
EAST YORKSHIRE SOLAR FARM

East Yorkshire Solar Farm
EN010143

Design and Access Statement

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Prepared for:

East Yorkshire Solar Farm Limited

Prepared by:

AECOM Limited

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Executive Summary

- ES1 East Yorkshire Solar Farm (the Scheme) is a proposed large-scale ground mounted solar development which will help meet the urgent need for renewable energy. Solar energy production is a key part of the Government's strategy to deliver low-cost decarbonisation of the energy sector.
- ES2 The Scheme will comprise the construction, operation (including maintenance), and decommissioning of a solar photovoltaic (PV) electricity generating facility, with a total capacity exceeding 50 megawatts (MW) and export connection to the national grid, at National Grid Drax Substation. The design life of the Scheme is proposed to be 40 years.
- ES3 Design objectives for the Scheme have been developed in order to achieve a high-quality scheme design that delivers urgent, nationally needed energy benefits, whilst respecting its local surroundings, enhancing biodiversity, safeguarding and enhancing the water environment, enhancing footpaths, and considering existing land use and quality.
- ES4 This Design and Access Statement (DAS) describes the process that the Applicant's design team has taken to identify and respond to nine design objectives. It presents the relevant design policy and guidance and an analysis of the context within which the Scheme is located which has been used to develop the design objectives and design response. Due regard has been given to the feedback provided during statutory and ongoing consultation and engagement through the design process.
- ES5 The Scheme Design Masterplan illustrates the output of this design process incorporating the features and approaches which deliver a high-quality renewable energy generating facility that delivers local environment and community benefits.

1. Introduction

1.1 Background

- 1.1.1 East Yorkshire Solar Farm Limited (hereafter referred to as ‘the Applicant’) is applying for a Development Consent Order (DCO) for East Yorkshire Solar Farm (hereafter referred to as ‘the Scheme’). The application for the DCO (the DCO Application) is submitted to the Planning Inspectorate, with the decision whether to grant a DCO being made by the Secretary of State for Energy Security and Net Zero (the ‘Secretary of State’) pursuant to the Planning Act 2008 (PA 2008) (Ref. 1).
- 1.1.2 The Scheme will comprise the construction, operation (including maintenance) and decommissioning of a solar photovoltaic (PV) electricity generating facility, with a total capacity exceeding 50 megawatts (MW) and export connection to the national grid, at National Grid Drax Substation. The design life of the Scheme is proposed to be 40 years.
- 1.1.3 The Order limits comprise approximately 1,276 hectares (ha) of land which includes the Solar PV Site, Ecology Mitigation Area, the Interconnecting Cable Corridor, the Grid Connection Corridor, and Site Accesses. The Solar PV Site, Ecology Mitigation Area, and the Interconnecting Cable Corridor and associated Site Accesses lie wholly within the administrative area of East Riding of Yorkshire Council, whilst the Grid Connection Corridor which links the Solar PV Site to the National Grid Drax Substation and associated Site Accesses lie within the administrative areas of East Riding of Yorkshire Council and North Yorkshire Council.
- 1.1.4 **Figure 3-1** shows the Order limits for the Scheme.

1.2 Structure and purpose of this document

- 1.2.1 The principal focus of this Design and Access Statement (DAS) is on the operational design and access of the Scheme. It explains how the design responds to its context and achieves its design objectives.
- 1.2.2 A detailed description of the Scheme and its components in terms of its proposed use, scale, appearance, and materials can be found in **Chapter 2: The Scheme** of the **Environmental Statement (ES), Volume 1 [EN010143/APP/6.1]** and is therefore not repeated in this DAS. The **Outline Design Principles Statement [EN010143/APP/7.4]** defines the design parameters for the future detailed design.
- 1.2.3 The construction and decommissioning design of the Scheme is not discussed in this DAS. This is described in **Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1]** and will be principally managed through the Construction Environmental Management Plan (CEMP) and Decommissioning Environmental Management Plan (DEMP) which are secured through the requirements of the DCO (see schedule 2 of the **Draft DCO [EN010143/APP/3.1]**). A **Framework CEMP [EN010143/APP/7.7]** and a **Framework DEMP [EN010143/APP/7.9]** are submitted with the DCO Application which provide details of the working methods and mitigation measures to be implemented during these stages.

1.2.4 This DAS is therefore structured as follows:

- a. **Section 2: Good Design** – introduces the context of what is considered to be good design referring to relevant design guidance and policy for large scale energy infrastructure.
- b. **Section 3: Context and Analysis** – Explains the location of the Solar PV Site.
- c. **Section 4: Design Process and Evolution** – describes the process of developing the design, its different stages of evolution; and the how the outline design will be secured.
- d. **Section 5: The Design Response** – details how the design meets the Scheme’s design objectives and how design commitments are to be secured; and presents the Scheme Design Masterplan.

2. Good Design

2.1 Introduction

- 2.1.1 In developing the design for the Scheme, a review of relevant national and local policy and guidance regarding the design of major energy infrastructure projects has been undertaken to establish what is considered to be good design.
- 2.1.2 This section of the DAS also discusses the need for and approach to design flexibility in achieving good design.

2.2 Policy Context

National Policy Statements and Design Guidance

- 2.2.1 National Policy Statement (NPS) for Energy (NPS EN-1) (Ref. 2) and Draft NPS EN-1 (Ref. 3) sets out the Government's policy for the delivery of major energy infrastructure to meet the Government's net zero and climate change objectives, and achieve a secure, reliable, and affordable energy system. In achieving this, the policy expects Applicants to bring forward schemes which deliver 'good design'.
- 2.2.2 Paragraph 4.5.1 of NPS EN-1 (Ref. 2) explains that while visual appearance is sometimes considered to be the most important factor in good design, high quality and inclusive design goes far beyond aesthetic considerations. It continues 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."*
- 2.2.3 NPS EN-1 (Ref. 2) and paragraph 4.6.2 of Draft NPS EN-1 (Ref. 3) do acknowledge 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."* Paragraph 4.5.4 of draft NPS EN-1 (Ref. 2) also expects the Secretary of State to consider the *"ultimate purpose of the infrastructure"* and its *"operational, safety and security requirements which the design has to satisfy"* in considering whether good design can be demonstrated.
- 2.2.4 Adapting to climate change is also identified by NPS EN-1 at section 4.8 (Ref. 2) as a key consideration of design. Specifically, paragraph 4.8.5 expects Applicants to consider the impacts of climate change *"when planning the location, design, build, operation and, where appropriate, decommissioning of new energy infrastructure"*.
- 2.2.5 Draft NPS EN-3 (paragraph 3.5.2) (Ref. 4) identifies that energy infrastructure should demonstrate good design, particularly in respect of landscape and visual amenity and in the design of the project to mitigate impacts such as noise and effects on ecology and heritage.
- 2.2.6 In terms of design process, Draft NPS EN-1 (Ref. 3) paragraph 4.6.5 expects design principles to be *"established from the outset of the project to guide the development from conception to operation"*. Footnote 113 (Ref. 3) explains that design principles *"should take into account any national guidance on infrastructure design, this could include for example the Design Principles for National Infrastructure published by the National Infrastructure*

Commission, the National Design Guide and National Model Design Code, as well as any local design policies and standards.”

- 2.2.7 The National Infrastructure Commission (NIC) design group published the Design Principles for National Infrastructure in 2020 (Ref. 5). Key principles for good design based on the following four key pillars are identified and set out below:
- a. Climate: mitigate greenhouse gases and adapt to climate change, enable decarbonisation.
 - b. People: reflect what society wants, improve quality of life and health/wellbeing as well as take into account the views of affected communities.
 - c. Places: create a sense of identity and improve the environment, provide a positive contribution to the local landscape, protect and enhance biodiversity and achieve biodiversity net gain.
 - d. Value: achieve multiple benefits and solve problems, seek opportunity to add value and solve multiple problems with one solution.
- 2.2.8 According to the NIC, “*design is about how something works and how it looks*” (Ref. 5). Design should be used to solve problems and maximise the benefits. It should be integral to all aspects of a project and considered at all stages.
- 2.2.9 The National Design Guide (Ref. 6) published in January 2021 sets out the components considered key for good design including layout, form, scale, appearance, landscape, materials and detailing. Part 2 of the National Design Guide explains that there are 10 characteristics of well designed places which work together to create its physical character and help nurture and sustain a sense of community and positively address environmental issues affecting Climate. These are:
- a. Context – enhances the surroundings.
 - b. Identity – attractive and distinctive.
 - c. Built form – a coherent pattern of development.
 - d. Movement – accessible and easy to move around.
 - e. Nature – enhanced and optimised.
 - f. Public spaces – safe, social and inclusive.
 - g. Uses – mixed and integrated.
 - h. Homes and buildings – functional, healthy and sustainable.
 - i. Resources – efficient and resilient.
 - j. Lifespan – made to last.

National policy relating to solar design

- 2.2.10 Draft NPS EN-3 (Ref. 4) recognises that there are a number of factors when considering the design and layout of large scale ground mounted solar sites including grid capacity, orientation, topography and ability to mitigate environmental impacts and flood risk (paragraph 3.10.51).

- 2.2.11 The draft NPS EN-3 (Ref. 4) sets out in section 3.10 the key considerations for siting a solar farm and its design. These include:
- a. Irradiance and topography – this is a key consideration as the amount of electricity generated on the site is directly linked to the amount of irradiance. Irradiance is affected by ground topography as set out in paragraph 3.10.10.
 - b. Proximity to dwellings – paragraph 3.10.12 provides that large scale solar farms “*are large sites that may have a significant zone of influence*”. Proximity to dwellings (as sensitive receptors) may therefore give rise to visual amenity and glare impacts which need to be considered.
 - c. Agricultural Land Classification – paragraph 3.10.14 (Draft NPS EN-3) states that “*land type should not be a predominating factor in determining the suitability of the site location*”. Where possible, previously developed land should be favoured and where agricultural land is necessary preference should be given to poorer quality land rather than high quality (Best and Most Versatile Land). When siting solar PV on agricultural land paragraph 3.10.17 provides that consideration should be given to whether the design allows for the continued agricultural use.
 - d. Accessibility – “*Applicants will need to consider the suitability of the access routes to the proposed site for both the construction and operation of the solar farm with the former likely to raise more issues*” (paragraph 3.10.20 Draft NPS EN-3).
 - e. Public Rights of Way – as set out in paragraph 3.10.27 of Draft NPS EN-3, “*applicants are encouraged to design the layout and appearance of the site to ensure continued recreational use of public rights of way*”. The design should also minimise the visual outlook from PRow and maximise opportunities to enhance PRow.
 - f. Security and Lighting- consideration of availability of natural defences such as hedging and rivers as well as perimeter security measures. Security measures and lighting used should minimise the impact on landscape and visual impact.
 - g. Network Connection – the capacity of the electricity transmission network and/or the presence of supportive infrastructure is critical to the feasibility of a development. Paragraph 3.10.38 states “*To maximise existing grid infrastructure, minimise disruption to existing local community infrastructure or biodiversity and reduce overall costs applicants may choose a site based on nearby available grid export capacity*”.

Other national and local planning policy and design guidance

- 2.2.12 The National Planning Policy Framework (NPPF) (Ref. 7), most recently updated in September 2023, sets out the Government’s planning policies for England and how these should be applied to developments within the Town and Country Planning Act 1990. Paragraph 126 of the NPPF described good design, explaining “*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.”

- 2.2.13 Design not only features within national policy and guidance, but also within local policy relevant to the Scheme.
- 2.2.14 Of relevance is the East Riding Local Plan 2012 - 2029 (Ref. 8) and East Riding Local Plan Update 2020 - 2039 (Ref. 9) which expects developments to safeguard and respect the diverse character and appearance of the area through their design, layout, construction and use whilst seeking to reduce carbon emissions and make prudent and efficient use of natural resources, particularly land, energy and water.
- 2.2.15 The Lower Derwent Valley Supplementary Planning Document 2018 (Ref. 10) sets out that “*considering the design of the development and landscaping schemes at an early stage will ensure proposals respond to their context*” (paragraph 6.1). It expects opportunities for biodiversity and landscape enhancement to be considered and inform all stages of developments.
- 2.2.16 East Riding of Yorkshire Council have produced a Public Rights of Way (PRoW) and Planning Guidance Document (Ref. 11) which provides recommended standards and gives associated advice for PRoW as part of development applications.

3. Context and Analysis

3.1 Introduction

- 3.1.1 This section summarises the existing context and characteristics of the Solar PV Site and the surrounding area given the majority of the above ground infrastructure is within this part of the Site. It sets out key design considerations that were identified to help guide the Scheme's design, in relation to this context. These characteristics have informed the development of the design for the operational above ground components of the Scheme.
- 3.1.2 This process has included identification of opportunities and constraints at the Solar PV Site in relation to landscape character, green infrastructure, ecology and biodiversity, hydrology, access and movement and cultural heritage. This has been informed by extensive desk-based and field work surveys.

3.2 The Order limits

- 3.2.1 The Order limits, which are shown in **Figure 3-1**, comprise approximately 1,276 hectares (ha) of land located within the administrative areas of East Riding of Yorkshire Council and North Yorkshire Council.
- 3.2.2 The Order limits are located in close proximity to the hamlets and villages of Gribthorpe, Spaldington, Brind, Willitof, Wressle, Newsholme, Brackenholme, Barmby on the Marsh and Long Drax. The nearest town is Howden.

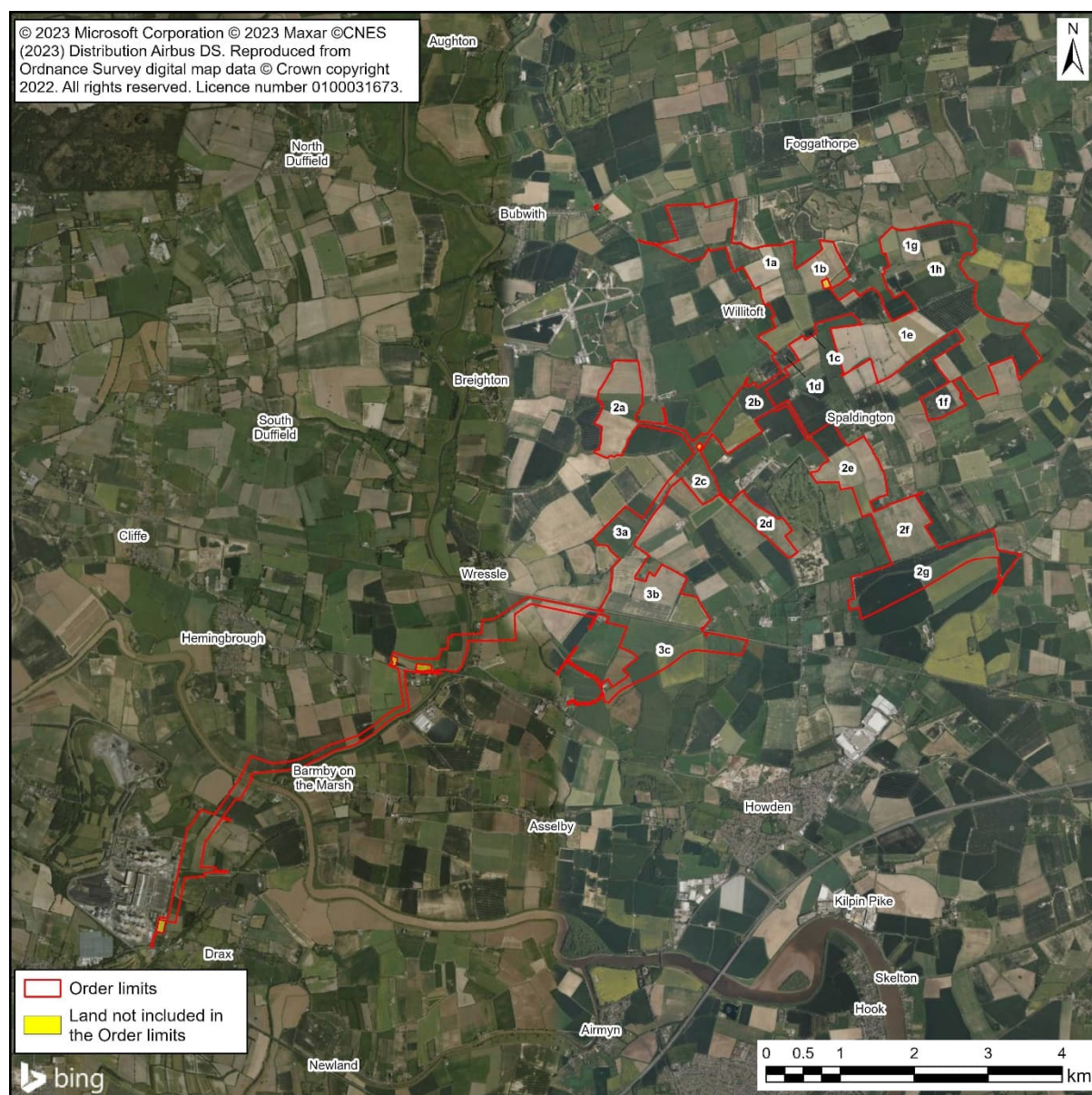


Figure 3-1. The Order limits

3.2.3 The Order limits comprise the following elements as shown on **Figure 3-2**.

- a. The Solar PV Site – approximately 966 ha of land, which will contain the ground mounted solar photovoltaic (PV) panels and associated infrastructure including inverters, switchgear and transformers, two Grid Connection Substations, areas of habitat creation/enhancement and landscaping; creation of permissive paths and access points; and other ancillary works;
- b. The Interconnecting Cable Corridor - area within which underground cables linking the Solar PV Site to the Grid Connection Substations will be installed;
- c. Ecology Mitigation Area – approximately 107 ha of land north-east of the Solar PV Site which is to be managed for ecological mitigation and enhancement. It comprises approximately 28 ha near to River Foulness to be managed as wet grassland habitat and the remaining

approximately 79 ha to remain in the current arable rotation with enhanced management.

- d. Site Accesses – land required to facilitate access to the Solar PV Site, Grid Connection Corridor and Interconnecting Cable Corridor, such as new access routes or measures to provide better visibility splays;
- e. The Grid Connection Corridor which is the area within which the underground Grid Connection Cables running between and linking the Grid Connection Substations to National Grid's Drax Substation (approximately 6.2 km south-west of the southern extent of the Solar PV Site) will be installed.

3.2.4 The Solar PV Site comprises 16 Solar PV Areas. Individual Solar PV Areas have been assigned an identification number. The numbering was assigned by placing the Solar PV Areas into three groups numbered from north to south, with individual Solar PV Areas given a letter from east to west, as shown in **Figure 3-2** below. The numbering system therefore solely relates to geographical location.

3.2.5 The following sections provide a summary of the baseline context of the Scheme, which helped to identify key design considerations. These then helped inform the development of the design objectives and the design response.

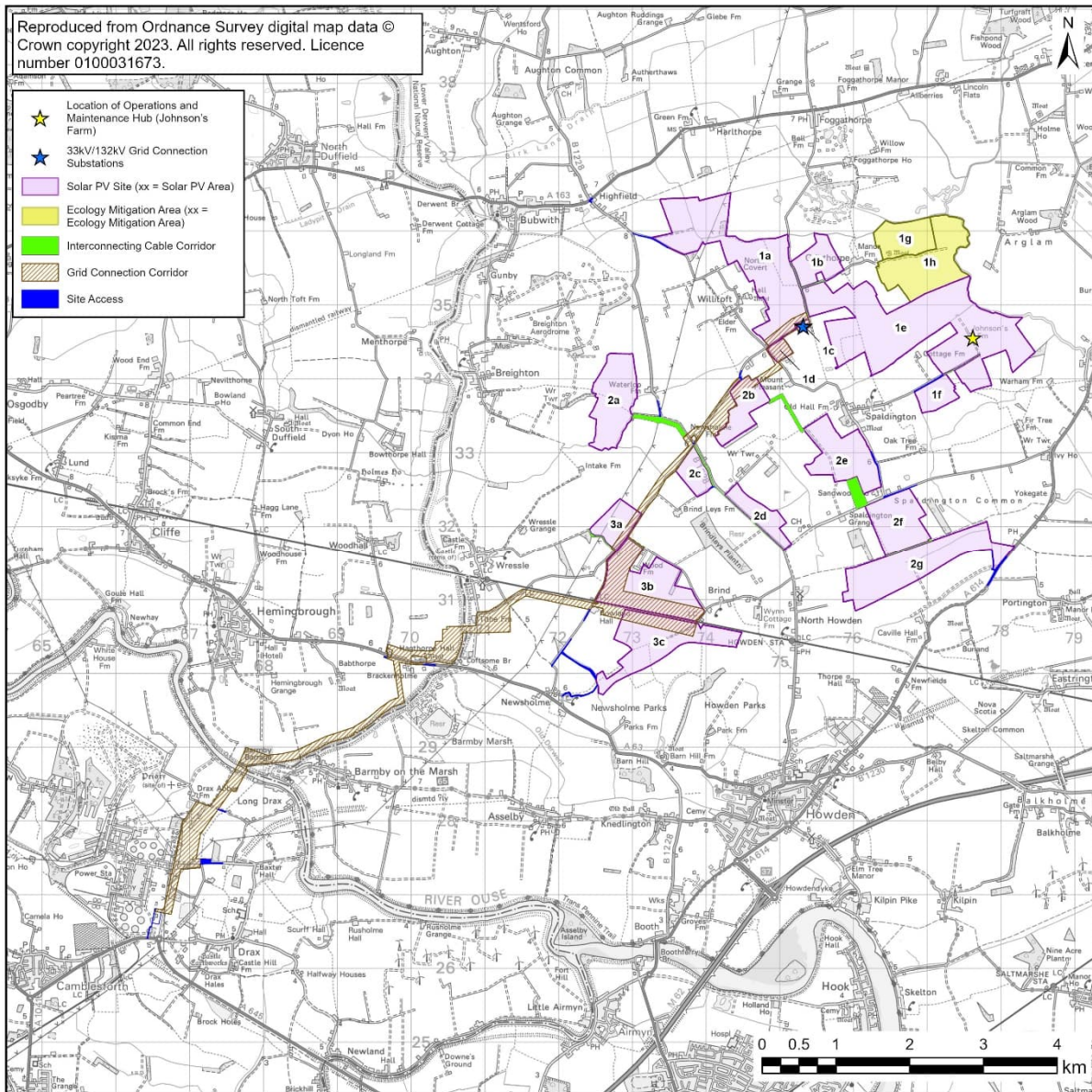


Figure 3-2. Elements of the Order limits

3.3 Network Connection, Irradiance and Topography

Existing Context

- 3.3.1 Network connection, irradiance and topography all influence the generating capacity of solar developments and the distribution of energy generated.
- 3.3.2 The wider area within which the Scheme is located has a history of energy generation. Yorkshire's history of coal fired power stations such as those at Drax, Eggborough and Ferrybridge means that the national electricity transmission system is well developed in this area and has available capacity given decommissioning of these facilities.
- 3.3.3 For the Scheme to deliver its renewable energy generation to the national electricity transmission system, the Applicant identified a point of connection and capacity at the National Grid Drax Substation through discussions with

National Grid. The National Grid Drax Substation is approximately 6.2 km from the southern extent of the Solar PV Site.

- 3.3.4 The characteristics of the land in this part of East Yorkshire are optimal for the generation of renewable energy by solar PV. The land at this location has good levels of irradiation and large areas of flat land. The topography of the area is relatively flat with existing elevation ranges <10 m Above Ordnance Datum (AOD).
- 3.3.5 Large scale solar development is ideal on flat land because it helps to reduce visual intrusion as panels can be screened easily due to the land not being elevated and there being fewer areas surrounding it that are elevated too. Flat land which is not located close to woodland also limits the shading between solar PV arrays which can reduce energy production. There is an additional benefit that flat land facilitates the construction.

Key design considerations

- a. To maximise energy generation, where possible, the siting of solar PV on flat land should avoid close proximity to woodland blocks and other features which cause shade.
- b. A need to locate the solar PV in close proximity to a point of connection with capacity to ensure the electricity generated can easily feed into the national electricity transmission system.

3.4 Landscape Character, Green Infrastructure and Visual Receptors

Existing Context

- 3.4.1 The landscape features within the Order limits consist predominately of agricultural fields, mainly under arable production, with some areas of pasture, interspersed with individual trees, hedgerows, tree belts (linear) small woodland blocks and farm access tracks. Fields containing willow coppice used for biomass production are located adjacent to and partially within Solar PV Area 3c in the southern part of the Solar PV Site.
- 3.4.2 Field boundaries are predominantly hedgerows of varying quality and height with mature oak trees as the dominant hedgerow tree species. Lines of mature trees, often oak, mark where hedgerows have been lost and fields amalgamated. The vegetation pattern across the Solar PV Site and its immediate setting is generally linear, following road and river corridors, field boundaries, and along settlement edges. Woodland cover across the Solar PV Site is generally low. Where areas of trees and woodland exist, these are generally narrow rectilinear blocks along field boundaries or within corners of fields. Vegetation cover is generally higher to the north around Gribthorpe and to the south of Foggathorpe.
- 3.4.3 The wider landscape is of a similar nature with repetitive elements and notable features such as the Drax Power Station, wind turbines, pylons and overhead wires and transport infrastructure which influence landscape character. The river corridors are inconspicuous within the landscape due to

limited vegetation and engineered banks. There are no national or local designations which afford protection to the landscape within the Solar PV Site or within its close surroundings.



Figure 3-3. View north across arable and pastoral farmland from the edge of the village of Spaldington

- 3.4.4 At the national level, the Solar PV Site, Ecology Mitigation Area, Interconnecting Cable Corridor, Grid Connection Corridor, and Site Accesses are within the Natural England's National Character Area 39: Humberhead Levels (NCA 39) (Ref. 12).
- 3.4.5 At a local level, the Solar PV Site is within Landscape Character Area 5 (Ouse Valley) as defined by the Selby Landscape Character Assessment (Ref. 13), as well as Landscape Character Types LCT 5 Open Farmland and LCA 7 Foulness Open Farmland of the East Riding of Yorkshire Landscape Character Assessment (Ref. 14). The LCT 5 is further broken down to LCA 5A Howden to Bubwith Farmland; and LCA 5B West of Holme on Spalding Moor Farmland; and LCT 7 Foulness Open Farmland is further broken down to LCA 7A South of Holme on Spalding Moor Farmland; and LCA 7B Eastrington Farmland. These are shown in **Figure 3-4**.
- 3.4.6 The key characteristics of these Landscape Character Areas are defined within **Chapter 10: Landscape and Visual Amenity, ES Volume 1 [EN010143/APP/6.1]**. In summary these are generally described as being flat and low-lying land or flood plain, with large scale open and rectilinear arable fields. Dykes and ditches define field boundaries, and there is a general absence of hedgerows. The River Foulness defines the eastern boundary of the Solar PV Site.

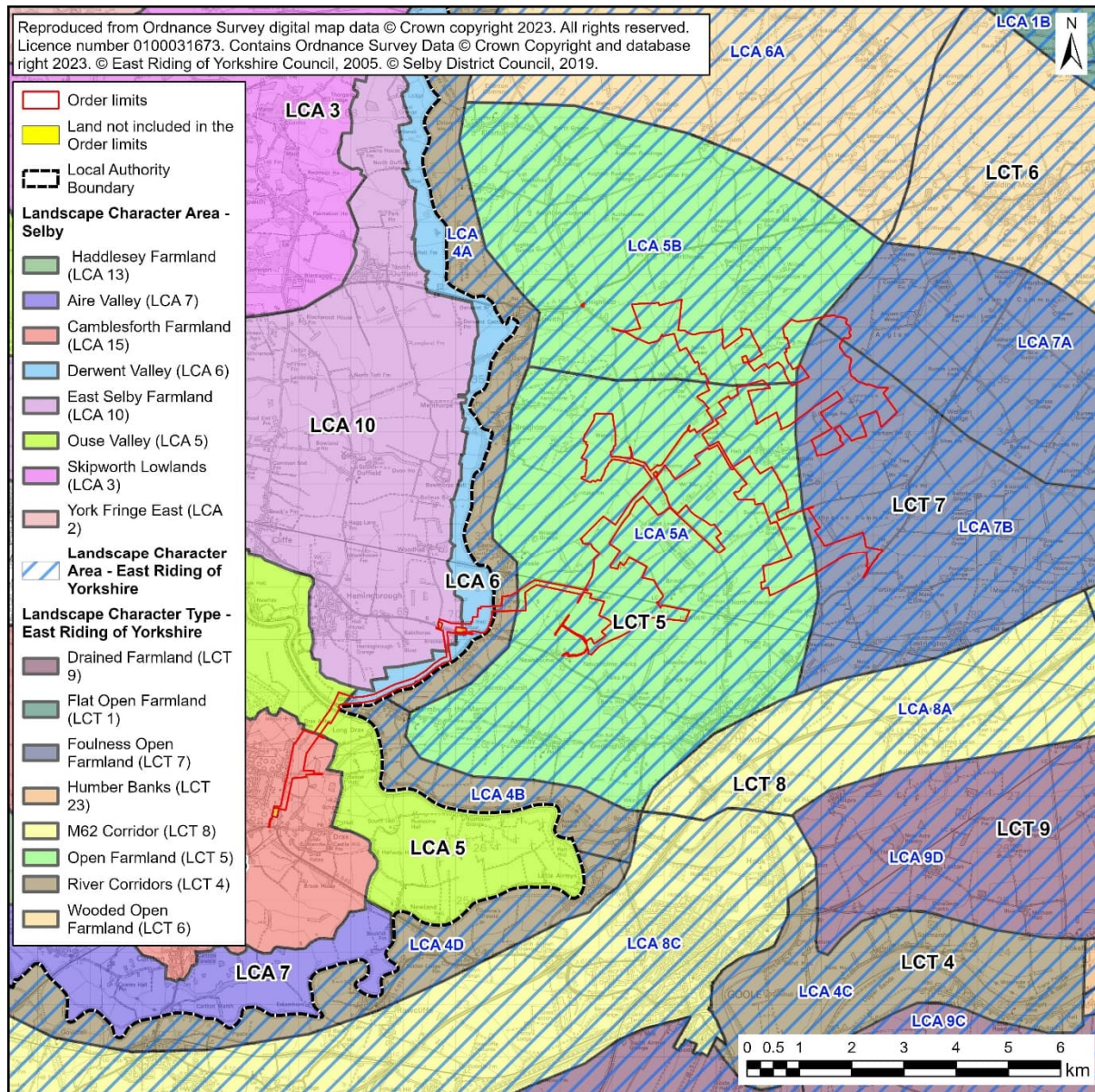


Figure 3-4. Local Landscape Character Areas

3.4.7 In terms of visual residential receptors, as mentioned, several small rural villages and hamlets including Gribthorpe, Willitof, Spaldington, Brind and Wressle and the market town of Howden are located in the surrounding area of the Order limits. At the closest point, the boundary of the Solar PV Site is located 1.6 kilometres (km) north-west of new residential developments in the north of Howden and approximately 1.3 km west of the villages of Brighton and Wressle. The closest residential properties in the hamlets of Gribthorpe and Brind and the village of Spaldington are approximately 20 metres (m) from the Solar PV Site, whilst the closest properties in the hamlet of Willitof are approximately 120 m away. The village of Newsholme is located adjacent to the south of the Solar PV Site.

3.4.8 **Figure 3-5** below shows the locations of the residential properties in close proximity to the Order limits.

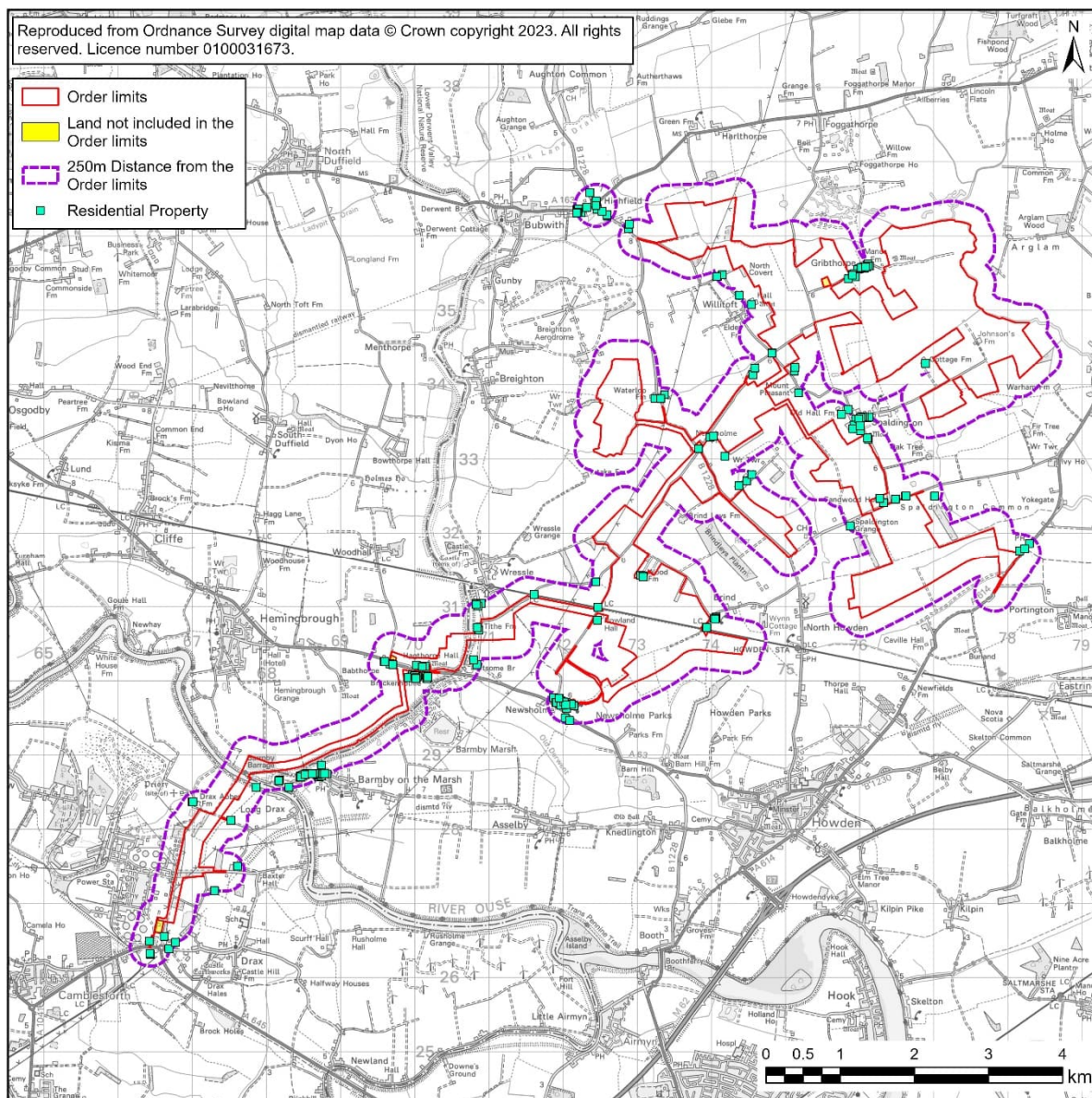


Figure 3-5. Residential Receptors in proximity to the Order limits

- 3.4.9 Other visual receptors within and surrounding the Scheme include Public Rights of Way (PRoW). A number of ProW cross parts of the Scheme and surrounding area, linking settlements. The Howden 20 Long Distance Route (LDR) is a circular route which runs through Howden and Spaldington to the east, to the south of Bubwith to the north and the River Derwent, Wressle and Asselby to the east (see **Figure 3-9**).
- 3.4.10 The PRoW network available across much of the Scheme and surrounding area provides access to tranquil areas, such as open arable land and river corridors.

Key design considerations

- a. Integrate the Scheme into the existing landscape pattern as far as practicable by retaining and following existing features, including vegetation.
- b. There are villages, hamlets and individual residential properties in close proximity to the Solar PV Site. The layout of the Solar PV Site should take opportunities to be sensitive to residential views, avoiding or reducing change wherever practicable and filtering and screening more prominent components of the Scheme.
- c. PRow partially cross and surround the Scheme. The layout of the Scheme should ensure that suitable buffers are provided to protect PRow and views from within, avoiding or reducing change wherever practicable.
- d. Given the rural nature of the area affected there is limited natural surveillance therefore security measures that are sensitive to this context should be used where practicable.

3.5 Land use

Existing Context

- 3.5.1 Within the Solar PV Site and the immediate adjacent area, land use is principally agricultural, characterised by large-scale regular arable fields across several land holdings. The main crops within the Solar PV Site are a winter cereal rotation (wheat, barley and oilseed rape or beans) with limited areas of grassland.
- 3.5.2 Other existing infrastructure within the Order limits and surrounding area includes overhead power lines carried by pylons which extend from Drax Power Station and cross Solar PV Areas 1a and 3a; and a National Grid Gas transmission pipeline which is 140 m from the southern boundary of Solar PV Area 2g and 60 m from the southern boundary of Solar PV Area 3c.
- 3.5.3 To the south of Solar PV Area 2b and between Solar PV Areas 2d and 2e, there is an existing wind farm and an anaerobic digestion plant. The windfarm is located on the former Spaldington Airfield and has five turbines.
- 3.5.4 Recreational and tourism uses are also located close to the Solar PV Site. Fishing lakes are sited to the north-east of Solar PV Areas 1a and 1b. At the southernmost lake, closest to the Solar PV Site, there are six holiday homes.
- 3.5.5 Holiday cabins are located at Waterloo Farm, to the east of Solar PV Area 2a. Boothferry Golf Club and Spaldington Golf Range are situated to the west of Solar PV Area 2d and Brighton Airfield (on the former Brighton RAF Airfield), which has an active flying club who regularly fly for pleasure, is located to the north of Solar PV Area 2a.
- 3.5.6 Within the Solar PV Site there are buildings around a courtyard off a farm access track from the eastern extent of Ings Lane, east of Spaldington, which are locally known as Johnsons Farm. These buildings consist of a dilapidated residential building, located to the east of the access and a single storey barn type building immediately adjoining the access to the north. To

the north-east of the dilapidated dwelling is a modern agricultural building used for storage. Beyond the courtyard heading north is a farm access track providing access to arable fields.



Figure 3-6. Dilapidated dwelling and modern barn at Johnson's Farm

- 3.5.7 Soil surveys undertaken within the Solar PV Site, Ecology Mitigation Area, and Interconnecting Cable Corridor in November 2022 to January 2023, and between May 2023 and September 2023 and Predictive Agricultural Land Classification (ALC) mapping data commissioned by Cranfield University confirm that the majority of land is moderate quality Subgrade 3b. There are small areas of subgrade 3a within Solar PV areas 1a, 1g, 1h, 2f, 2g, 3b and 3c, and a small area of Grade 2 and 1 land in Solar PV Areas 2g and 3c. The majority of agricultural land within the Solar PV Site is therefore not Best and Most Versatile (BMV) land.
- 3.5.8 There are several consents which have been approved and overlap or are adjacent to the Order limits. Of relevance to the Solar PV Site is the Scotland to England Green Link 2 (SEGL2) (Planning permission reference 22/01990/STPLFE) which is an electrical cable route between Drax and Fraisthorpe.

Key design considerations

- a. The siting of infrastructure to avoid permanent losses of BMV land.
- b. Opportunity to reuse existing buildings and structures within the Solar PV Site.
- c. Integration of the design with existing and consented utility assets and layout considerations for minimising the effect of shading from nearby uses such as wind turbines.
- d. The proximity of recreational and tourism uses when considering the layout of the solar PV arrays to reduce views and visual impacts and visually screen the Solar PV Site.

3.6 Ecology

Existing Context

- 3.6.1 The Solar PV Site and Ecology Mitigation Area do not contain any statutory or non-statutory nature conservation designations.
- 3.6.2 The nationally and internationally designated River Derwent Special Area of Conservation (SAC) and River Derwent Site of Special Scientific Interest (SSSI) cross the Grid Connection Corridor, approximately 4.8km from the southern part of the Solar PV Site.
- 3.6.3 There are two non-statutory Local Wildlife Sites (LWS) near the Solar PV Site. Tottering Lane, Gribthorpe LWS partially lies within the Interconnecting Cable Corridor between Solar PV Area 1a and Solar PV Areas 1b and 1e. Wressle Verge LWS partially lies within the Interconnecting Cable and Grid Connection Corridors between Solar PV Areas 3a and 3b, running south-east to north-west along both sides of Brind Lane and then south-west along both sides of Wood Lane.
- 3.6.4 As mentioned, the habitat within the Solar PV Site is predominantly arable farmland (some with semi-improved grassland margins), intersected by a network of drainage ditches, hedgerows and tree lines. Other, less frequently recorded habitats within the Solar PV Site (recorded to date) include improved grassland and poor semi-improved grassland fields, areas of neutral semi-improved grassland, broad-leaved plantation woodland and ponds. Small areas of broad-leaved and mixed semi-natural woodland are present within the Solar PV Site.
- 3.6.5 As indicated by Department for Environment, Food and Rural Affairs (DEFRA) mapping (Ref. 15), priority coastal and floodplain grazing marsh habitat is located immediately adjacent to the Solar PV Site, slightly encroaching into Solar PV Area 2b. An area of Priority coastal and floodplain grazing marsh habitat is also within the Grid Connection Corridor, in a field adjacent to Solar PV Area 2b, along the verges of Wood Lane, and inside a field to the west of Wood Lane. A single area of Priority deciduous woodland habitat is located within Solar PV Area 3b, other areas of Priority deciduous woodland are present adjacent to the Solar PV Site. An areas of Priority orchard habitat is located to the east of Solar PV Area 3b.
- 3.6.6 There are no areas of ancient woodland within 2km of the Order limits. There are a total of 206 trees that are identified as likely veteran, with seven of those meeting the criteria for ancient trees, mainly along field boundaries within the Order limits.
- 3.6.7 A number of notable trees are also located along field boundaries and particularly within Solar PV Areas 1a-1e of the Solar PV Site.
- 3.6.8 Ecological species surveys indicate that there is presence of Golden Plover and Pink footed Geese using parts of the Solar PV Site which are overwintering, and migratory bird species linked to the Humber Estuary SPA/Ramsar and Lower Derwent Valley SPA/Ramsar. In addition, Skylark, Curlew, and Lapwing bird species have been recorded.

Key design considerations

- a. Opportunity to enhance the quality and range of habitats within the Order limits and achieve a net gain in biodiversity.
- b. Opportunity to create new habitats and adopt planting strategies including hedgerows to improve the connectivity between existing and new habitats.
- c. Opportunity to create habitat specifically for Golden Plover and Pink Footed Geese currently using the area.
- d. Protect ancient and veteran trees and avoid impacts on notable trees and important hedgerows within and along the boundaries of the Solar PV Site

3.7 Cultural Heritage

Existing Context

- 3.7.1 There are no designated heritage assets such as World Heritage Sites, Registered Battlefields, Registered Parks and Gardens, or Protected Wrecks within the Order limits or within 3 km from the boundary of the Solar PV Site. There are no designated heritage assets comprising Scheduled Monuments, Listed Buildings and Conservation Areas within the Order limits.

Archaeological context

- 3.7.2 There are non-designated heritage assets adjacent to or within the Solar PV Site. A possible Bronze Age round barrow lies adjacent, north of Solar PV Area 3b, at Wood Farm and could potentially extend into the Solar PV Site. Two non-designated heritage assets dating to the Iron Age period are located within the Solar PV Site.
- 3.7.3 The southern portion of Solar PV Area 2a was formerly divided into narrow, east-west aligned, 'strip fields', accessed by a network of footpaths connecting to a long, sinuous routeway called 'The Outgang'. The Outgang connects the settlement of Brighton to an historic area of rough common land, 'Brighton Common' and, as suggested by its name, represents a historic driveway, which could be medieval or post-medieval in origin.
- 3.7.4 There is also a non-designated moated site (MHU3206) located in the south-west corner of Ecology Mitigation Area 1g, and a non-designated heritage asset of schedulable quality; Hagthorpe moated site (MNY10603), approximately 2.4km west of the Solar PV Site, within the Grid Connection Corridor.

Built Heritage context

- 3.7.5 To the west of the Solar PV Site, a group of historic settlements all lie along the eastern side of the course of the River Derwent. Wressle, Brighton, Gunby and Bubwith which all include listed buildings, and non-designated historic buildings within enclosed village settings. The key designated heritage assets within these villages include:
- a. Wressle Castle scheduled monument, which is visible when looking north-east over the Derwent.

- b. Church of All Saints (Grade I) within Bubwith, sited approximately 1.7km to the west of Solar PV Area 1a.
- c. Within 1km of the Solar PV Site, designated heritage assets include Home Farmhouse in Spaldington which is a Grade II listed building; a scheduled monument is present at Manor Farm; Portington Hall a Grade II Listed Property, Common Farmhouse and Grade II Listed building, Foggathorpe House a Grade II Listed House. The listed late 18th century house of Rowland Hall, Grade II Listed, lies approximately 500 m west of Solar PV Area 3c.
- d. To the south of the Solar PV Area lies Howden Conversation Area which contains Howden Minster, a Grade I Listed Church.

Key design considerations

- a. The design of the Scheme should avoid direct impacts on heritage assets identified within the Solar PV Site through avoidance and if this is not practicable, reduce impacts through mitigation.
- b. The design should be sensitive to preserving the setting of, and key relationships, between heritage assets identified in the surrounding area.

3.8 Flood Risk and Hydrology

Existing Context

- 3.8.1 The River Foulness defines the eastern boundary of the Solar PV Site and the eastern area of the Solar PV Site is part of its floodplain. The River Derwent defines the western boundary of the Solar PV Site, and is crossed by the Grid Connection Corridor where the river intersects with the River Ouse. The River Ouse is located approximately 3 km to the south of Solar PV Area 3c. Drainage ditches, notably Fleet Dike and Londesborough Drain, and small watercourses are ubiquitous across the area and are generally heavily modified or artificial in nature as a result of the surrounding agricultural and drainage practices.
- 3.8.2 From published Environment Agency fluvial flood mapping, the majority of the Solar PV Site is located within Flood Zone 1 (lowest risk of flooding). Areas of Flood Zone 2 (medium risk) are predominantly located within the central area of the Solar PV Site within Solar PV Areas 2a, 2c, 2d, 3a and 3b. Areas of Flood Zone 3 (high risk) are found in Solar PV Areas 1e, 1g, 1h and 2a.
- 3.8.3 There are small pockets of land at medium and high risk of surface water flooding in particular within the north of Solar PV Site 1a.
- 3.8.4 **Figure 3-7** illustrates the hydrological risk context.

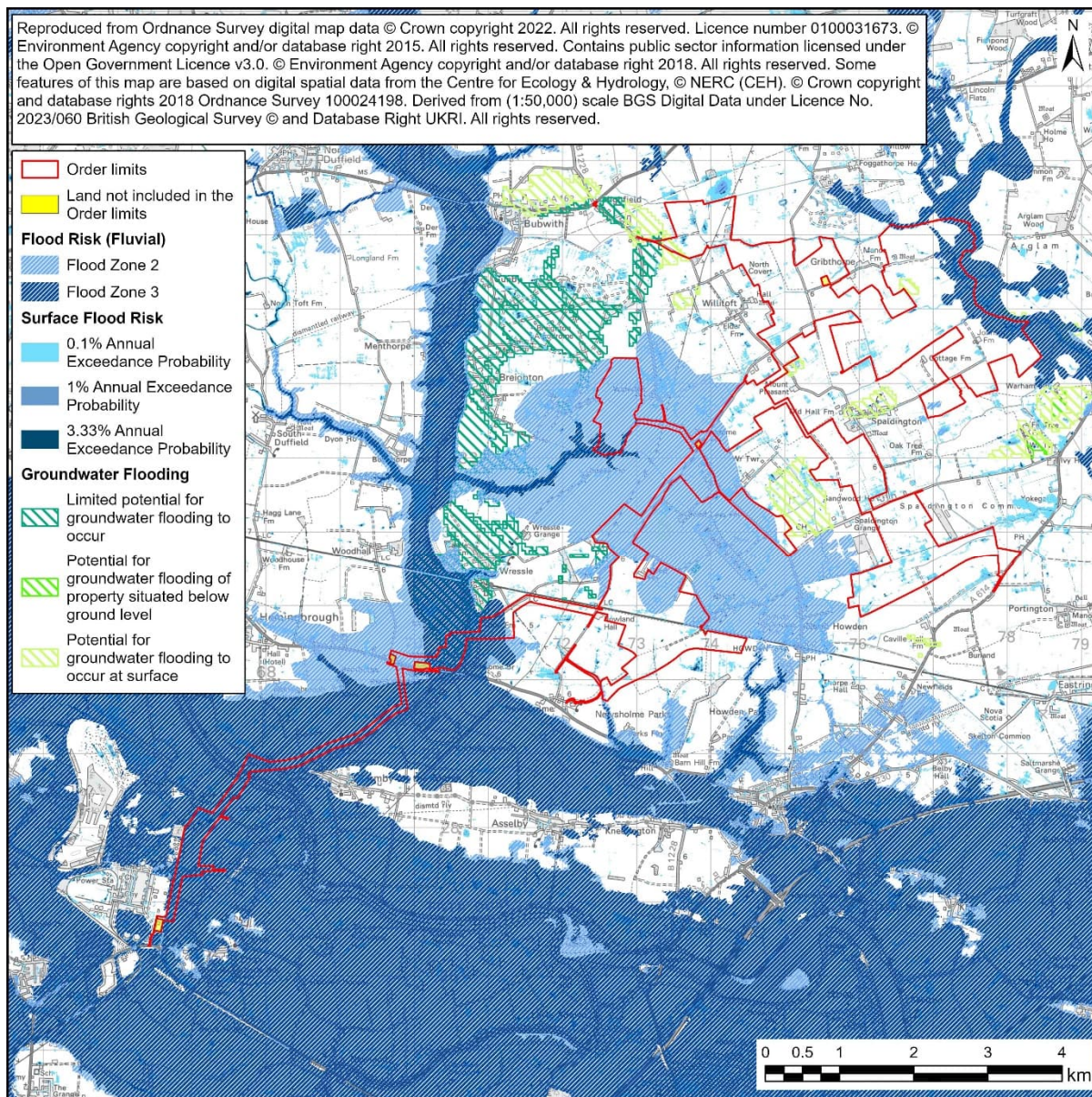


Figure 3-7. Flood Zone Mapping

Key design considerations

- a. The interaction of the Scheme with the large number of drainage ditches and small watercourses across the area.
- b. Avoiding the location of above ground vulnerable infrastructure in areas at high risk of flooding where practicable.
- c. Avoiding an increase in flooding within and outside of the Order limits as a result of the Scheme.

3.9 Accessibility

Existing Context

Highway Network

- 3.9.1 The Solar PV Site is in close proximity to the strategic road network with the M62, which is a motorway connecting Liverpool to Hull via Bradford, Leeds and Wakefield, located 3.25 km to the south of Solar PV Area 2g. The A614 is adjacent to the south-east of the Solar PV Site and the A63 less than 1 km to the south of the Solar PV Site.
- 3.9.2 The local road network consists of the B1228 which runs from the north near York southwards to Howden. The road is adjacent to Solar PV Areas 2c and 2d. A network of smaller roads is present in and around the Solar PV Site. Wood Lane runs alongside Solar PV Areas 3a, 2c and 2b connecting Station Road in the west to Tottering Lane in the east for a length of 5.6 km. Tottering Lane provides access to Solar PV Areas 1a, 1b, 1c, 1d and 1e heading east from the junction with Willitof Road and Wood Lane to the north with Bell Lane, travelling for 3 km.
- 3.9.3 Spaldington Road runs in between Solar PV Areas 2e and 2f, travelling from the B1228 in the west to the A614 in the east for a distance of approximately 4 km. The road is a single carriageway without road markings, that provides access to an unmarked road heading north to Ings Lane, Wood Lane and Willitof Lane.
- 3.9.4 **Figure 3-8** shows the Local Road Network in relation to the Order limits.

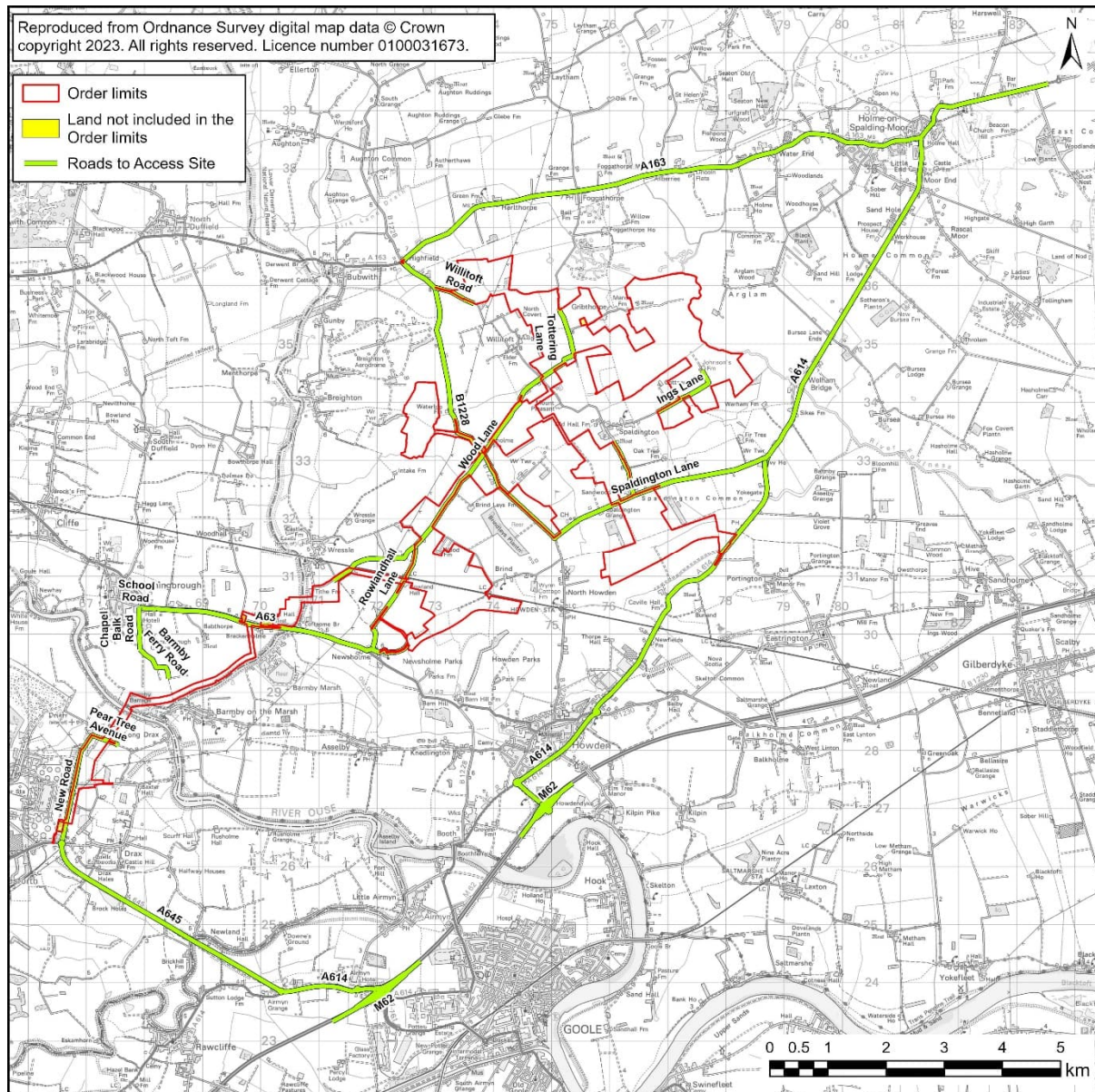


Figure 3-8. Local Road Network used to access the Solar PV Site

Public Rights of Way

- 3.9.5 There is a network of PRow crossing fields and running alongside roads and rivers which intersect the Solar PV Site. **Figure 3-9** shows the existing PRow within the Order limits. There are 10 PRow either located entirely within the Solar PV Site, or which pass through the Solar PV Site and continue outside of it. There are 12 PRow which are located along or abutting the Solar PV Site boundary but do not traverse it.
- 3.9.6 As mentioned, the Howden 20 is a circular route which follows part of the Trans Pennine Trail to the south, running through Howden and Spaldington to the east, to the south of Bubwith to the north and the River Derwent, Wressle and Asselby to the east. It runs through and around the Solar PV Areas. The footpath extends within Solar PV Areas 1a, 1c and 3c and along the boundaries of Solar PV Areas 2e, 2f and 2g.
- 3.9.7 National Cycle Route 65 passes through Howden approximately 2.5 km to the south of the Solar PV Site.

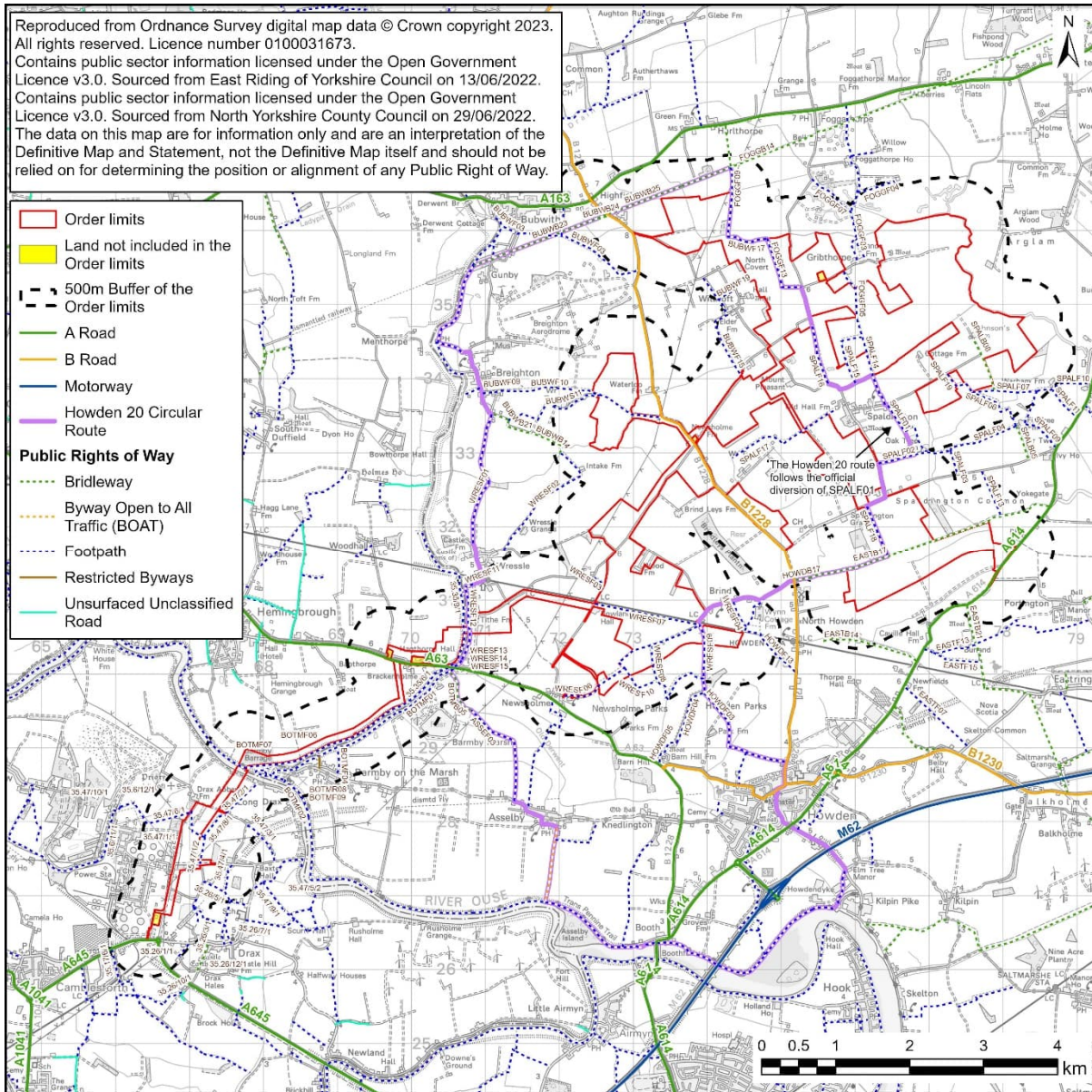


Figure 3-9. PRoW within and surrounding the Order limits

Key design considerations

- a. Access design should consider safety and accessibility to avoid impacts on the local transport network.
- b. There is potential to improve connectivity with existing PRoW and to provide additional routes (permissive paths) for PRoW users within the Solar PV Site to facilitate connections across the Solar PV Site during the operational phase. In particular, existing PRoW could be connected with permissive routes to extend the existing Howden 20 circular route.
- c. Care should be taken in the design of the Scheme around existing PRoW that run through the Solar PV Site particularly in terms of corridor widths and landscaping, to deliver a safe and pleasant experience for users.

3.10 Design objectives

3.10.1 **Table 1** below sets out the key design considerations from the review of the baseline context and the resulting design objectives.

Table 1. Development of Design Objectives

Key design consideration	Design objective(s)
Network Connection, Irradiance and Topography	
<p>To maximise energy generation, where possible, the siting of solar PV on flat land should avoid close proximity to woodland blocks and other features which cause shade.</p>	<p>Objective 1: The Scheme will seek to efficiently generate a substantial capacity of renewable energy to the National Electricity Transmission System through its careful siting, thereby supporting the delivery of the Government’s objectives and commitments for the development of a secure, affordable and low carbon energy system.</p>
<p>A need to locate the solar PV in close proximity to a point of connection with capacity to ensure the electricity generated can easily feed into the national electricity transmission system.</p>	
Landscape Character, Green Infrastructure and Visual Receptors	
<p>Integrate the Scheme into the existing landscape pattern as far as practicable by retaining and following existing features, including vegetation.</p>	<p>Objective 2: The Scheme will be sensitively integrated into its landscape setting, to avoid and minimise adverse landscape and visual effects as far as practicable.</p>
<p>There are villages, hamlets and individual residential properties in close proximity to the Solar PV Site. The layout design of the Solar PV Site should take opportunities to be sensitive to residential views, avoiding or reducing change wherever practicable and filtering and screening more prominent components of the Scheme.</p>	<p>Objective 4: The Scheme will respond sensitively to its proximity to residential dwellings, settlements and PRoW with regard to visual impact, noise and lighting.</p>
	<p>Objective 2: The Scheme will be sensitively integrated into its landscape setting, to avoid and minimise adverse landscape and visual effects as far as practicable.</p>

Key design consideration

PRoW partially cross and surround the Scheme. The layout of the Scheme should ensure that suitable buffers are provided to protect PRoW and views from within, avoiding or reducing change wherever practicable.

Land Use

As the area is dominated by agricultural use consider the grazing of sheep as a method of grassland management.

The siting of infrastructure to avoid permanent losses of BMV land.

Opportunity to reuse existing buildings and structures within the Solar PV Site.

Integration of the design with existing and consented utility assets and layout considerations for minimising the effect of shading from nearby uses such as wind turbines.

The proximity of recreational and tourism uses when considering the layout of the solar PV arrays to reduce views and visual impacts and visually screen the Solar PV Site.

Ecology

Opportunity to enhance the quality and range of habitats within the Order limits and achieve a net gain in biodiversity.

Design objective(s)

Objective 4: The Scheme will respond sensitively to its proximity to residential dwellings, settlements, and PRoW with regard to visual impact, noise and lighting.

Objective 8: The Scheme will be sensitive to the existing land quality and its resources and other land uses.

Objective 2: The Scheme will be sensitively integrated into its landscape setting, to avoid and minimise adverse landscape and visual effects as far as practicable.

Objective 4: The Scheme will respond sensitively to its proximity to residential dwellings, settlements and PRoW with regard to visual impact, noise and lighting.

Objective 3: The Scheme will seek opportunities to enhance existing biodiversity through the creation of new green

Key design consideration

Opportunity to create new habitats and adopt planting strategies including hedgerows to improve the connectivity between existing and new habitats.

Opportunity to create habitat specifically for Golden Plover and Pink Footed Geese currently using the area.

Protect ancient and veteran trees and avoid impacts on notable trees and important hedgerows within and along the boundaries of the Solar PV Site.

Cultural Heritage

The design of the Scheme should avoid direct impacts on heritage assets identified within the Solar PV Site through avoidance and if this is not practicable, reduce impacts through mitigation.

The design should be sensitive to preserving the setting of, and key relationships, between heritage assets identified in the surrounding area.

Flood Risk and Hydrology

The interaction of the Scheme with the large number of drainage ditches and small watercourses across the area.

Avoiding the location of above ground vulnerable infrastructure in areas at high risk of flooding where practicable.

Design objective(s)

infrastructure and create new habitat for wildlife to achieve Biodiversity Net Gain.

Objective 2: The Scheme will be sensitively integrated into its landscape setting, to avoid and minimise adverse landscape and visual effects as far as practicable.

Objective 4: The Scheme will respond sensitively to its proximity to residential dwellings, settlements and PRow with regard to visual impact, noise and lighting.

Objective 6: The Scheme will be sensitive to heritage assets and their setting where practicable.

Objective 5: The Scheme will safeguard the water environment, be resilient from flooding both now and in the future and not increase the risk of flooding elsewhere.

Key design consideration

Design objective(s)

Avoiding an increase in flooding within and outside of the Order limits as a result of the Scheme

Accessibility

Access design should consider safety and accessibility to avoid impacts on the local transport network.

There is potential to improve connectivity with existing PRow and to provide additional routes (permissive paths) for PRow users within the Solar PV Site to facilitate connections across the Solar PV Site during the operational phase. In particular, existing PRow could be connected with permissive routes to extend the existing Howden 20 circular route.

Care should be taken in the design of the Scheme around existing PRow that run through the Solar PV Site particularly in terms of corridor widths and landscaping, to deliver a safe and pleasant experience for users.

Objective 7: The Scheme will enhance, where practicable, the existing network of PRow to improve accessibility.

Objective 9: The Scheme will provide safe access and mitigate impacts on the local highway network to avoid significant effects, where practicable.

Objective 2: The Scheme will be sensitively integrated into its landscape setting, to avoid and minimise adverse landscape and visual effects as far as practicable.

Objective 4: The Scheme will respond sensitively to its proximity to residential dwellings, settlements and PRow with regard to visual impact, noise and lighting.

Objective 7: The Scheme will enhance, where practicable, the existing network of PRow to improve accessibility.

Objective 9: The Scheme will provide safe access and mitigate impacts on the local highway network to avoid significant effects, where practicable.

4. The Design Process and Evolution

4.1 Introduction

4.1.1 This section presents a summary of the design process and key stages of the evolution of the Scheme design. The design evolution is also explained in **Chapter 3, Alternatives and Design Evolution, ES Volume 1 [EN010143/APP/6.1]**.

4.2 The Design Process

4.2.1 The Scheme's design, including access design, has been developed by a team of qualified and experienced professionals comprising solar energy and highway engineers; planners; landscape architects; ecologists; heritage specialists; and other environmental professionals.

4.2.2 The design team has worked collaboratively to provide an integrated and responsive design. The Applicant has sought feedback from a wide range of stakeholders to inform each stage of the design process, and has had regard to these comments, in accordance with requirements of the PA 2008 and Ministry of Housing, Communities and Local Government (MHCLG) guidance. The Applicant has also built relationships with key stakeholders to better understand their views and incorporate design changes where possible. These stakeholders have included planning, highway, heritage, landscape, ecology and PRow officers at East Riding of Yorkshire Council and North Yorkshire Council; the Environment Agency; Historic England; Natural England, the relevant Internal Drainage Boards, elected councillors, MP's and the Local Community.

4.2.3 The team has developed design objectives and principles to influence the design response including access requirements (See section 5 of this DAS). This has involved understanding the local context, summarised in section 3 of this DAS, and by working collaboratively with the key stakeholders identified above, taking into consideration their feedback.

4.2.4 Key members of the design team, the lead landscape architect and lead ecologist, have led the multidisciplinary approach from the initial stages to the present therefore delivering the design champion role encouraged by Draft NPS EN-1 (Ref. 3). This has been achieved through leading design workshops and balancing the input from all members of the design team as well as the views of external stakeholders.

4.3 Design stages

Introduction

4.3.1 The Scheme has undergone several stages of design evolution which has resulted in changes to its layout and the Order limits. The stages undertaken included:

- a. EIA Scoping Layout EIA Scoping Layout (August 2022) and Non Statutory Consultation Layout (September 2022).
- b. Statutory Consultation Layout (May 2023).

c. Order limits and Application Layout (October 2023).

4.3.2 The process of design evolution has been informed by ongoing environmental assessments, engineering and design considerations, as well as engagement with stakeholders.

EIA Scoping and Non-Statutory Consultation Layout

4.3.3 At the EIA Scoping stage, and the non statutory consultation that followed, the Solar PV Site boundary represented the maximum extent of land being considered and consisted of 16 individual parcels covering approximately 1,173 hectares (ha). At this stage an indicative layout had not yet been developed, however initial desk based and preliminary environmental surveys as well as considering known planning and environmental constraints were considered to determine the extent of the land required for the energy generation proposed and also provide flexibility for unknown environmental constraints to the solar infrastructure being located in these areas. **Figure 4-1** illustrates the Scheme's boundary at this stage.

4.3.4 The Solar PV Site area was also informed by meetings with landowners with negotiations ongoing. At this early stage the design was influenced by the following principles:

- a. Minimising the requirements for new built structures and therefore protecting landscape and visual amenity by making a commitment to reuse existing buildings for an operations and maintenance hub;
- b. Flexibility in the type of mounting structures for the solar PV panels which therefore have varying land take; and
- c. The existence of large field sizes and contiguous blocks of land with existing screening to generate the output required whilst providing established visual screening from nearby residential receptors.

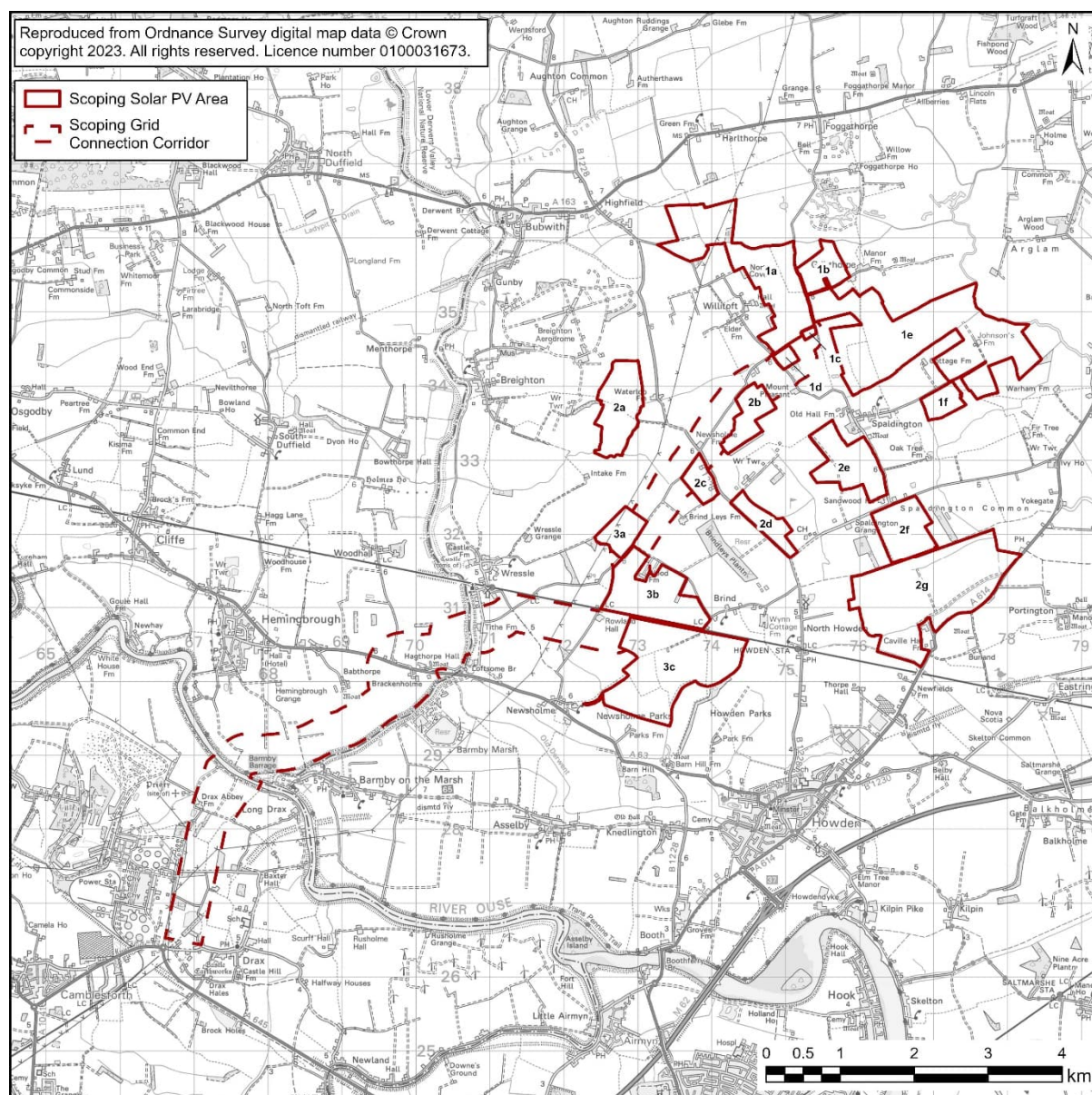


Figure 4-1. EIA Scoping and Non-Statutory Consultation Layout

Statutory Consultation Layout

- 4.3.5 Following EIA Scoping and Non-statutory Consultation stage, design objectives were developed by the Applicant’s design team to guide the design response and develop the indicative layout and design principles to be followed. These objectives were developed from baseline data gathering; the consultation process; and relevant policy and industry guidance for design as detailed in Sections 2 and 3 of this DAS. The design response to these objectives is discussed in Section 5 of this DAS.
- 4.3.6 Consultation continued with officers at East Riding of Yorkshire Council, North Yorkshire Council, Natural England, and Environment Agency to discuss ongoing environmental survey and assessments and the Scheme design at this stage in relation to heritage, landscape and visual impact, flood risk, water and drainage, transport, ecology, and public rights of way.
- 4.3.7 An area of land in the north eastern extent of **Figure 4-1** (formerly Solar PV Areas 1g and 1h) was incorporated into the Scheme due to feedback from

landowners at the non statutory consultation stage who identified this land as being available to the Applicant. These areas were also adjacent to other parcels within the Solar PV Site; and were identified as being at a lower risk of flooding (Flood Zone 1) compared to other areas of the Solar PV Site and having few environmental constraints.

- 4.3.8 Inclusion of this land provided flexibility for providing ecological and archaeological mitigation areas that were potentially needed but the requirements of which were not yet known at this stage of the Scheme's design.
- 4.3.9 Design principles were developed at this stage through workshops with solar engineers, landscape architects, ecologists and highway engineers which influenced the proposed indicative masterplan.
- 4.3.10 At the statutory consultation stage, the Solar PV Site comprised 18 parcels totalling 1,276 ha. An indicative layout for the Scheme was developed and was informed by the outcome of baseline ecology, landscape and visual, heritage, flood risk and access surveys and consultation feedback.
- 4.3.11 **Figure 4-2** illustrates the proposed indicative masterplan which was developed and consulted upon at this stage.



Figure 4-2. Indicative masterplan at Statutory Consultation stage

Order limits and Application Layout

- 4.3.12 Following the Statutory Consultation, the Applicant's design team considered the feedback provided in response to the consultation period as well as feedback provided through ongoing engagement with key consultees. This is detailed in the **Consultation Report [EN010143/APP/5.1]** and the **Consultation Report Appendices [EN010143/APP/5.2]**.
- 4.3.13 Meetings were held with officers at East Riding of Yorkshire Council, North Yorkshire Council, Natural England, Historic England, Environment Agency and the Ouse and Humber Drainage Board to discuss the Scheme design in relation to heritage, landscape and visual impact, flood risk, water and drainage, transport, ecology, and public rights of way.
- 4.3.14 The design of the Scheme was further refined and resulted in the Order limits shown in **Figure 3-1**. Following a review of the access strategy for the Scheme's operation, additional land was included in the Order limits for operational accesses, traffic management and movement of abnormal loads. Other small areas of the Order limits were removed to minimise the Scheme affecting land interests.
- 4.3.15 The following key changes to the layout of the Solar PV Site were made following the statutory consultation and through ongoing consultation and assessments:
- a. The removal of the Battery Energy Storage System in response to statutory consultation feedback.
 - b. Removal of the existing storage barns proposed to be used during construction and operation located east of Gribthorpe which were in Solar PV Area 1g to reduce the Scheme's traffic going through Gribthorpe.
 - c. Removal of solar PV infrastructure in Solar PV Areas 1g and 1h following discussion with the landowners and feedback regarding the scale of the Scheme. This land is proposed as the Ecology Mitigation Area providing mitigation for Golden Plover and Pink Footed Geese as required by the **Habitats Regulation Assessment (HRA) [EN010143/APP/7.12]**.
 - d. Small area of additional land included in Solar PV Area 1a to allow an internal track to avoid veteran trees and provide a route through the Solar PV Areas for construction traffic to address feedback regarding construction traffic on local roads.
 - e. Removal of an area of land proposed for grassland planting from the landscaping for Solar PV Area 1e. This provides a further set back of the Scheme from residential dwellings in Spaldington in response to feedback on the loss of agricultural land and the scale of the Scheme.
 - f. Providing additional landscaping to the south and west of a property in Spaldington with a sensitive receptor and committing to offsetting of Field Stations and Grid Connection Substations from this property.
 - g. Provision of additional landscaping in Solar PV Area 2e in response to feedback received to screen views from a property located immediately to the south along Spaldington Lane.

- h. Removal of the southern parts of Solar PV Area 2g and Solar PV Area 3c following discussions with National Grid's SEGL2 project team and in response to feedback relating to loss of agricultural land and scale of the Scheme.
- i. The removal of the proposed bird hide in the ecological enhancement area in Solar PV Area 1e (previously referred to as the Wetland Wildlife Zone) in response to feedback.
- j. The relocation of the Grid Connection Substation in Solar PV Area 3b to Solar PV Area 1c in response to feedback regarding concerns of noise impacts at nearby residential receptors at Brind and along Rowlandhall Lane.

5. The Design Response

5.1 Introduction

- 5.1.1 The Applicant has developed its design to respond to the opportunities and constraints identified in section 3 of this DAS. Once identified, along with guidance from the relevant design policies and guidance, these informed the development of design objectives. Good design will be secured by delivering the Scheme in a way that meets these design objectives.
- 5.1.2 This section of the DAS details the Applicant's design objectives that were developed to help guide the design of the Scheme. It also sets out how the Scheme's has responded to these objectives with its final operational design. The Scheme's response includes design principles which define the design for the Scheme by setting out commitments and parameters. These principles are set out in the **Outline Design Principles Statement [EN010143/APP/7.4]**.

5.2 Objectives and Design Response

Objective 1: The Scheme will seek to efficiently generate a substantial capacity of renewable energy to the National Electricity Transmission System through its careful siting, thereby supporting the delivery of the Government's objectives and commitments for the development of a secure, affordable and low carbon energy system.

Design Response

- 5.2.1 The Scheme will be a substantial infrastructure asset, which if consented will deliver large amounts of low-cost, secure and low-carbon electricity, which would support the Government's carbon reduction and climate targets.
- 5.2.2 Over the 40-year lifetime of the Scheme, the Scheme is designed to generate a total energy generation figure of approximately 15.9 terrawatt hours.
- 5.2.3 To meet **Objective 1**, the Scheme design:
- has a direct connection into NETS at the National Grid Drax Substation, with no further offsite infrastructure required;
 - incorporates single access tracker panels configured in rows. The panels will track the sun east to west during the course of the day, tilting to maximise the potential energy generation. Single access tracker technology is considered to be the most efficient option for the Scheme, enabling it to deliver the maximum amount of energy during daylight hours; and
 - retains flexibility to allow for the selection of the most efficient technology. Solar generation technology is developing at a fast pace, with better, more efficient and more cost-effective solar PV panels

coming to the market. 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 **Works Plan [EN010143/APP/2.3]** and **Outline Design Principles Statement [EN010143/APP/7.4]**.

Objective 2: The Scheme will be sensitively integrated into its landscape setting, to avoid and minimise adverse landscape and visual effects as far as practicable.

Design Response

- 5.2.4 The Landscape and Visual Impact Assessment undertaken in **Chapter 10: Landscape and Visual Amenity, ES Volume 1 [EN010143/APP/6.1]** has informed the iterative design process, guided by design principles and in response to policy requirements, published landscape character assessment guidance and fieldwork analysis.
- 5.2.5 The overall objective of the landscape design is to integrate the Scheme into its landscape setting and avoid or minimise adverse landscape and visual effects as far as practicable.
- 5.2.6 To meet **Objective 2**, the Scheme design:
- a. retains the existing pattern and scale of the landscape by retaining and enhancing existing field boundaries and other screening features;
 - b. has sensitively located Solar PV panels and the Grid Connection Substations within the landscape, setting infrastructure back where they are considered to have a stronger influence on key landscape and visual receptors. The highest structures, the two proposed Grid Connection Substations, have been located in an area that already has robust boundary vegetation providing screening;
 - c. proposes offsets from properties and local roads within proximity to the Solar PV Areas responding to the existing character of views, or where views and open character contribute to the setting of local villages. These are discussed in response to Design Objective 4. Where longer views from sensitive receptors are available, wider offsets have been incorporated;
 - i. For Solar PV Area 1b, a wide grassland margin will provide visual separation from the Solar PV Area and settlement of Gribthorpe retaining a long view on the approach to this hamlet.
 - ii. A wide margin is also provided within Solar PV Area 2f, where a small number of properties currently have open views across the field.

- d. minimises the loss of, and avoid significant impacts on, existing landscape features, where possible. This includes minimum offsets of:
 - i. 15 m from woodlands;
 - ii. 10 m from hedgerows increasing to 15 m where there are hedgerow trees;
 - iii. 15 m from individual trees;
 - iv. 10 m from ditches and drains (except where crossed by cables);
 - v. 30 m from the Rivers Ouse, Derwent and Drain DE53; and
 - vi. 10 m from existing ponds.
- e. proposes a planting design that responds to the varied character of the landscape within the Site and seeks to allow key views to remain open, where practicable;
- f. increases the overall woodland cover across the Scheme and connectivity of woodland habitats by linking existing areas of woodland with new areas of planting. New woodland will provide a robust boundary to screen the Solar PV Areas from Willitoft;
- g. proposes new native species rich hedgerows with hedgerow trees where historic field boundaries have been lost through the amalgamation of fields, to provide mitigation, reinforce landscape pattern, ecological connectivity, and interest within the landscape;
- h. proposes new grassland habitats to provide a corridor connecting Willitoft and Gribthorpe whilst allowing for separation between the Solar PV Areas on the approach to Gribthorpe;
- i. proposes a new native traditional orchard to be planted as mitigation to help screen solar panel areas from sensitive residential receptors on the edge of Spaldington, whilst providing a new landscape feature;
- j. provides offsets to PRow to retain the existing character of the routes as far as practicable. These are discussed in Objective 4.
- k. proposes fencing with reduced visual prominence through the use of wooden posts and mesh fencing. This avoids the use of heavy duty materials where possible and is less visually intrusive;
- l. has designed the Grid Connection Cable and Interconnecting Cable routes to minimise disturbance of existing vegetation, and where selective vegetation removal is required, replacement planting will be reinstated, where practicable;
- m. ensures that the maximum height of the Solar PV Panels when at full tilt is 3.5 m, and at 2.3 m overnight; and
- n. reduces the need for artificial lighting by restricting works e.g. cleaning of panels, to daytime hours. CCTV will use thermal imaging and Infrared (IR) lighting to provide night vision functionality meaning that no visible lighting will be needed for security.

Objective 3: The Scheme will seek opportunities to enhance existing biodiversity through the creation of new green infrastructure and create new habitat for wildlife to achieve Biodiversity Net Gain.

Design Response

- 5.2.7 Where possible, ecological mitigation measures have been incorporated into the Scheme design. Through an iterative assessment, potential impacts have been predicted and opportunities to mitigate them identified with the aim of preventing or reducing ecological impacts as far as practicable.
- 5.2.8 The impact avoidance approach allows for the majority of trees and hedgerows to remain unchanged to ensure that the connectivity of the existing green infrastructure network is maintained.
- 5.2.9 Ecological enhancement measures have therefore been developed through this process. New habitat is proposed across the Solar PV Site and this aims to achieve approximately 80% biodiversity net gain for habitat units as detailed in the **Biodiversity Net Gain Assessment Report [EN010143/APP/7.11]**.
- 5.2.10 To meet **Objective 3**, the Scheme design:
- a. Comprises undeveloped buffers throughout the Site from existing boundary features through implementing the minimum offsets from existing vegetation described in (d) under Objective 2 to avoid and/or reduce potential effects on biodiversity;
 - b. has established a buffer of 30 m around any identified active badger setts;
 - c. includes the creation of new habitats within areas of Flood Zone 3 associated with the River Foulness on the eastern boundary of the Solar PV Site. Solar PV Areas 1g and 1h are to be an Ecology Mitigation Area to provide habitat for Pink Footed Goose and Golden Plover. An area of land within Solar PV Area 1e will also become a Habitat Enhancement Area with a bird hide or similar viewing structure;
 - d. proposes larger areas of ecological enhancement and mitigation outside panel/infrastructure areas to be seeded with species-rich grassland mixes. Areas will include mixes suitable for skylark habitat, golden plover and other ground nesting birds;
 - e. includes habitat enhancement through the creation of water meadow habitat along the river floodplain within the area of habitat enhancement east of Solar PV 1e, and the eastern part of the Ecology Mitigation Area to provide habitat for invertebrates, mammals and birds, suitable for being managed by grazing in the long term;
 - f. proposes new woodland and shelter belts to be planted to provide increased structure, ecological connectivity, and interest within the landscape;
 - g. creates scrub, woodland edge, and associated mosaic habitats.. Such habitats are of value to breeding birds and other wildlife;

- h. includes new native species rich hedgerows with hedgerow trees to provide mitigation and ecological connectivity. Additional trees will be planted to replace potential tree loss due to ash dieback;
- i. includes 1.95 ha of new native traditional orchard providing additional habitat for mammals and birds to screen solar panel areas from sensitive residential receptors on the edge of Spaldington;
- j. proposes 797.9 ha of new grassland seeding under the solar PV panel areas, providing an extensive habitat across the Solar PV Site. This would be suitable for sheep grazing whilst offering a greater species diversity than existing improved grassland or arable crops;
- k. proposes 91.9 ha of species-rich grassland outside the fence line of the Solar PV Areas, along hedge margins, under power lines and between solar panel areas;
- l. will use a locally appropriate flower-rich grassland mix with pollen and nectar-rich flowers for pollinators, beneficial insects, and farmland birds (3.5 ha in total);
- m. comprises a range of artificial bird and bat boxes to be installed in existing woodland and trees, and retained/modified buildings, to increase the availability of nesting and roosting features and enhance their value as habitat for these species;
- n. creates habitat piles and hibernacula to provide refuge and hibernation opportunities for amphibians and reptiles, as well as dead wood habitat for invertebrates, which would in turn benefit fauna such as bats and birds; and
- o. retains all ancient and veteran trees as well as other notable trees where practicable.

Objective 4: The Scheme will respond sensitively to its proximity to residential dwellings, settlements and PRow with regard to visual impact, noise and lighting.

Design Response

- 5.2.11 The landscape design aims to filter and screen more prominent components of the Scheme in views from visual receptors and ensures that the Scheme is carefully sited in the landscape.
- 5.2.12 To meet **Objective 4**, the Scheme design:
 - a. has been carefully developed where the Scheme components will appear in views experienced by residents so as to avoid or minimise adverse effects;
 - b. locates solar PV panels away from residential properties incorporating buffers to minimise the potential for adverse impacts on visual amenity;
 - c. incorporates a distance of 250 m between residential receptors and noise emitting Field Stations and Grid Connection Substations, except for one sensitive receptor in Spaldington, where a specific exclusion

- area for Field Stations and Grid Connection Substations is provided in response to feedback;
- d. has sited Grid Connection Substations within one location which has existing screening to reduce disturbance to residential receptors;
 - e. provides hedgerow enhancement where existing hedgerows are gappy, and provides new native hedgerows with trees on boundaries where there are no boundary features, to help screen residential dwellings, settlements and PRow;
 - f. sets Solar PV Areas back from the road by a minimum of 5 m;
 - g. sets Solar PV Panels within Solar PV Area 1b back from the road behind an area of scrub with trees and a wide margin (approximately 100 m width) of species-rich grassland, which screens views for road users and retains longer views on the approach to Gribthorpe;
 - h. sets Solar PV panels within Solar PV Area 1a back from properties behind an area of species-rich grassland and hedgerow with trees (approximately 100 m in length) which screens views from the properties at Crossroad Cottages at the junction with Willitof Road and Wood Lane;
 - i. sets Solar PV Panels within Solar PV Area 2e back from properties at the south of Spaldington by a wide margin of species-rich grassland, orchard tree planting and linear woodland planting (approximately 150 m) which screens views from these properties;
 - j. a limited number of temporary PRow diversions within the Order limits, with no permanent diversions or closures;
 - k. controls areas where the internal maintenance route crosses any existing PRow (such as by providing gates), permitting only operational traffic to utilise these internal routes within the Solar PV Areas. Operational traffic would give-way to other users when utilising the crossing points. Visibility will be maximised between operational vehicles and other users, with warning signage provided if required;
 - l. ensures a minimum width for PRow, as well as for the corridor in which they will be provided (between Scheme infrastructure). In all cases the PRow will see perimeter fencing being installed a minimum distance from the centreline of the PRow of 20 m to either side (creating a 40 m corridor) if the solar infrastructure is on both sides of the PRow, and of 15 m if solar infrastructure lies to one side only. This will help avoid the perception of being channelled into narrow passages between solar PV panels;
 - m. proposes perimeters to be planted with species-rich grassland or flower rich grassland (Solar PV area 2f) and clumps of low-growing native woodland edge to break up channelled views created by the proposed Solar PV fencing;
 - n. creates new native hedgerows with trees along the Howden 20 Route and PRow BUBWF10; and

- o. ensures that there would be no visible lighting from CCTV or artificial lighting (except for in emergencies, for temporary maintenance and repair or when panels are cleaned every 2 years).

Objective 5: The Scheme will safeguard the water environment, be resilient from flooding both now and in the future and not increase the risk of flooding elsewhere.

Design Response

5.2.13 The Scheme's design has endeavoured to safeguard the water environment through its design, and as a result there will be no significant effects to flood risk or the water environment as a result of the Scheme. Through careful design, the Scheme will be resilient from flooding both now and in the future and would not increase the risk of flooding elsewhere.

5.2.14 To meet **Objective 5**, the Scheme design:

- a. has undertaken a sequential approach to its location and design. This has involved locating the majority of the Order limits within Flood Zone 1 where possible. The majority of the solar PV panels and vulnerable electrical components in the Solar PV Area are located outside of Flood Zone 3;
- b. ensures that where solar PV panels and Field Stations are located within Flood Zones 2 and 3, the tilt range of tracker panels will be restricted to ensure that a 300 mm freeboard above the modelled design flood event is maintained at all times regardless of whether there is a flood event occurring or not. Tilt range can be set on a solar PV table by solar PV table basis and therefore will vary across the Flood Zone 3 area;
- c. ensures that panels can be remotely moved into their horizontal (night-time storage position) of 2.3 m above ground level if increasing water levels are observed or if a flood warning is received, increasing their resiliency;
- d. compensates for the approximate 150 m³ of floodplain volume lost as a result of the Scheme, with flood compensation proposed along the edge of Flood Zone 3;
- e. proposes that where depressions in the land are located, panels will either traverse the depression and maintain the same minimum panel level as the highest ground level either side or will stop at the depression if it is too wide, to avoid any impact from flooding;
- f. has located more sensitive parts such as the Grid Connection Substations to be located in Flood Zone 1;
- g. has sited Field Stations in containerised units founded on ground screw piles or strip footings, sitting above ground with gravel or aggregate underneath. This will allow runoff to spread under the units, mitigating an impact from the structures;

- h. has located Field Stations away from the edge of fields, allowing the surrounding land to further aid in mitigating any runoff;
- i. has chosen tracking Solar PV Panels which would not focus surface water in specific areas;
- j. ensures that all infrastructure will be offset from watercourses by 10 m (except where crossings are required);
 - i. for small channel watercourses/agricultural drainage channels this would be measured from the top of bank; and
 - ii. for larger watercourses with channel widths typically greater than 3 m (such as the River Ouse and River Derwent), this would be measured from the edge of the water / channel extents under normal flow conditions;
- k. Includes indicative foundation depths associated with the development of:
 - i. 3 m to 5 m for driving and erection of the Solar PV module mounting structures;
 - ii. typical trench depth of 0.6 to 0.8 m for low voltage onsite cabling (i.e within the Solar PV Site); and
 - iii. typical depth of 1.2 to 1.4 m for Interconnecting Cables and the Grid Connection Cables in agricultural land.

Objective 6: The Scheme will be sensitive to heritage assets and their setting where practicable.

Design Response

- 5.2.15 The layout of the Order limits has been designed to avoid all designated heritage assets.
- 5.2.16 Physical impacts to known below ground archaeology within the Order limits have been avoided by the Scheme design, where practicable, and the design also minimises potential changes to the setting of designated heritage assets, including Scheduled Monuments, Grade I, Grade II* and Grade II listed buildings.
- 5.2.17 Because of this, there has been no need for any major design considerations in relation to heritage assets.
- 5.2.18 To meet **Objective 6**, the Scheme design:
 - a. utilises existing vegetation and topography to obscure the view of the Scheme and minimise effects on the surrounding environment, which would include the setting of some heritage assets;
 - b. includes planting to create screening of the Scheme, which would also provide screening to some heritage assets;
 - c. avoids impacts to the moated site east of Gribthorpe (MHU3206), a non designated heritage asset, which is located within the Ecology Mitigation Area 1g;

- d. proposes that the external finish of infrastructure within Field Stations is typically in keeping with the prevailing surrounding environment, often with a grey or green painted finish, which will help minimise their visual impact on some heritage assets;
- e. proposes new native species rich hedgerows with hedgerow trees to be planted where historic field boundaries have been lost through the amalgamation of fields; and
- f. ensures that existing woodland and hedgerows (including important hedgerows) will be managed to protect historic boundaries.

Objective 7: The Scheme will enhance, where practicable, the existing network of PRow to improve accessibility.

Design Response

- 5.2.19 The Scheme design will maintain access to all existing PRow within the Site, with no permanent diversions or closures.
- 5.2.20 As noted in Objective 4, minimum widths and buffers have been proposed to existing PRow, to ensure that they continue to be a safe and pleasant experience for users.
- 5.2.21 The measures proposed as part of the Scheme design accord with the guidance set out in East Yorkshire's Public Rights of Way and Planning Guidance Document (Ref. 11).
- 5.2.22 To meet **Objective 7**, the Scheme design:
 - a. proposes two new Permissive Paths which are routes available to the public during the operational life of the Scheme, as follows:
 - i. A continuation of the permissive path allowing travel on horses SPALB08 which currently terminates at Johnson's Farm. This will be a Permissive Path over which horse riders will be permitted to travel, running northbound for approximately 340 m until connecting with the second permissive route; and
 - ii. An eastbound route from footpath SPALF14 (north of Spaldington) parallel with Londesborough Drain to connect with the first Permissive Path, continuing eastwards to the edge of the Habitat Enhancement Area running for approximately 1.4 km. This Permissive Path will allow horse riding over the majority of the extent of the route. The section travelling westbound from where the two permissive routes meet will permit passage by foot only, being of approximately 250 m in length.
 - b. ensures that new routes will connect to and link existing PRow to provide a new circular route; and
 - c. proposes that Permissive Paths will be planted with either a species-rich or flower-rich grassland seed mix, which would provide amenity for walkers, cyclists and horse-riders.

Objective 8: The Scheme will be sensitive to the existing land quality and its resources and other land uses.

Design Response

- 5.2.23 The development of the Scheme location and design has been carefully considered to minimise impacts on land quality and resources, and existing land uses within the area.
- 5.2.24 To meet **Objective 8**, the Scheme design:
- a. has minimised the use of land that is considered Best and Most Versatile (BMV) agricultural land;
 - b. includes provision of semi-improved and species-rich grassland beneath the solar panel areas and within the wider Solar PV Site, to increase biodiversity and soil health;
 - c. locates structures such as Field Stations which require the removal of topsoil and creation of hardstanding away from BMV land;
 - d. proposes the consideration of the use of the use of ground screw foundations at detailed design as this 'no dig' solution eliminates the need for the stripping of soil resources minimising disturbance, where it is not possible to avoid siting Field Station Units on BMV land;
 - e. has reduced the Solar PV Site where it is close to the boundary of the Scotland to England Green Link 2 (SEGL2) route thereby reducing its interface;
 - f. avoids the placement of solar panels directly above or within the easements of gas pipelines; and
 - g. provision of offsets from existing overhead lines.

Objective 9: The Scheme will provide safe access and where possible will not significantly impact the local highway network.

Design Response

- 5.2.25 The Scheme design provides a network of vehicular access points within the Solar PV Site to enable ease of access to the Scheme during its operation. It has also been designed to avoid significant impacts to the local highway network during its operation.
- 5.2.26 To meet Objective 9, the Scheme design:
- a. uses existing field access points and tracks for access where this is practicable therefore minimising the need to create new points of access;
 - b. reuses accesses created for construction use to avoid additional land take and ecological disturbance for access; and

- c. ensures that access routes are wide enough to support the use of vehicles necessary to undertake works during the operational phase of the Scheme.

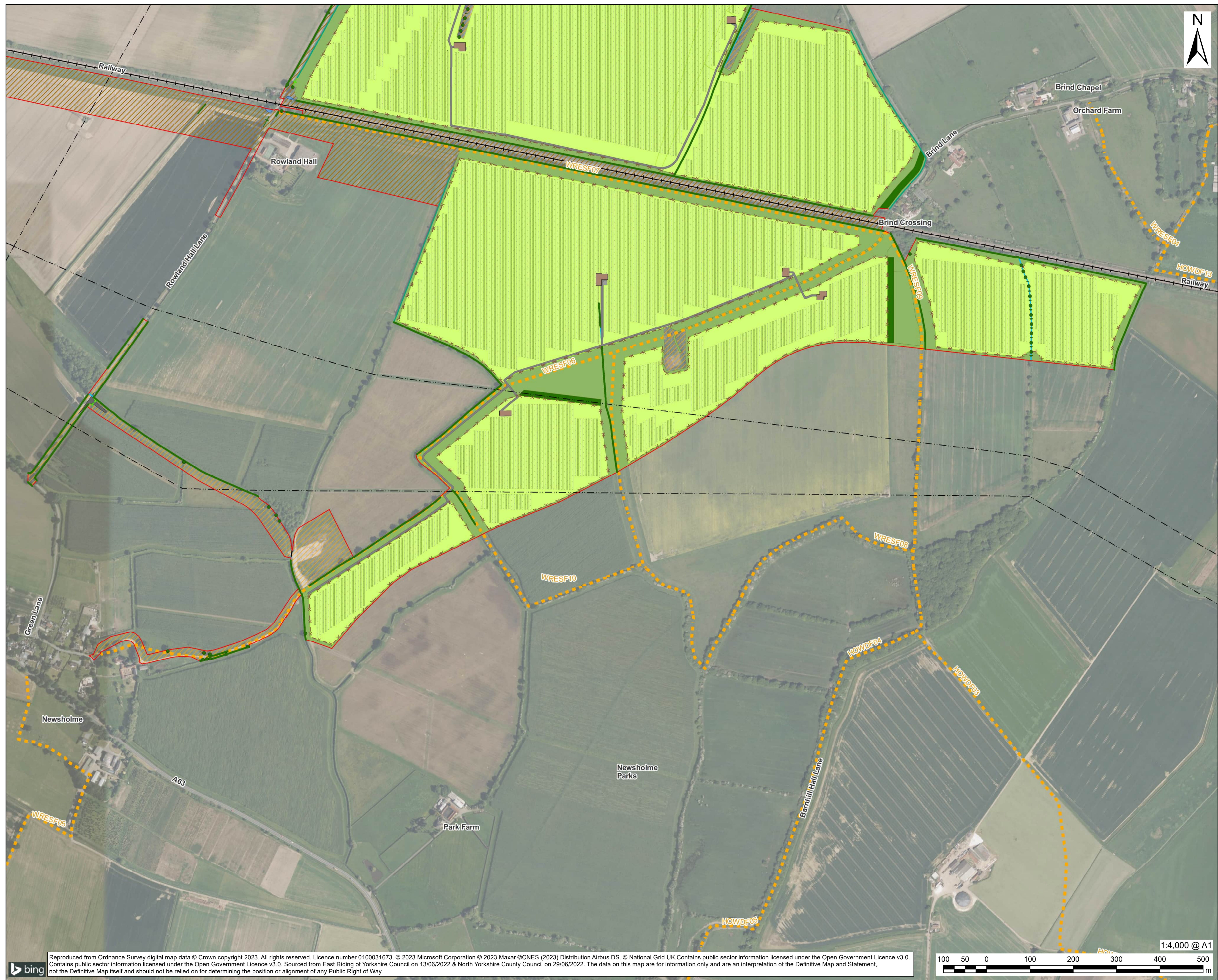
5.3 Design flexibility and commitments

- 5.3.1 As recognised in national policy, flexibility may be required in relation to dimension, layout and spacing of solar PV panels. In addition, solar PV panels are a rapidly evolving technology and infrastructure, therefore it is important that the latest technology can be utilised at the time of construction to ensure that the Scheme can make an important contribution to achieving the Governments decarbonisation requirements and climate change targets, as well as providing a secure, reliable and affordable energy system.
- 5.3.2 The Environmental Impact Assessment presented in the **Environmental Statement [EN010143/APP/6.1/6.2/6.3/6.4]** has been undertaken on the basis of the works proposed in the **Works Plan [EN010143/APP/2.3]** and the maximum area of land anticipated to be required. This approach is known as the use of the 'Rochdale Envelope' which is described in footnote 78 to paragraph 4.2.8 of NPS EN-1 (Ref. 1) whereby the assessment is based on a "*series of maximum extents of a project for which the significant effects are established. The detailed design of the Scheme can then vary within this 'envelope' without rendering the environmental impact assessment inadequate*".
- 5.3.3 The Planning Inspectorate's Advice Note Nine (Ref. 16) (July 2018) explains the use of the Rochdale Envelope approach under the PA 2008 and its application to maintain flexibility and address uncertainty including market conditions or new technologies.
- 5.3.4 Design objectives have been developed which have informed the likely design of the Scheme. Maximum extents and parameters for components of the Scheme are set out in the **Outline Design Principles Statement [EN010143/APP/7.4]** submitted with the DCO Application. However, further work will be required to develop the Scheme's detailed design so that it can be constructed. This is to occur post consent, and Schedule 2 of the **Draft DCO [EN010143/APP/3.1]** proposes a requirement to manage the detailed design process. This requirement would ensure that the detailed design of the Scheme conforms to the **Outline Design Principles Statement [EN010143/APP/7.4]**.
- 5.3.5 Other strategies and plans submitted with the DCO Application also explain how the Applicant is committed to delivering the outline design principles and parameters identified. These include the:
 - a. **Works Plan [EN010143/APP/2.3]** which sets out the location of PV arrays and associated infrastructure including the grid connection substations, ecology mitigation areas and access.
 - b. **Framework Landscape and Ecological Management Plan (LEMP) [EN010143/APP/7.14]** sets out the framework for delivering the landscape strategy and ecological mitigation and enhancement for the Scheme.

- c. **Appendix 9-4: Framework Surface Water Drainage Strategy, ES Volume 2 [EN010143/APP/6.2]** which sets out the proposed measures to be implemented for drainage design.
 - d. **Framework PRow Management Plan [EN010143/APP/7.13]** outlines how PRow be managed by the Applicant for the Scheme.
 - e. **Framework Operational Environmental Management Plan [EN010143/APP/7.8]** which sets out the control measures for the operational including maintenance activities of the Scheme.
- 5.3.6 Detailed plans for (b) to (e) will be prepared and implemented as requirements of the **Draft DCO [EN010143/APP/3.1]**.

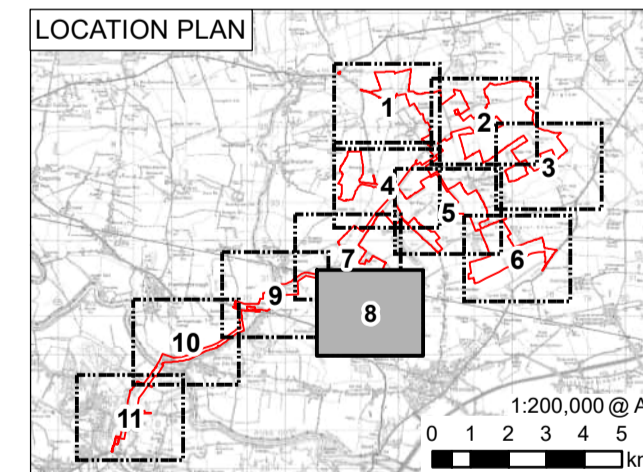
5.4 Scheme Design Masterplan

- 5.4.1 The Scheme design masterplan illustrates the Scheme incorporating the features and approaches described in this DAS. These deliver the design response to the Applicant's design objectives.
- 5.4.2 **Figure 5-1** shows the Scheme's design masterplan. The layout of solar infrastructure shown by the masterplan is for illustrative purposes only.
- 5.4.3 The Scheme Design Masterplan represents the culmination of the design process set out in this DAS at this stage of the development of the Scheme.



LEGEND

	Order limits
	Land not included in the Order limits
Landscape Features	
	Existing Individual Tree
	Existing Hedgerow
	Retained Habitat
	Proposed Cable Corridor – Habitat to be Reinstated
	Low Intensity Arable Farmland
	Enhanced Line of Trees
	Proposed Enhanced Linear Features
	Proposed Hedgerow
	Proposed Hedgerow with Trees
	Proposed Ecological Enhancement Area
	Proposed Flower Rich Grassland
	Proposed Hardstanding
	Proposed Native Scrub with Trees Planting
	Proposed Native Woodland - Mixed
	Proposed Semi-Improved Grassland
	Proposed Species-Rich Grassland
	Proposed Species Rich Wet Grassland
	Proposed Traditional Orchard
	Proposed Woodland Edge Mixed
	Solar PV Table
	Field Station
	Existing Watercourse
	Culvert
	Existing Pond
Movement and Access	
	Proposed Internal Access Track
	Solar PV Site Perimeter Fencing
	Grid Connection Substation Fencing
	Proposed Permissive Path
	Proposed Permissive Path (Allowing Travel on Horses)
	Existing Public Right of Way
	Hull to Selby Railway Line
	Overhead Electricity Line



FIRST ISSUE			
CA	JW	16/11/2023	0
REVISION DETAILS			
BY	CHECK	DATE	REV

ISSUE PURPOSE

DCO Application

PROJECT NUMBER

60683115

PLAN TITLE

Landscape Masterplan
Sheet 8 of 11

REFERENCE NUMBER

Figure 5-1 Scheme Design Masterplan



6. References

- Ref. 1 H.M Government (2008). The Planning Act 2008. Available at: https://www.legislation.gov.uk/ukpga/2008/29/pdfs/ukpga_20080029_en.pdf [Accessed 29 August 2023]
- Ref. 2 Department of Energy and Climate Change (DECC) (2011). Overarching National Policy Statement for Energy (EN-1). Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf [Accessed 29 August 2023]
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- Ref. 10 East Riding of Yorkshire Council (2018). Lower Derwent Valley Supplementary Planning Document. Available at: [https://downloads.eastriding.org.uk/corporate/pages/supplementary-planning-documents/Lower%20Derwent%20Valley%20SPD%20\(Adopted%20Jan%202018\).pdf](https://downloads.eastriding.org.uk/corporate/pages/supplementary-planning-documents/Lower%20Derwent%20Valley%20SPD%20(Adopted%20Jan%202018).pdf) [Accessed 17 November 2023]
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7. Abbreviations

Abbreviation/Term	Definition
PA	Planning Act
MW	Megawatts
DAS	Design and Access Statement
NPS	National Policy Statement
DCO	Development Consent Order
SOS	Secretary of State
PV	Photovoltaic
CEMP	Construction Environmental Management Plan
DEMP	Decommissioning Environmental Management Plan
NIC	National Infrastructure Commission
NPPF	National Planning Policy Framework
LCT	Landscape Character Type
LCA	Landscape Character Area
ALC	Agricultural Land Classification
SAC	Special Areas of Conservation
DEFRA	Department for Environment, Food and Rural Affairs
SPA	Special Protection Areas
SSSI	Site of Special Scientific Interest
NNR	National Nature Reserve
LNR	Local Nature Reserve
LWS	Local Wildlife Sites
SINC	Site of Nature Conservation Interest
SuD	Sustainable Urban Drainage Systems
PRoW	Public Right of Way
BMV	Best and Most Versatile Land
Ha	Hectares
EIA	Environmental Impact Assessment

8. Glossary of Frequently Used Terms

Term	Definition
Order Limits	The limits shown on the land plans and works plans within which the authorised development may be carried out and land acquired or used
Applicant	East Yorkshire Solar Farm Limited
The Planning Inspectorate	The Planning Inspectorate deals with planning appeals, national infrastructure planning applications, examinations of local plans and other planning-related and specialist casework in England.
Planning Act 2008	An Act to establish the Infrastructure Planning Commission and make provision about its functions; to make provision about, and about matters ancillary to, the authorisation of projects for the development of nationally significant infrastructure; to make provision about town and country planning; to make provision about the imposition of a Community Infrastructure Levy; and for connected purposes.
Secretary of State	His Majesty's principal secretaries of state, or secretaries of state, are senior ministers of the Crown in the Government of the United Kingdom. In this case, reference is made to the Secretary of State for Energy Security and Net Zero.
Design and Access Statement (DAS)	This document.
Biodiversity Net Gain (BNG)	BNG is a strategy to develop land and contribute to the recovery of nature. It is a way of making sure the habitat for wildlife is in a better state than it was before development.
Detailed Construction Environmental Management Plan (CEMP)	Subsequently produced following the appointment of the contractor, when the detailed design of the Scheme is known, in accordance with a requirement of the DCO prior to commencing construction. It will be a live document and will provide a systematic approach to environmental management so that environmental risks are identified, incorporated in all decision-making and managed appropriately.
Development Consent Order (DCO)	Development consent is required pursuant to the Planning Act 2008 for Nationally Significant Infrastructure Projects. A development consent order is the order which grants development consent when an application is made to the Secretary of State.

Ecology Mitigation Area	Area of land in the north-east of the Site to be managed to provide good quality habitat for overwintering and migratory bird species, mitigating the loss of habitat elsewhere in the Site considered to be functionally linked to the international designated sites of the Lower Derwent Valley Special Protection Area (SPA)/Ramsar and Humber Estuary SPA/Ramsar.
East-West Single Axis Tracker	The system of attaching the Solar PV Panels to a motorised table that moves in relation to the sun tilting the panel from east to west over the course of the day. This allows for optimal power generation throughout the day.
Environmental Impact Assessment (EIA)	A process by which information about environmental effects of a proposed development is collected, assessed and used to inform decision making. For certain projects, EIA is a statutory requirement.
Field Station Units	Single enclosures that comprise the inverters, a transformer, and switchgear in a single containerised unit.
Field Stations	Areas where electrical equipment such as central inverters, transformers, and switchgear are located.
Field Substations	Transformers and switchgear packaged together in containerised units. In this case inverters are separate, either string or central type.
Framework Construction Environmental Management Plan (CEMP)	This document. Provides a framework from which a final CEMP will be developed to avoid, minimise or mitigate any construction effects on the environment.
Framework Decommissioning Environmental Management Plan (DEMP)	A specific plan developed to ensure that appropriate environmental management practices are followed during the decommissioning phase of a project.
Framework Operational Environmental Management Plan (OEMP)	A specific plan developed to ensure that appropriate environmental management practices are followed during the operational phase of a project.
Grid Connection Corridor	Corridor which represents the maximum extent of land within which the cable route would be located.
Grid Connection Substation	A compound containing electrical equipment to enable connection to the National Grid.
Grid Connection Working Width	Width of the construction area for the Grid Connection Cable which includes haul road, spoil storage, cable trench and temporary drainage during cable installation.

Interconnecting Cable Corridor	The land outside of the Solar PV Site and the Grid Connection Corridor in which the 33 kV cables linking the Solar PV Areas to the Grid Connection Substations will be installed.
Interconnecting Cables	33 kV cables which link the Solar PV Areas to the Grid Connection Substations. (This excludes the 132 kV Grid Connection Cable).
Inverter	Inverters convert the direct current (DC) electricity collected by the PV modules into alternating current (AC), which allows the electricity generated to be exported to the National Grid. Battery energy storage systems also use inverters to convert between DC and AC. The batteries function in DC and electricity must be converted to AC to pass into or from the grid.
Mitigation	Measures including any process, activity, or design to avoid, prevent, reduce, or, if practicable, offset any identified significant adverse effects on the environment.
National Grid Drax Substation	The substation at Drax Power Station west of Drax village, North Yorkshire, owned and operated by National Grid and where the Grid Connection Cable will connect to.
Nationally Significant Infrastructure Projects (NSIP)	NSIPs are large scale developments such as certain new harbours, power generating stations (including wind farms), highways developments and electricity transmission lines, which require a type of consent known as 'development consent' under procedures governed by the Planning Act 2008 (and amended by the Localism Act 2011).
Scheme	The project for which the DCO Applicant is sought.
Site	The Site is the collective term for the Solar PV Site, the Ecology Mitigation Area, the Interconnecting Cables and the Grid Connection Corridor.
Solar photovoltaics (PV)	Solar electricity panels, also known as PV, capture the sun's energy and convert it into electricity for consumer use.
Solar PV Areas	Areas of land within which the solar PV panels, Field Stations and Grid Connection Substations are to be located. For clarity of reporting, individual Solar PV Areas have been assigned an identification number e.g. 1a, 1b, etc.
Solar PV Site	The Solar PV Site comprises the 18 Solar PV Areas. This is the anticipated maximum extent of land potentially required for the solar photovoltaic (PV) panels, associated infrastructure and on-site energy storage

facilities; including land for landscaping and habitat enhancement

Solar PV Panels	Convert sunlight into electrical current (as direct current, DC). Typically consist of a series of photovoltaic cells beneath a layer of toughened, low reflectivity glass.
Switchgear	Switchgear is an integral part of an electric power system. It includes fuses, switches, relays, isolators, circuit breaker, potential and current transformer, indicating device, lightning arresters, etc. that protects electrical hardware from faulty conditions.
Transformers	Transformers control the voltage of the electricity generated across the site before it reaches the electrical infrastructure.
