identifies proposed planting. **Works Plan [ENO10118/APP 2.2]** defines where PV arrays and solar farm and associated infrastructure may be located and where open biodiversity enhancement land will be located.
3j	Bespoke approach to be taken to the arrangement of the proposed panels close to residential properties. This includes the retention of key view corridors free from solar panels and other equipment from residential properties	**Works Plan [EN010118/APP/2.2]** defines where PV arrays and solar farm and associated infrastructure may be located.

Objective 4: Any lighting will be sensitively designed to reduce any potential impact

4a	Except at the entrance, no visible lighting will be utilised at the site perimeter. Infrared lighting will be provided by the CCTV/security system to provide night vision functionality for CCTV	**Outline Design Principles (Appendix A to this Design Statement [EN010118/APP/7.3])** define parameters for lighting and CCTV.
4b	Lighting at solar stations will be manually operated used only when work is required there outside of daylight hours or in emergency situations	**Outline Design Principles (Appendix A to this Design Statement [EN010118/APP/7.3])** define parameters for lighting.
4c	Lighting at Longfield substation will be Passive Infra Red (PIR) operated, calibrated to detect vehicles and personnel	**Outline Design Principles (Appendix A to this Design Statement [EN010118/APP/7.3])** define parameters for lighting.
4d	Lighting at the BESS entrances and adjacent to the access track within the BESS will be operated by PIR calibrated to trigger on detection of a vehicle and person, with the option of manual control	**Outline Design Principles (Appendix A to this Design Statement [EN010118/APP/7.3])** define parameters for lighting.

Objective 5: The Scheme will enhance the local green infrastructure network

5a	New green infrastructure will be embedded into the Scheme, including a new north/south green route and east/west green links via permissive paths, and green focal points along green infrastructure routes	The **OLEMP [EN010118/APP/7.13]** identifies proposed planting. Works Plans [EN010118/APP/2.2] define where PV arrays and solar farm and associated infrastructure may be located and where open biodiversity enhancement land will be located. The **Permissive Paths Plan [EN010118/APP/7.14]** and the **OLEMP [EN010118/APP/7.13]** identify proposed new permissive paths.
5b	Extensive new planting incorporated into the design	The **OLEMP [EN010118/APP/7.13]** identifies proposed planting of hedgerows; trees; woodland buffer; linear tree belts; species rich grassland and mown grassland. It also identifies proposed hedgerow enhancement.

Objective 6: The Scheme will enhance local biodiversity

6a	The retention of all ancient woodland, mature/veteran trees, roadside verges, and ponds, with protection buffers around these habitats	**Works Plan [EN010118/APP/2.2]** defines where PV arrays and solar farm and associated infrastructure may be located, and identifies minimum offsets to ancient woodland, trees; roadside. verges; and ponds.
6b	Minimum stand-off of 15m to any ancient woodland	**Works Plan [EN010118/APP/2.2]** defines where PV arrays and solar farm and associated infrastructure may be located, and minimum offsets to ancient woodland.
6c	Woodland buffers and native tree belts being established to supplement the retained existing woodland and tree belts	**Works Plan [EN010118/APP/2.2]** defines where PV arrays and solar farm and associated infrastructure may be located.
6d	Areas adjacent to existing ponds and woodland being encouraged to naturally regenerate	**Works Plan [EN010118/APP/2.2]** defines where PV arrays and solar farm and associated infrastructure may be located, and identifies minimum offsets to ancient woodland, trees; roadside.
6e	The installation of bird and bat boxes on existing trees within the Order limits	The **OLEMP [EN010118/APP/7.13]** sets out the indicative numbers of bat and bird boxes proposed.

6f	Facilitating the safe movement of mammals across the Order limits, including access under perimeter fences for smaller species	**Chapter 2, the Scheme, of the ES [EN010118/APP/6.1]** sets out that mammal gates will be installed at regular intervals.
6g	Grassland and wildflower planting mixes below and between solar panels	The **OLEMP [EN010118/APP/7.13]** provides details of planting mixes proposed below and between solar panels.

Objective 7: The Scheme will be sensitive to heritage assets and their setting

7a	Siting BESS and the Longfield Substation in a part of the Order limits that benefit from existing screening by Toppinghoehall Wood	**Works Plan [EN010118/APP/2.2]** defines the location of the BESS and the Longfield Substation.
7b	Careful refinement of the Order limits and extent of PV arrays and solar farm or ancillary infrastructure in the vicinity of heritage assets so as to reduce impact on the setting of the assets. Existing woodland and hedgerows have been used wherever possible to provide screening between heritage assets and proposed PV arrays and solar farm or ancillary infrastructure	**Works Plan [EN010118/APP/2.2]** defines the Order limits and where PV arrays and solar farm and associated infrastructure may be located. **Vegetation Removal Plan (Figure 10-15 of the ES) [EN010118/APP/6.3])** sets out vegetation to be removed. The **OLEMP [EN010118/APP/7.13]** identifies proposed planting and hedgerow enhancement.
7c	New native woodland buffers, biodiverse grassland margins and new hedgerows will be employed within the setting of the assets	**Works Plan [EN010118/APP/2.2]** defines where PV arrays and solar farm and associated infrastructure may be located and where open biodiversity enhancement land will be located.
7d	Sensitive approach has been employed to the extent, layout and design of the Scheme in the vicinity of listed buildings	**Works Plan [EN010118/APP/2.2]** defines where PV arrays and solar farm and associated infrastructure may be located and where open biodiversity enhancement land will be located. **Vegetation Removal Plan (Figure 10-15 of the ES) [EN010118/APP/6.3]** sets out vegetation to be removed. The **OLEMP [EN010118/APP/7.13]** identifies proposed planting and hedgerow.

Objective 8: The Scheme will safeguard the water environment, be safe from flooding and will not increase flood risk elsewhere, taking account of the impacts of climate change

8a	All above ground equipment, building or structures will be located in Flood Zone 1	**Works Plan [EN010118/APP/2.2]** defines where PV arrays and solar farm and associated infrastructure may be located.
8b	Areas of the Solar Farm Site that lie within Flood Zones 2 and 3, are reserved for compatible uses	**Works Plan [EN010118/APP/2.2]** defines where PV arrays and solar farm and associated infrastructure may be located and where open biodiversity enhancement land will be located.
8c	The grid connection cable in the Grid Connection Route that is partly within Flood Zones 2 and 3 will be buried below ground	**Outline Design Principles (Appendix A to this Design Statement [EN010118/APP/7.3])** require the Grid Connection Route cable to be below ground.
8d	Where the grid connection cable is required to cross a watercourse, these will be buried below the water-course and be constructed by directional drilling	**Outline Design Principles (Appendix A to this Design Statement [EN010118/APP/7.3])** require the Grid Connection Route cable to be below ground.
8e	The drainage design takes account of the impacts of climate change and will ensure that there is no increase in flood risk	The **Longfield SuDS Strategy and Bulls Lodge Substation Extension: Drainage Strategy (Appendices 9C and 9D of the ES [EN010118/APP/6.2])** set out drainage proposals.
8f	The detailed design of drainage features will consider their potential to enhance biodiversity	The **OLEMP [EN010118/APP/7.13]** identifies proposed pond enhancement.
8g	Surface water run-off rates will be limited to greenfield rates	**The Longfield SuDS Strategy and Bulls Lodge Substation Extension: Drainage Strategy (Appendices 9C and 9D of the ES [EN010118/APP/6.2])** set out drainage proposals.

Objective 9: The Scheme will retain all existing Public Rights of Way and will enhance the network of foot and cycle paths

9a	Existing PRoW will be retained in all instances with no closures or permanent diversions proposed. During construction, the movement of construction vehicles through the Order limits will be physically separated from existing PRoW and any PRoW crossing points will be carefully managed. There will only be a few temporary and localised PRoW diversions to accommodate the installation of the Grid Connection Route	The **PRoW Management Plan (Appendix 13C of the ES [EN010118/APP/6.2])** provides details of how PRoW will be safely managed.
9b	Connectivity will be improved for non-motorised users within the Order limits through provision of a Green Corridor and new permissive paths within the Solar Farm Site	The **Permissive Paths Plan [EN010118/APP/7.14]** and the **OLEMP [EN010118/APP/7.13]** identify proposed new permissive paths.
9c	The new permissive paths will enhance connectivity close to the Chelmsford Garden Community	The **Permissive Paths Plan [EN010118/APP/7.14]** and the **OLEMP [EN010118/APP/7.13]** identify proposed new permissive paths.

Objective 10: Access to the Scheme will be safe and will not adversely impact the highway network

10a	A proposed new single point of access to the Solar Farm Site on Waltham Road, which will be utilised during the construction, operational and decommissioning phases of the Scheme	**Figure 13-3 of the ES [EN010118/APP/6.3]** identifies the proposed access points to the Order limits.
10b	Two proposed new points of access for the Bulls Lodge Substation Site on the private road to the east of the RDR during the construction phase of the Scheme, to provide access to both the construction site (western access) and the construction compound (eastern access). The western access will be retained during the operational phase, whereas the eastern access will be removed at the end of the construction phase. The existing access for Bulls Lodge Substation will be retained at all times	**Figure 13-3 of the ES [EN010118/APP/6.3]** identifies the proposed access points to the Order limits.
10c	Adequate visibility splays will be provided at all new access points, commensurate with existing vehicle speeds or speed limits	**Figures 2-7 and 2-43 of the ES [EN010118/APP/6.3]** show the proposed entrance to the Solar Farm Site and Bulls Lodge Substation Site.
10d	Local highway improvements (verge clearance, hedge cutting and/ or carriageway widening) will be implemented along Wheeler's Hill, Cranham Road and Waltham Road to support HGV movements	**Streets, access and rights of way Plan [EN010118/APP/2.3]** and **Figure 13-5 of the ES [EN010118/APP/6.3]** show the locations of proposed works along Cranham Road and Waltham Road.

References

REF-1 Department for Energy and Climate Change (2011): Overarching National Policy Statement for Energy (EN-1)
REF-2 Department for Business, Energy and Industrial Strategy (2021): Overarching National Policy Statement for Energy (Draft EN1)
REF-3 Ministry of Housing, Communities and Local Government (2021): The National Planning Policy Framework (NPPF)
REF-4 The Landscape Institute (2020): Infrastructure Technical Guidance Note 04/20