FENWICK SOLAR FARM

Fenwick Solar Farm

EN010152

Design and Access Statement

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Prepared for:

Fenwick Solar Project Limited

Prepared by:

AECOM Limited

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Executive Summary

ES1 This Design and Access Statement (DAS) has been commissioned by Fenwick Solar Project Limited (hereafter referred to as 'the Applicant') in relation to an application for a Development Consent Order (DCO) for Fenwick Solar Farm (hereafter referred to as the 'Scheme').

ES2 The Scheme would comprise the construction, operation and maintenance, and decommissioning of a solar photovoltaic (PV) electricity generating facility, with a total capacity exceeding 50 megawatts (MW) together with a Battery Energy Storage System (BESS), export and import connection to the national grid via the Existing National Grid Thorpe Marsh Substation.

ES3 The BESS will have the ability to store electricity generated from the Scheme and/or import energy from the grid at times of excess generation, discharging the stored energy at times of peak demand and assisting in balancing UK's electricity supplies.

ES4 An Operations and Maintenance Hub will be established adjacent to an existing barn within the Solar PV Site. This will provide welfare, office accommodation and facilities for maintenance throughout the operation and maintenance phase of the Scheme**.**

ES5 Subject to being granted consent and following a final investment decision, the earliest construction could start is in 2028. Installation of the Grid Connection Cables is anticipated to require 12 months. Construction of the Solar PV Site will require an estimated 24 months, with operation therefore anticipated to commence in 2030, and decommissioning 40 years after final commissioning.

ES6 Design principles for the Scheme have been developed in order to achieve a high-quality scheme design that delivers critical, nationally significant low carbon infrastructure, whilst respecting local communities and the natural environment.

ES7 This DAS describes the process that the Applicant's design team have taken to develop and implement design principles. The team have reviewed relevant design policy and guidance and undertaken an analysis of the context within which the Scheme is located. Following this analysis, the team have been able to develop design considerations and subsequently design principles. Due regard has been given to the feedback provided during statutory and ongoing consultation and engagement throughout the design process.

ES8 The indicative site layout plan and the indicative Landscape Masterplan for the Scheme illustrates the output of this design process incorporating the features and approaches which will deliver a high-quality renewable energy generating facility that is of good design, and which delivers local environmental and community benefits. It also explains how the good design principles will be secured through the consenting process to ensure that the Scheme that is implemented is in accordance with the principles set out in this DAS.

1. Introduction

1.1 Background

1.1.1 This Design and Access Statement (DAS) has been prepared on behalf of Fenwick Solar Project Limited (hereafter referred to as 'the Applicant') in relation to an application for a Development Consent Order (DCO) for Fenwick Solar Farm (hereafter referred to as 'the Scheme'). 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 would comprise the construction, and maintenance, and decommissioning of a solar photovoltaic (PV) electricity generating facility and associated development. The associated development proposed includes, but is not limited to, a Battery Energy Storage System (BESS); On-Site Substation; underground cabling to provide export and import connection to the National Electricity Transmission System (NETS); areas of landscaping and biodiversity enhancements.

1.1.3 The connection to the NETS will be either via underground cabling along a corridor in which three 400 kilovolt (kV) cables would run for approximately 6.3 kilometres (km) from the Solar PV Site to the Existing National Grid Thorpe Marsh Substation; or via underground cabling between the On-Site Substation and existing overhead power lines within the Solar PV Site, which connect to the Existing National Grid Thorpe Marsh Substation.

1.1.4 The Order limits of the Scheme, which are shown on Figure 3-1 of this DAS, comprise approximately 509 hectares (ha) of land which includes:

a. The 'Solar PV Site' – The area located east of Fenwick and immediately south of the River Went (see Figure 3-2 of this DAS) within which the Solar PV Panels, planting and mitigation areas, Field Stations, BESS Area, On-Site Substation, Grid Connection Line Drop, and associated infrastructure would be located. The Solar PV Site would be approximately 407 ha, centred on the approximate National Grid Reference SE 60549 16313;

b. The 'Grid Connection Corridor' – The area located between the Solar PV Site and the Existing National Grid Thorpe Marsh Substation (see Figure 3-2 of this DAS) within which the 400 kV and associated cables (the Grid Connection Cables) would be installed between the On-Site Substation to the Existing National Grid Thorpe Marsh Substation. The area of the Grid Connection Corridor would be approximately 95 ha, with an approximate length of 6.3 kilometres (km), centred on the approximate National Grid Reference SE 60314 11457; and

c. The 'Existing National Grid Thorpe Marsh Substation' – The area located within the existing compound for the National Grid's Thorpe Marsh Substation (see Figure 3-2 of this DAS) (hereafter referred to as the 'Existing National Grid Thorpe Marsh Substation') within which the 400 kV Grid Connection Cables would connect to the grid. The Existing National Grid Thorpe Marsh Substation is approximately 6 ha, centred on the approximate National Grid Reference SE 60526 09507.

1.1.5 The Order limits also include a section of highway at the junction of the A19 and Station Road in the town of Askern to allow for abnormal indivisible load (AIL) vehicle access and escort. This area is approximately 1 ha and is centred on the approximate National Grid Reference SE 56598 13647 (see Figure 3-1 of this DAS)

1.1.6 The Order limits are located entirely within City of Doncaster Council's administrative area and comprise land which is predominantly agricultural in nature. Landscape features immediately surrounding the Solar PV Site comprise largely agricultural fields and small rural villages, including Fenwick, Moss and Sykehouse, as well as the hamlet of Topham.

1.2 Structure and purpose of this document

1.2.1 The principal focus of this DAS is on the operational design and access of the Scheme. It explains how the design responds to its context and achieves its design principles.

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 **ES Volume I Chapter 2: The Scheme [EN010152/APP/6.1]** and is therefore not repeated in this DAS. **The Outline Design Parameters Statement [EN010152/APP/7.4]** defines the design parameters for the future detailed design.

1.2.3 The construction and decommissioning design and access of the Scheme is not the main focus of this DAS. Construction and decommissioning details are described in **ES Volume I Chapter 2: The Scheme [EN010152/APP/6.1]** and will be principally managed through detailed management plans including the Construction Environmental Management Plan (CEMP), the Construction Traffic Management Plan (CTMP) and the Decommissioning Environmental Management Plan (DEMP) which are secured through the requirements of the DCO (see schedule 2 of the **Draft DCO [EN010152/APP/3.1]**).

1.2.4 The **Framework CEMP [EN010152/APP/7.7], Framework CTMP [EN010152/APP/7.16]** and **Framework DEMP [EN010152/APP/7.9]** provide details of the likely working methods and mitigation measures to be implemented during these stages.

1.2.5 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 and its different stages of evolution.

d. **Section 5: The Design Response** – details how the design meets the Schemes design principles and how design commitments are to be secured; and presents the Indicative Site Layout Plan.

2. Good Design

2.1 Introduction

2.1.1 In developing the design rationale for the Scheme, the Applicant has undertaken a review of relevant national and local planning policy and guidance. This is to ensure that good design principles were embedded into the Scheme at the early stages.

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

2.2.1 The Overarching National Policy Statement (NPS) for Energy (EN-1) (Ref. 2) sets out the Government's policy for the delivery of critical national priority (CNP) nationally significant low carbon infrastructure. The deployment of solar forms part of the CNP low carbon infrastructure to ensure that the UK meets its legally binding net zero targets by 2050, to support the decarbonisation of electricity generation by 2035 and to achieve a secure, reliable, and affordable energy system.

2.2.2 As part of the overarching national policy direction for the provision of energy set out by NPS EN-1, Applicants are required to demonstrate how a Scheme is of good design. Paragraph 4.7.2 of NPS EN-1 (Ref. 2), states that:

"Applying good design to energy projects should produce sustainable infrastructure sensitive to place, including impacts on heritage, efficient in the use of natural resources, including land-use, and energy used in their construction and operation, matched by an appearance that demonstrates good aesthetic as far as possible. It is acknowledged, however that the nature of energy infrastructure development will often limit the extent to which it can contribute to the enhancement of the quality of the area."

2.2.3 Paragraph 4.7.3 of NPS EN-1 (Ref. 2) further explains that good design is a:

"means by which many policy objectives in the NPSs can be met, for example the impact sections show how good design, in terms of siting and use of appropriate technologies, can help mitigate adverse impacts."

2.2.4 National Policy Statement EN-1 (Ref. 2) clarifies that good design is a means in which the adverse impacts of a Scheme can be mitigated against and seeks applicants to demonstrate how good design is embedded into a Scheme at the early stages of its development.

2.2.5 Paragraphs 4.7.5 to 4.7.9 of NPS EN-1 (Ref. 2) set out how the Applicant should ensure that good design is encompassed into a Scheme. This includes:

a. Appointment of a design champion;

b. Establishment of design principles at the outset of the Scheme to guide design evolution;

c. Consideration of the siting of infrastructure relative to existing landscape character, land form and vegetation;

d. Sensitive use of materials in any associated development, and

e. The incorporation of nature inclusive design

2.2.6 Footnote 122 of NPS EN-1 (Ref. 2) 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 Within the context of decision making, paragraph 4.7.10 of NPS EN-1 (Ref. 2) states that:

"the Secretary of State needs to be satisfied that energy infrastructure developments are sustainable and, having regard to regulatory and other constraints, are as attractive, durable and adaptable (including taking account of natural hazards such as flooding) as they can be."

2.2.8 Paragraph 4.7.11 of NPS EN-1 (Ref. 2) states that:

"the Secretary of State should be satisfied that the applicant has considered both functionality (including fitness for purpose and sustainability) and aesthetics (including its contribution to the quality of the area in which it would be located, any potential amenity benefits, and visual impacts on the landscape or seascape) as far as possible."

2.2.9 Paragraph 4.7.12 of NPS EN-1 (Ref. 2) confirms that in considering applications, the Secretary of State:

"should take into account the ultimate purpose of the infrastructure and bear in mind the operational, safety and security requirements which the design has to satisfy".

2.2.10 In this regard, NPS EN-1 (Ref. 2) acknowledges the constraints associated with the external appearance of infrastructure confirming that the wider impacts of the development upon design being *"important factors in the design process."*

2.2.11 Adapting to climate change is also identified as a key consideration of design in section 4.10 of NPS EN-1 (Ref. 2). Specifically, paragraph 4.10.8 states that Applicants should:

"consider the direct (e.g. site flooding, limited water availability, storms, heatwave and wildfire threats to infrastructure and operations) and indirect (e.g. access roads or other critical dependencies impacted by flooding, storms, heatwaves or wildfires) impacts of climate change when planning the locations, design, build, operation and, where appropriate, decommissioning of new energy infrastructure".

National Policy Relating to Solar Design

2.2.12 The National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) (Ref. 3) includes specific national planning policy with respect to Solar PV Schemes that constitute Nationally Significant Infrastructure Projects

(NSIP). This applies to any generating station which exceeds a generating capacity of 50MW.

2.2.13 Paragraph 2.1.8 of NPS EN-3 (Ref. 3) confirms that whilst solar is 'Critical National Priority' (CNP) infrastructure:

"Applicants must show how any likely significant negative effects would be avoided, reduced, mitigated or compensated for, following the mitigation hierarchy."

2.2.14 The above approach naturally feeds into design considerations and evolution of a Scheme with paragraph 2.5.2 of NPS EN-3 (Ref. 3) confirming that:

"Proposals for renewable energy infrastructure should demonstrate good design, particularly in respect of landscape and visual amenity, opportunities for co-existence/co-location with other marine and terrestrial uses, and in the design of the project to mitigate impacts such as noise and effects on ecology and heritage."

2.2.15 National Policy Statement EN-3 (Ref. 3) sets out in paragraphs 2.10.18 to 2.10.48 the key considerations and factors that influence site selection and design of solar schemes. 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 2.10.19 of NPS EN-3 (Ref. 3).

b. 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 2.10.25 of NPS EN-3 (Ref. 3) 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".*

c. Proximity to dwellings – paragraph 2.10.27 of NPS EN-3 (Ref. 3) 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.

d. Agricultural Land Classification – paragraph 2.10.29 (NPS EN-3) (Ref. 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 2.10.32 provides that consideration should be given to whether the design allows for the continued agricultural use.

e. Accessibility – paragraph 2.9.30 of NPS EN-3 (Ref. 3) states that "*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*".

f. Public Rights of Way (PRoW) – as set out in paragraph 2.10.42 of NPS EN-3 (Ref. 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.

g. Security and Lighting – availability of natural defences such as hedging, and rivers as well as perimeter security measures should be a key consideration in the design of solar infrastructure. Security measures and lighting used should minimise the impact on landscape and visual impact.

2.2.16 Paragraphs 2.10.49 to 2.10.72 of NPS EN-3 (Ref. 3) set out technical considerations relating to site selection and the design of solar schemes. These paragraphs relate to the need to maximise the power output of the Site having regard to the type, spacing and aspect of panel arrays.

2.2.17 Paragraph 2.10.66 of NPS EN-3 (Ref. 3) relates to project lifetime confirming that:

"Time limited consent, where granted, is described as temporary because there is a finite period for which it exists, after which the project would cease to have consent and therefore must seek to extend the period of consent or be decommissioned and removed."

2.2.18 In the context of good design, it is also relevant to note that NPS EN-3 (Ref. 3) confirms the need for solar schemes to retain flexibility with respect to *"panel numbers, types and layout"* as described in paragraph 2.10.71.

Other National and Local Planning Policy

2.2.19 The National Planning Policy Framework (NPPF) (Ref. 4), revised on 19 December 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 131 of the NPPF (December 2023) (Ref. 4) describes 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*."

2.2.20 Design not only features within national policy and guidance, but also within local policy relevant to the Scheme.

2.2.21 As the Order limits lies wholly within the administrative area of City of Doncaster Council. The following documents form the Development Plan for the land within which the Scheme would be located:

a. Doncaster Local Plan 2015-2035 (adopted September 2021) (Ref. 5); and

b. Barnsley, Doncaster and Rotherham Joint Waste Plan (adopted March 2012) (Ref. 6).

2.2.22 These plans expect development 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.

2.2.23 To support the implementation of its adopted Local Plan (Ref. 5), Doncaster Council has prepared the following Supplementary Planning Documents (SPD).

a. Biodiversity Net Gain SPD (adopted September 2022) (Ref. 7)

b. Flood Risk SPD (adopted August 2023) (Ref. 8)

c. Technical and Developer Requirements SPD (adopted August 2023). (Ref. 9)

2.2.24 Within the administrative area of City of Doncaster Council, there are no made neighbourhood plans which pertain to the Order Limits.

National and Local Design Guidance

2.2.25 The National Infrastructure Commission (NIC) design group published the Design Principles for National Infrastructure in 2020 (Ref. 10). This sets out four principles to guide the planning and delivery of major infrastructure projects. These are 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.

2.2.26 According to the NIC, *“design is about how something works and how it looks”* (Ref. 10). Design should be used to solve problems and maximise the benefits. It should be integral to all aspects of a scheme and considered at all stages.

2.2.27 The National Design Guide (Ref. 11) published in January 2021 sets out key components to achieve 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; and

j. Lifespan – made to last.

2.2.28 Other guidance relevant to the scheme also references the importance of good design when supporting the delivery of major infrastructure projects. The Landscape Institute's Technical Guidance Note 04/20 (Ref. 12) provides multi-disciplinary guidance on the planning, design and management of infrastructure. It states that:

"Achieving good design which works with the landscape and delivers valuable green infrastructure therefore needs a joined up, collaborative approach, where all planning and design elements of the project are integrated. This requires a common vision and purpose and a culture of openness to new ideas and perspectives."

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 Schemes 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 represented in Figure 3-1. The Order limits of this DAS, comprise approximately 509 hectares (ha) of land located within City of Doncaster administrative area. The Order limits comprise three main areas: the Solar PV Site (407 ha), the Grid Connection Corridor (95 ha) and the Existing National Grid Thorpe Marsh Substation (6 ha).

3.2.2 The Order limits comprise mainly of agricultural fields and are located close to the small rural villages of Fenwick, Moss, and Sykehouse, as well as the hamlet of Topham.

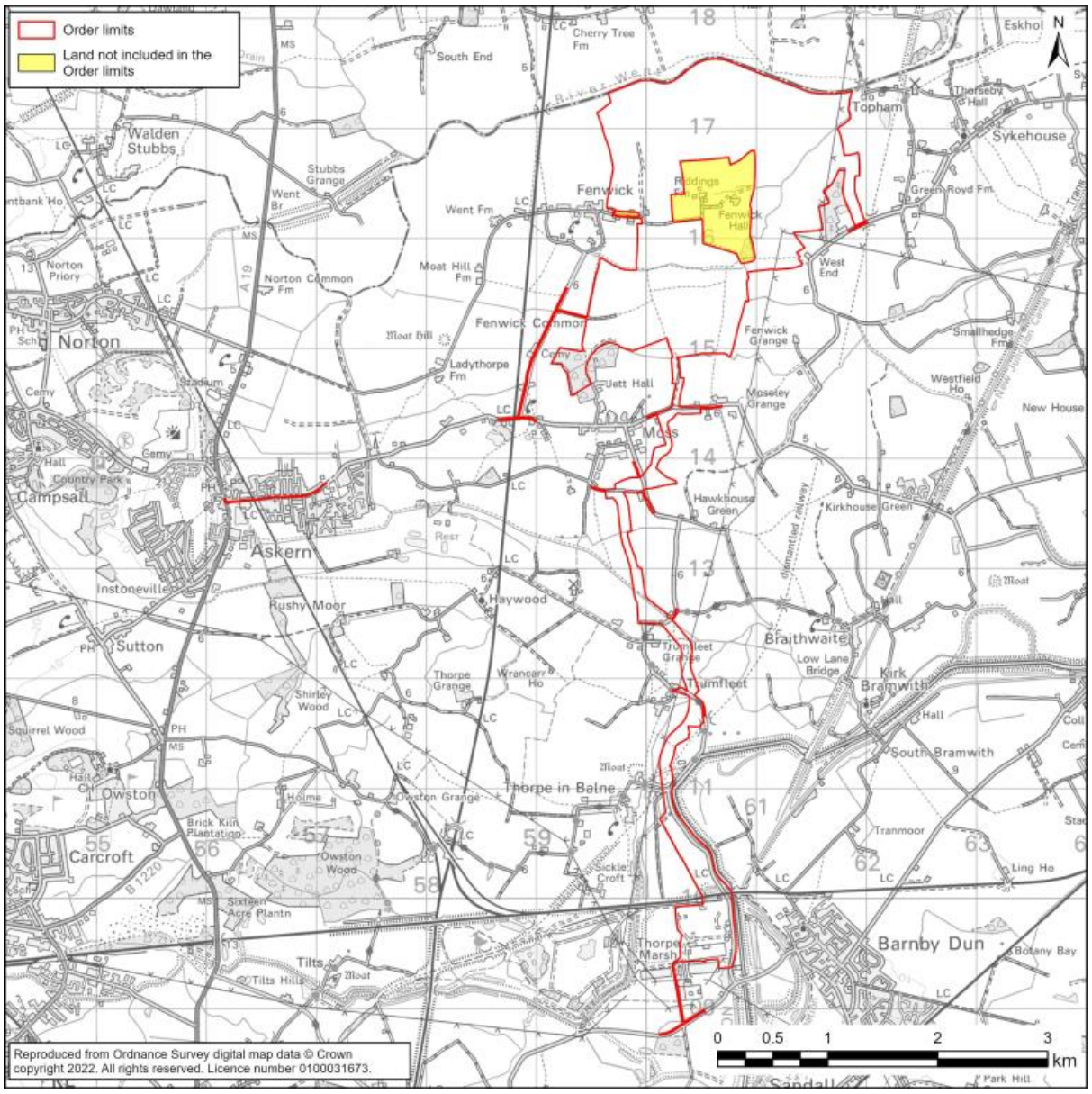


Figure 3-1. The Order limits

3.2.3 The Order limits comprise the following elements as shown on Figure 3-2 of this DAS).

a. Solar Photovoltaic (PV) Site – approximately 407 ha of land, which will contain the ground mounted solar PV panels, planting and mitigation areas, Field Stations, Battery Energy Storage System (BESS), On-Site Substation, associated infrastructure and an Operations and Maintenance Hub;

b. Grid Connection Corridor – the area outside the Solar PV Site in which the 400 kV and associated cables (the Grid Connection Cables) would be installed between the On-Site Substation to the Existing National Grid Thorpe Marsh Substation. The connection to the national grid will be either via underground cabling along a corridor in which three 400 kV cables would run for approximately 6.3 km from the Solar PV Site to the Existing National Grid Thorpe Marsh Substation; or via underground cabling between the On-Site Substation and existing

overhead power lines within the Solar PV Site, which connect to the Existing National Grid Thorpe Marsh Substation; and

c. Existing National Grid Thorpe Marsh Substation – the Existing Thorpe Marsh substation (owned and operated by National Grid) is located approximately 6 km to the south of the Solar PV Site. This is where the 400 kV Grid Connection Cables would connect to the NETS.

3.2.4 The **Outline Design Parameters Statement [EN010152/APP/7.4]** contains further design details on all the above infrastructure and equipment.

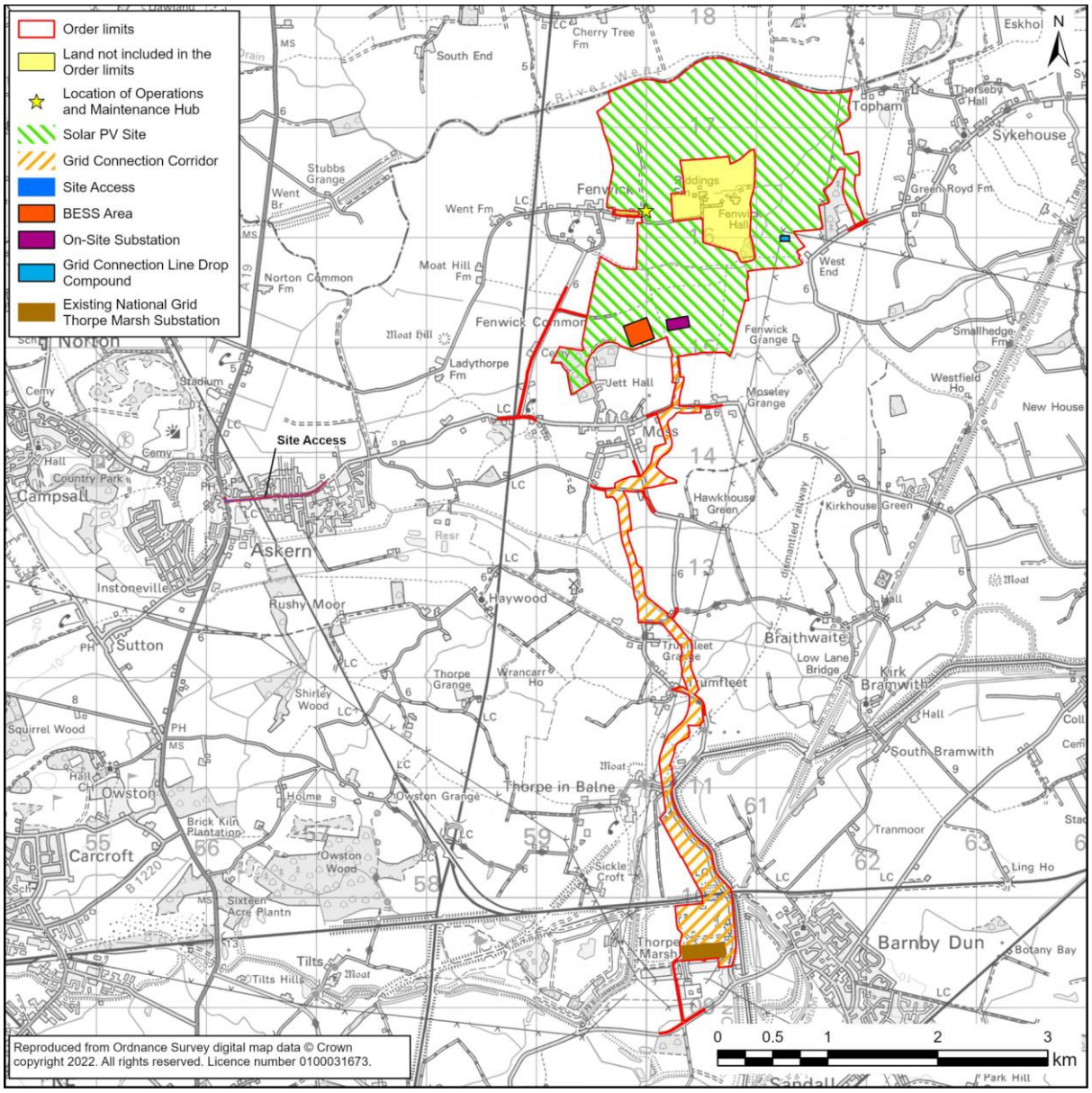


Figure 3-2: Elements of the Order limits

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 principles and the design response.

3.3 Network Connection, Irradiance and Topography

Baseline Analysis

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 For the Scheme to deliver renewable energy generation to the national electricity transmission system, it is important that it is located a reasonable distance from National Grid infrastructure. The Applicant was aware of the legacy of coal fired power stations in the Yorkshire region and undertook a search of available capacity within these areas. This was in the context that many coal fired power stations were being dismantled which would free up connections to existing National Grid infrastructure in this region.

3.3.3 Following discussions with National Grid, it was identified that the Existing National Grid Thorpe Marsh Substation had capacity for connection. This was agreed as a suitable POC and sites within a reasonable distance from this facility were considered. The Existing National Grid Thorpe Marsh substation is approximately 6.3 km from the southern extent of the Solar PV Site.

3.3.4 Generally, the Applicant found that the areas surrounding the POC had good levels of irradiation levels and comprised of mainly flat topography, as shown on Figure 3-3 of this DAS.

3.3.5 Land within the Solar PV Site comprises small to large scale arable fields situated across low lying and generally flat landform between 5 m and 6 m above Ordnance Datum (AOD).

3.3.6 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. Flat land which is not located close to woodland also limits the shading between solar PV arrays which can reduce energy production.

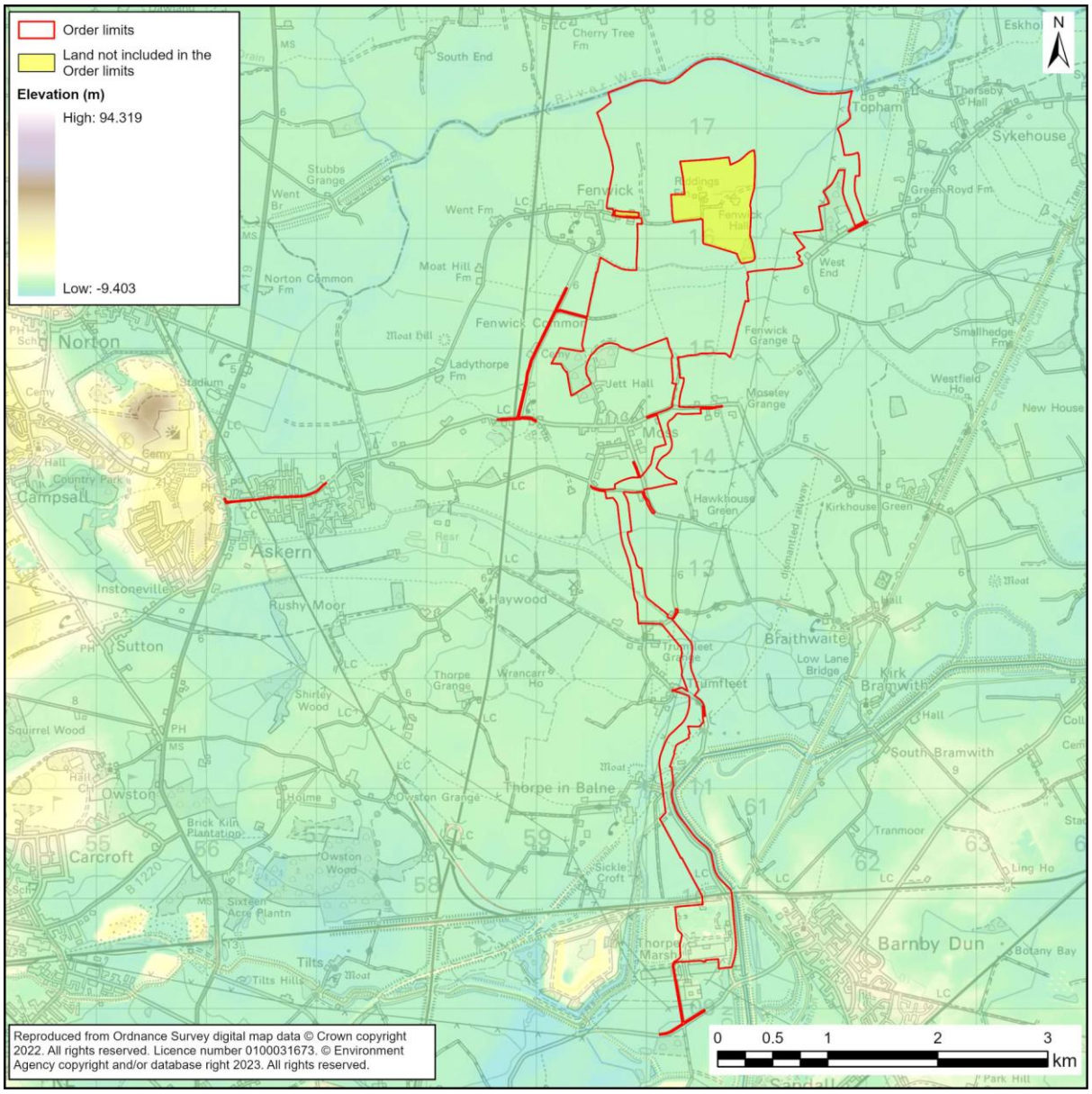


Figure 3-3: Topography of the Order limits

Key design considerations

a. To maximise energy generation, where practicable, 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

Land Use and form

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) and farm access tracks.

3.4.2 Land within the Solar PV Site comprises small to large scale arable and grass land fields situated across low lying and generally flat landform between 5 m and 6 m above Ordnance Datum (AOD). The Solar PV Site is bound by the River Went along its northern boundary. Fenwick Common Drain marks the southwestern boundary of the Solar PV Site, whereas Ell Wood and Fenwick Grange Drain forms the southern boundary. Fleet Drain extends through the northeast corner of the Solar PV Site.

3.4.3 The fields are mainly geometric in form and divided by a combination of drainage ditches, hedgerows, and trees. Hedgerows are low, managed and often gappy. The extent of this vegetation is notably less across the southeast part of the Solar PV Site, such that there is a more open character in relation to a higher degree of enclosure across the remainder of the Solar PV Site.

3.4.4 There is a more notable infrastructure character to the southeast part of the Solar PV Site due to the existing pylons. An existing wind turbine at Riddings Farm is notable within the north of the Solar PV Site.

3.4.5 The Solar PV Site is not covered by any landscape designations, nor does it contain any rare landscape features. There is a high recreational value to the southwest part of the Solar PV Site, due to several PRoW which follow field boundaries, whilst there are no PRoW across the northwest and northeast parts of the Solar PV Site.

3.4.6 The Solar PV Site is not lit and therefore reflects an area of generally darker night skies, although, with reference to **ES Volume II Figure 10-12: CPRE Light Pollution and Dark Skies [EN010152/APP/6.2]**, some light spillage from Fenwick, Moss and West End influence parts of the Solar PV Site.

3.4.7 Most of the Solar PV Site is considered to exhibit higher levels of tranquillity due to the land use. The exceptions to this are in proximity to the settlements, overhead power lines, and roads.

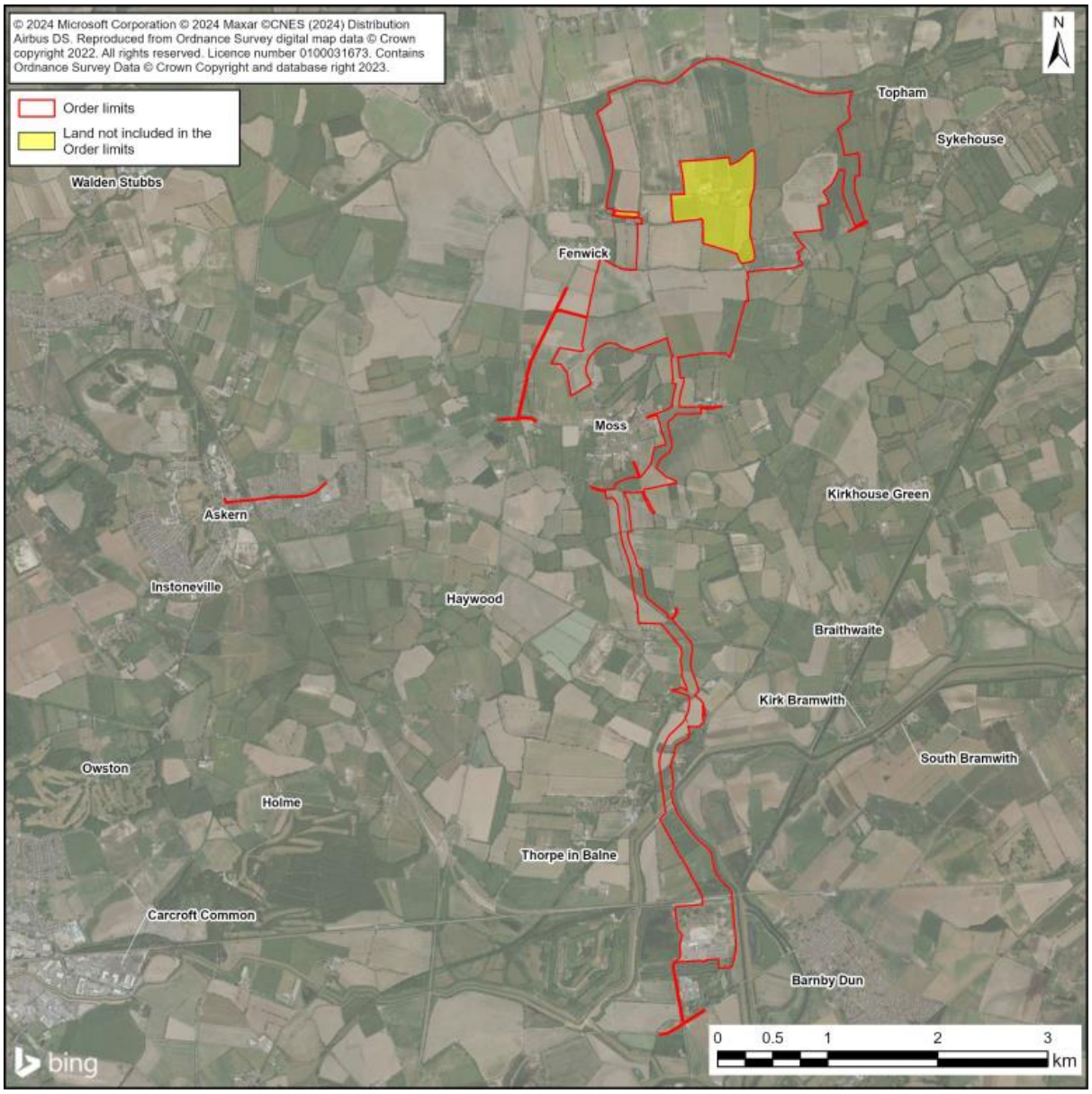


Figure 3-4: Satellite Image of the Order Limits

Vegetation

3.4.8 With reference to **ES Volume II Figure 10-5: Hydrology and Woodland [EN010152/APP/6.2**] and **ES Volume II Figure 10-11: Tree Preservation Order and Important Hedgerow Plan [EN010152/APP/6.2]**, the vegetation patterns to the north of the Solar PV Site consist mainly of field boundary hedgerows with trees. Woodland is limited and small in scale with the main concentration located 1.2 km northwest of the Solar PV Site at Chapel Hill. There is also a small woodland located 500 m northeast of the Solar PV Site on the northern side of the River Went to the north of Topham, along with established tree belts adjacent to the dismantled railway line. Small woodlands and mature tree groups border many of the farms and residential properties between the Solar PV Site and Pollington, as well as along the banks of the New Fleet Drain.

3.4.9 There is woodland adjacent to the eastern part of the Solar PV Site, extending from West Lane and across Bungalow Farm. Established trees border the dismantled railway which also extends across the eastern part of the Solar PV Site. Beyond these main areas of vegetation, the remainder of

the eastern part of the Solar PV Site is characterised by mature hedgerows and trees which divide the fields and are adjacent to many of the local roads, including at Sykehouse.

3.4.10 To the south of the Solar PV Site, the agricultural land use results in the main vegetation patterns being hedgerows and tress dividing the fields or bordering local roads. The density of this field boundary vegetation increases to the south of Moss in the southern part of the Solar PV Site.

3.4.11 The pattern of field boundary vegetation continues to the west of the Solar PV Site, along with established trees bordering residential properties and agricultural land uses in Fenwick. To the west of Fenwick, the larger scale field pattern and sparser field boundaries results in a more open character to the landscape. The extent of vegetation increases at the western edge of the Solar PV Site adjacent to the A19 corridor and Askern.

3.4.12 The main vegetation pattern across the Grid Connection Corridor are field boundary hedgerows with trees. The main concentration of woodland is along the disused railway and around Thorpe Marsh Nature Reserve.

National Landscape Character Areas

3.4.13 At the national scale, the Solar PV Site and the Grid Connection Corridor are covered by Natural England's NCA 39: Humberhead Levels (Ref. 13) (see Figure 3-5 of this DAS).

3.4.14 As shown on Figure 3-5 of this DAS, NCA 39 covers the entirety of the Solar PV Site. NCA 39 is described by the published study (Ref. 13) as a *"flat, low-lying and large-scale agricultural landscape."*

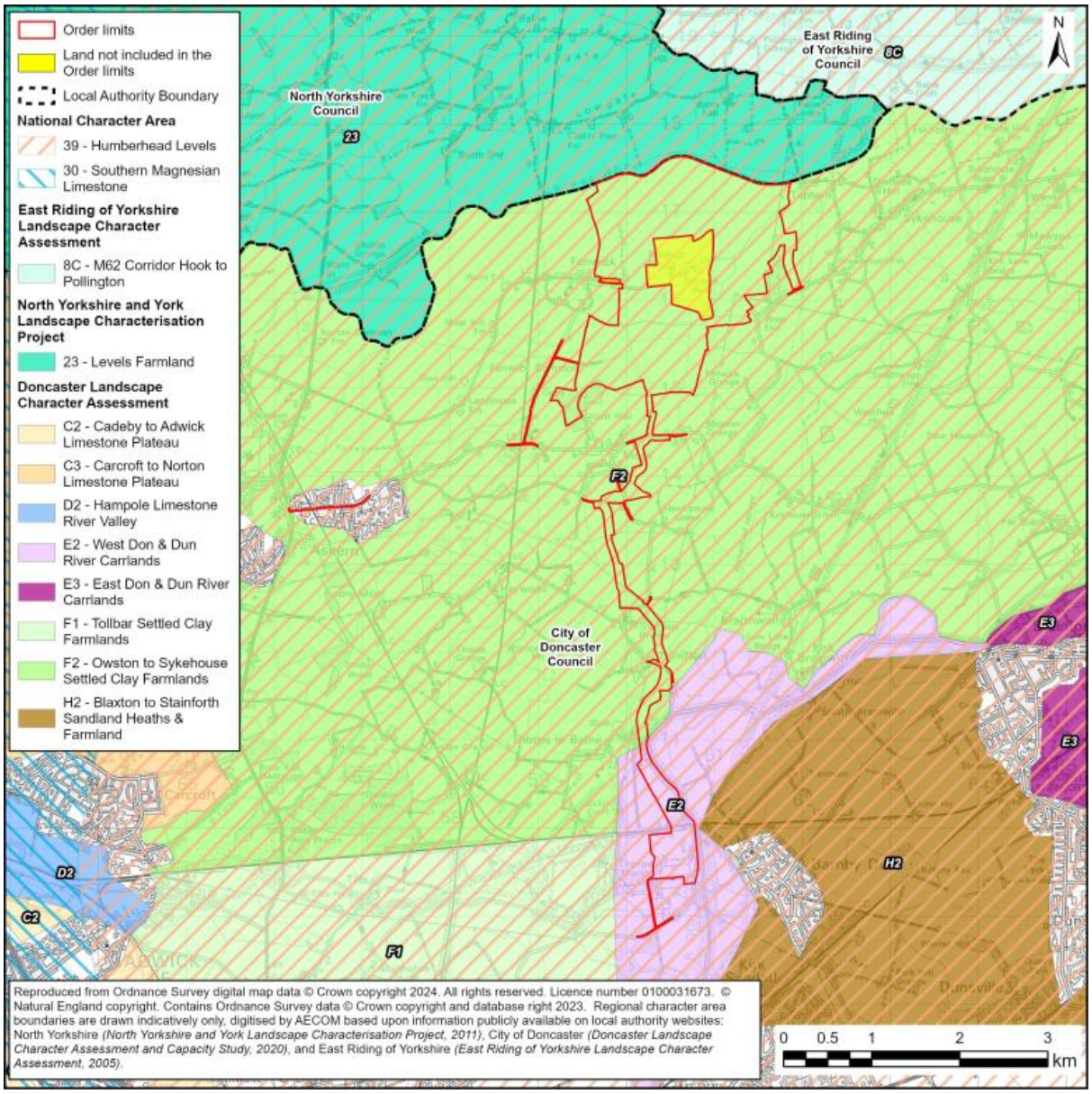


Figure 3-5: National and Regional Character Areas

County Landscape Character Areas

3.4.15 The Doncaster Landscape Character and Capacity Study 2007 (Ref. 14) sets out eight Landscape Character Types (LCTs) and smaller Landscape Character Areas (LCAs) across Doncaster.

3.4.16 With reference to **ES Volume II Figure 10-2: National and Regional Character Areas [EN010152/APP/6.2]**, the Solar PV Site and a large portion of the Grid Connection Corridor are covered by LCT F: Settled Clay Farmlands (LCT F), most of which is made up of LCA F2: Owston to Sykehouse Settled Clay Farmlands (LCA F2). A small part of the Grid Connection Corridor is covered by LCA F1: Tollbar Settled Clay Farmlands.

3.4.17 The southern part of the Grid Connection Corridor is covered by LCT E: River Carrlands (LCT E) and LCA E2: West Don and Dun River Carrlands (LCA E2).

3.4.18 A small part of the Grid Connection Corridor is covered by LCT H: Sandlands, Heaths and Farmlands and LCA H2: Blaxton to Stainforth Sandland Heaths and Farmland (LCA H2).

Local Landscape Character Areas

3.4.19 Given the large geographic scale of LCAs defined within published landscape character assessments, 11 Local Landscape Character Areas (LLCA) have been identified to provide a finer grain of detail and to help better inform a more proportionate assessment of landscape effects across the Solar PV Site. Given the lack of above ground change during operation, it is unlikely that the Grid Connection Cables would result in significant operational effects. LLCAs have therefore not been defined for the Grid Connection Corridor.

3.4.20 The identified LLCAs which are shown on Figure 3-6 of this DAS are as follows:

a. LLCA 01- Fenwick Village;

b. LLCA 02- Fenwick Farmlands;

c. LLCA 03- River Went Farmlands (South);

d. LLCA 04- Flashley Carr Farmlands;

e. LLCA 05- River Went Corridor;

f. LLCA 06- River Went Farmlands (North);

g. LLCA 07- Topham and Eastholm Farmlands;

h. LLCA 08- Moss Village;

i. LLCA 09- Moss Farmlands;

j. LLCA 10- Skyehouse Medieval Farmland; and

k. LLCA 11- Balne Farmlands

3.4.21 The key characteristics of these LLCAs are defined within **ES Volume I Chapter 10: Landscape and Visual Amenity [EN010152/APP/6.1].**

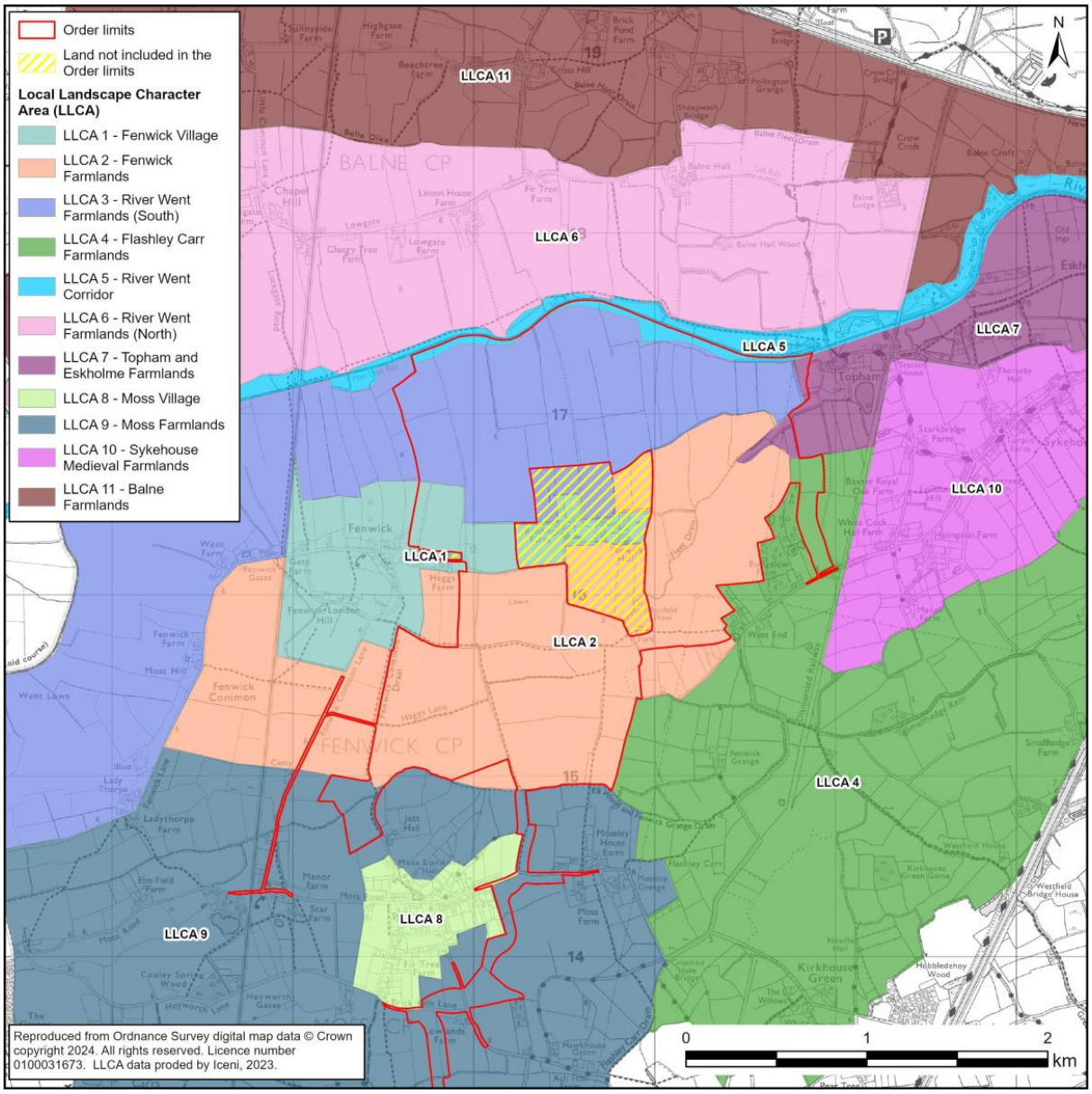


Figure 3-6: Local Landscape Character Areas

Visual Receptors

1.1.1 Visual receptors likely to experience views of the construction or operation and maintenance of the Solar PV Site or Grid Connection Corridor were identified through interrogation of the zones of theoretical visibility (ZTVs) (see Figure 3-7 of this DAS) and fieldwork, and were subsequently categorised into the following types:

- Residents;
- Recreational users of the PRoW network, promoted walking routes and cycle routes;
- Users of the road network; and
- Users of the rail network.

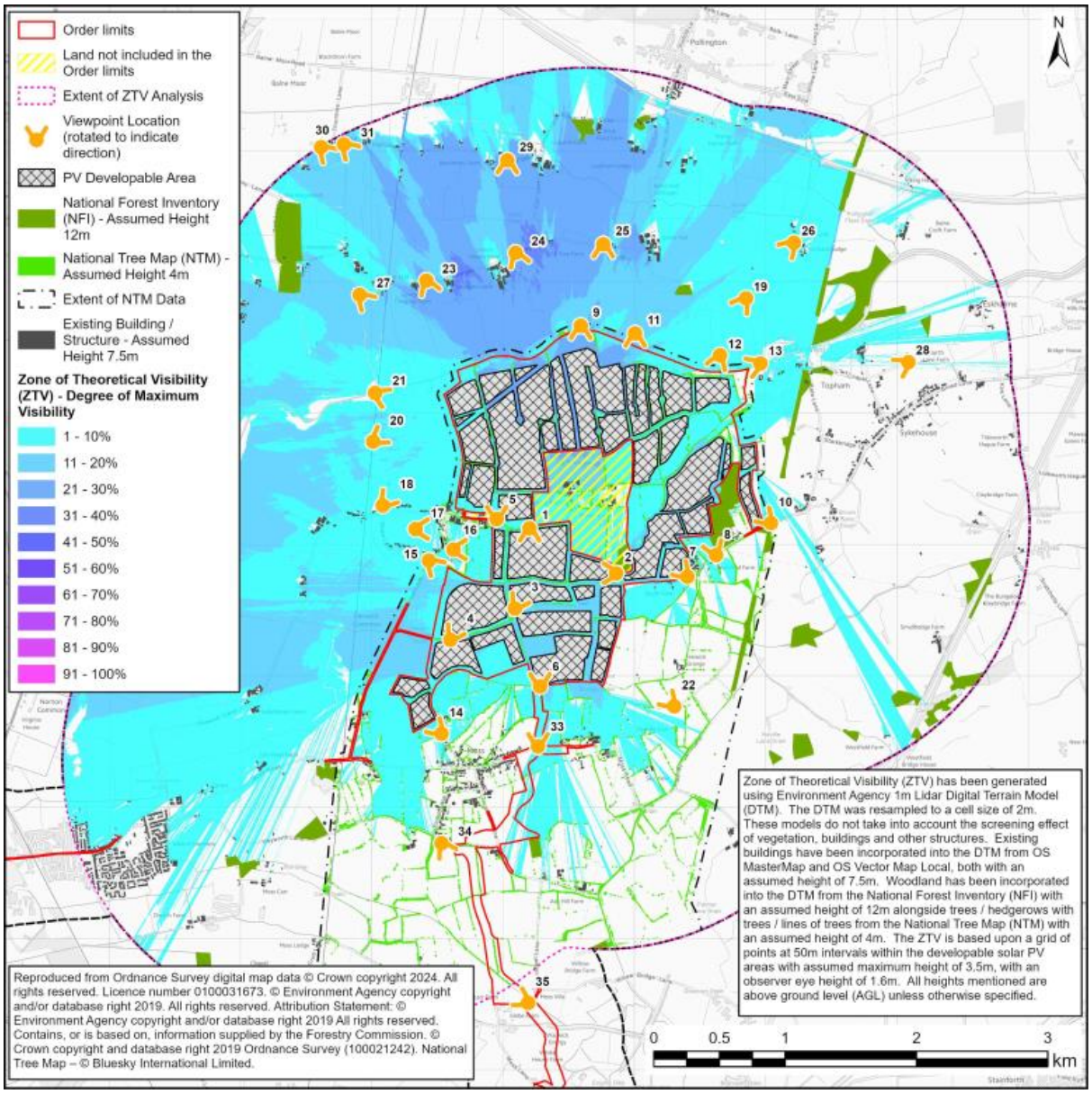


Figure 3-7: Screened Zone of Theoretical Visibility

3.4.22 **ES Volume II Figure 10-8: Screened Zone of Theoretical Visibility – All Features [EN010152/APP/6.2]** demonstrates that the mostly flat landform and lack of vegetation affords almost complete visibility across the northern part of the Solar PV Site. Existing planting in the northeastern corner of the Solar PV Site is shown to provide a degree of screening in the northeast of the Solar PV Site, reducing the proportion of the Solar PV Site visible to typically less than 10%.

3.4.23 East of the Solar PV Site, the vegetation lining the dismantled railway is shown to provide almost complete screening to land further east (including from Topham and Sykehouse). Occasional gaps are shown to afford some visibility of small parts of the Solar PV Site (<10%).

3.4.24 The existing network of field boundary vegetation present across the southern part of the Solar PV Site limits the visibility of the Solar PV Site from land to the south, such that land around the western part of Moss, and land further south is shown not to have intervisibility with the Solar PV Site. Occasional areas of visibility are shown on the outskirts of the Solar PV Site.

3.4.25 A lack of vegetation and built features west of the Solar PV Site is shown to result in almost complete visibility to the west of the Solar PV Site.

3.4.26 A Landscape and Visual Impact Assessment (LVIA) **ES Volume III Appendix 10-5 and Appendix 10-6 [EN010152/APP/6.3]**, has been submitted with the application. The LVIA is accompanied by viewpoint photography (**Figure 10-10 Viewpoint Photography [EN010152/APP/6.2]).** Figures 3-8 through to 3-12 of this DAS have been included to provide context on the existing landscape context looking from the north, east, south and west of the Solar PV site.

Figure 3-8: Viewpoint No. 9 – Central position north of the solar PV site looking south

Figure 3-9: Viewpoint No. 7 (PRoW Moss) – View from the east of the solar PV site looking west.

Figure 3-10: Viewpoint No. 4 (PRoW Fenwick) – West of the solar PV site looking northeast.

Figure 3-11: Viewpoint No. 6 (PRoW Moss) – South of the solar PV site looking north.

Figure 3-12: Viewpoint No. 1 (Lawn Lane) – Central position within the solar PV site looking south.

3.5 Land use

Existing Context

3.5.1 The Site and the immediate adjacent area are mostly used for agricultural purposes, characterised by large-scale regular arable fields across several land-holdings. There are no residential properties within the Site.

3.5.2 The Site includes twelve PRoW within the Solar PV Site and nine PRoW within the Grid Connection Corridor.

3.5.3 Five overhead line towers are located at the eastern extent of the Solar PV Site, two towers are located within the Grid Connection Corridor and three towers are located at the Existing National Grid Thorpe Marsh Substation.

Figure 3-13: Existing Barn within Field NW08 of the Solar PV Site

3.5.4 The mapping of agricultural land and soils within the Solar PV Site has been based on site surveys undertaken between February and May 2023, with additional areas surveyed during June 2024 (see **ES Volume II Figure 12-5: Agricultural Land Classification (ALC) Survey for the Solar PV Site**). The surveys covered 416.6 ha of land.

3.5.5 The survey showed that the Solar PV Site is predominantly located in ALC Grade 3b (moderate quality agricultural land) with some Grade 2 (very good quality agricultural land) and Grade 3a (good quality agricultural land). Under the ALC framework for classifying land, Grade 2 and Subgrade 3a land is BMV land whereas Subgrade 3b is not. No Grade 1 agricultural land was identified within the Solar PV Site.

3.5.6 Grade 2 land comprises 1% of the land surveyed and Subgrade 3a land comprises 6% of the land surveyed to date. This is equivalent to approximately 30.2 ha of the land within the Solar PV Site Order Limits (7%) being classified as BMV land.

3.5.7 An extract from the Natural England ACL map is included below on Figure 3-14. The full breakdown of ALC grades for the surveyed land within the Solar PV Site is presented in Table 1.

Table 1: Agricultural Land Classification Based Within the Solar PV Site

Agricultural Land Class	Total Area (Ha)	Percentage of Solar PV Site Total (%)
Grade 2	4.3	1
Subgrade 3a	25.9	6
Subgrade 3b	365.2	88
Grade 4	9.4	2
Non agricultural	11.8	3
Total	**416.6**	**100**

*Source: Land Research Associates Limited (2024) Agricultural Quality of Land at Fenwick. (**ES Volume III Appendix 12-3: Agricultural Land Classification Survey Report**)*

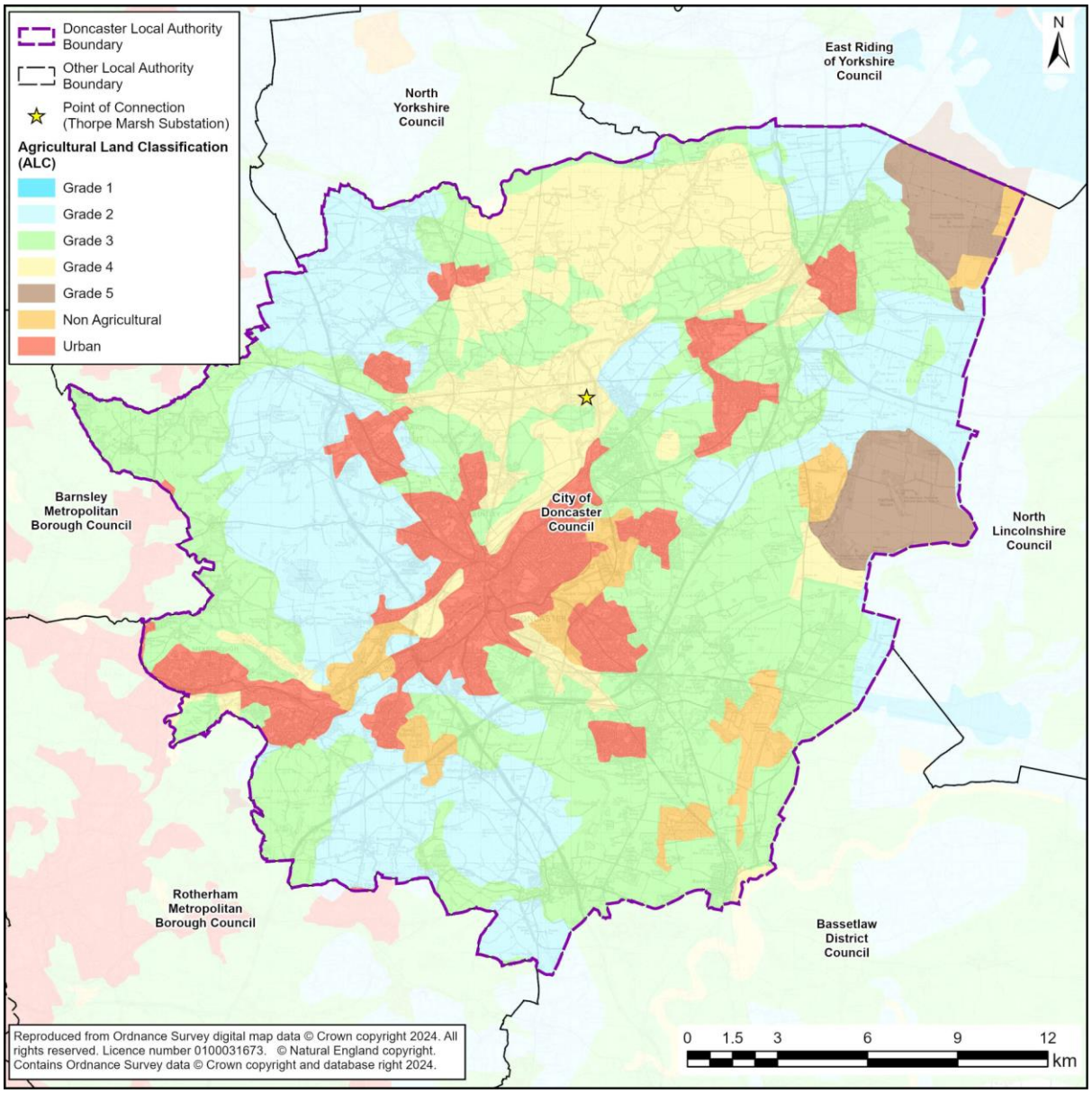


Figure 3-14: Agricultural Land Classification Map

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 utility infrastructure and layout considerations for minimising the effect of shading from vegetation and other structures.

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

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

3.6 Ecology

Existing Context

3.6.1 Determining the likely significant effects of a Scheme on ecological designations, trees, and habitats is integral to the design and layout.

3.6.2 The Solar PV Site and Grid Connection Corridor are not within, nor in proximity to, any statutory ecological designations

3.6.3 However, there are a number of Local Wildlife Sites (LWS) within, or within proximity to the Solar PV Site and Grid Connection Corridor. With reference to **ES Volume I Chapter 8: Ecology [EN010152/APP/6.1]** and **ES Volume II Figure 8-2: Sites Non-Statutorily Designated for their Biodiversity Value [EN010152/APP/6.2]**, these include the Went Valley LWS, located within the northern part of the Solar PV Site and Bunfold Shaw LWS located just outside the Solar PV Site, as well as a number of LWS adjacent to the Grid Connection Corridor associated with the River Don and Thorpe Marsh Nature Reserve.

3.6.4 Went Valley LWS comprises a series of semi-improved and grazed neutral grasslands which are located immediately south of the River Went. Bunfold LWS hosts mainly tall ruderal vegetation, with one or two scattered Oaks and several young, planted Scot's Pine *Pinus sylvestris*. This area of woodland is also listed as 'Ancient and semi-natural woodland'.

3.6.5 There are three sites statutorily designated for their biodiversity value at an International level and within 10 km of the Order limits. These are:

a. Thorne Moor SAC;

b. Thorne and Hatfield Moors SPA; and

c. Hatfield Moor SAC.

3.6.6 Beyond 10 km of the Site, the River Went and minor watercourses connected to it are linked to the Humber Estuary SAC/Ramsar site approximately 16 km downstream of the Solar PV Site via the River Don and Dutch River. The Humber Estuary SAC/Ramsar site is in part designated for two migratory fish species (River Lamprey and Sea Lamprey), which have the potential to be present in the River Went and connected watercourses. These impacts are considered within the **No Significant Effects Report [EN010152/APP/7.12**].

3.6.7 There is one site statutorily designated for its biodiversity value at a national level within 2 km of the Site, this being Shirley Pool SSSI which is located approximately 900 m to the south of the Order limits (this being the section of highway at the junction of the A19 and Station Road in the town of Askern).

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. 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 Designated heritage assets with the potential to be affected by the Scheme are identified on **ES Volume II Figure 7-1: Designated Heritage Assets [EN010152/APP/6.2]**.

3.7.2 **ES Volume III Appendix 7-2**: **Cultural Heritage Desk-based Assessment [EN010152/APP/6.3]** sets out the baseline conditions for the Order limits and its surroundings This includes the results of a Geophysical Survey undertaken on the Solar PV Site between May and October 2023 (refer to **Volume III Appendix 7-4: Geophysical Survey Report [EN010152/APP/6.3]**) and is informed by interim fieldwork results of trial trenching (with the final fieldwork report to be submitted post-submission of the DCO Application).

3.7.3 There are no designated heritage assets comprising Scheduled Monuments, Listed Buildings and Conservation Areas within the Order limits. Furthermore, there are also no World Heritage Sites, Registered Parks and Gardens, Registered Parks and Gardens, Registered Battlefields, or Protected Wrecks within the Order limits or wider Study Area.

3.7.4 There are several listed buildings and scheduled monuments in proximity to the Solar PV Site, which, with reference to the **ES Volume I Chapter 7: Cultural Heritage [EN010152/APP/6.1]** and **ES Volume II Figure 7-1: Designated Heritage Assets [EN010152/APP/6.2]** (and represented on Figure 3-15 in this DAS), include:

a. The Dovecote and outbuildings (Grade II), Barn and Granary (Grade II) and Lily Hall (Grade II) within Riddings Farm, located approximately 160 m from the Solar PV Site;

b. Lowgate Farmhouse (Grade II), located approximately 1.5 km to the northwest of the Solar PV Site, between the River Went and Pollington;

c. Fenwick Hall moated site scheduled monument, Barn and outbuildings (Grage II) and Fenwick Hall (Grade II) within Fenwick Hall, located approximately 110 m from the Solar PV Site;

d. Topham Ferry Bridge (Grade II), located approximately 250 m to the northeast of the Solar PV Site at the River Went;

e. Dovecote and outbuildings (Grade II), located approximately 170 m to the southeast of the Solar PV Site at West End; and

f. Ponderosa Farmhouse Barn (Grade II), located approximately 1.2 km to the south of the Solar PV Site at Moss.

3.7.5 Fenwick Hall, Barn and outbuildings are a well-defined group of Grade II listed buildings which are located on land in the centre of the Solar PV Site. The listed buildings overlie the scheduled monument of the Fenwick Hall moated site [1012459].

Non-designated Heritage Assets

3.7.6 Searches of both the SYAS Historic Environment Record (HER) and North Yorkshire Council HER have identified four non-designated heritage assets located within the Solar PV Site and one located within the Grid Connection Corridor.

3.7.7 The assets located within the Order limits comprise:

a. Unclassified cropmark (02791/01);

b. Undated probable enclosure or ditch intersection (05633);

c. Undated ring ditch and linear ditches (05632);

d. Undated possible ring ditch (05631); and

e. Unclassified cropmark and earthwork, Moss (02531/01).

3.7.8 In addition, the evaluation surveys undertaken for the Scheme have identified multiple areas of archaeological activity which represent Iron Age / Romano-British settlement activity comprising ditched enclosures, internal divisions, roundhouses, pits and postholes etc. (AEC004 – AEC021).

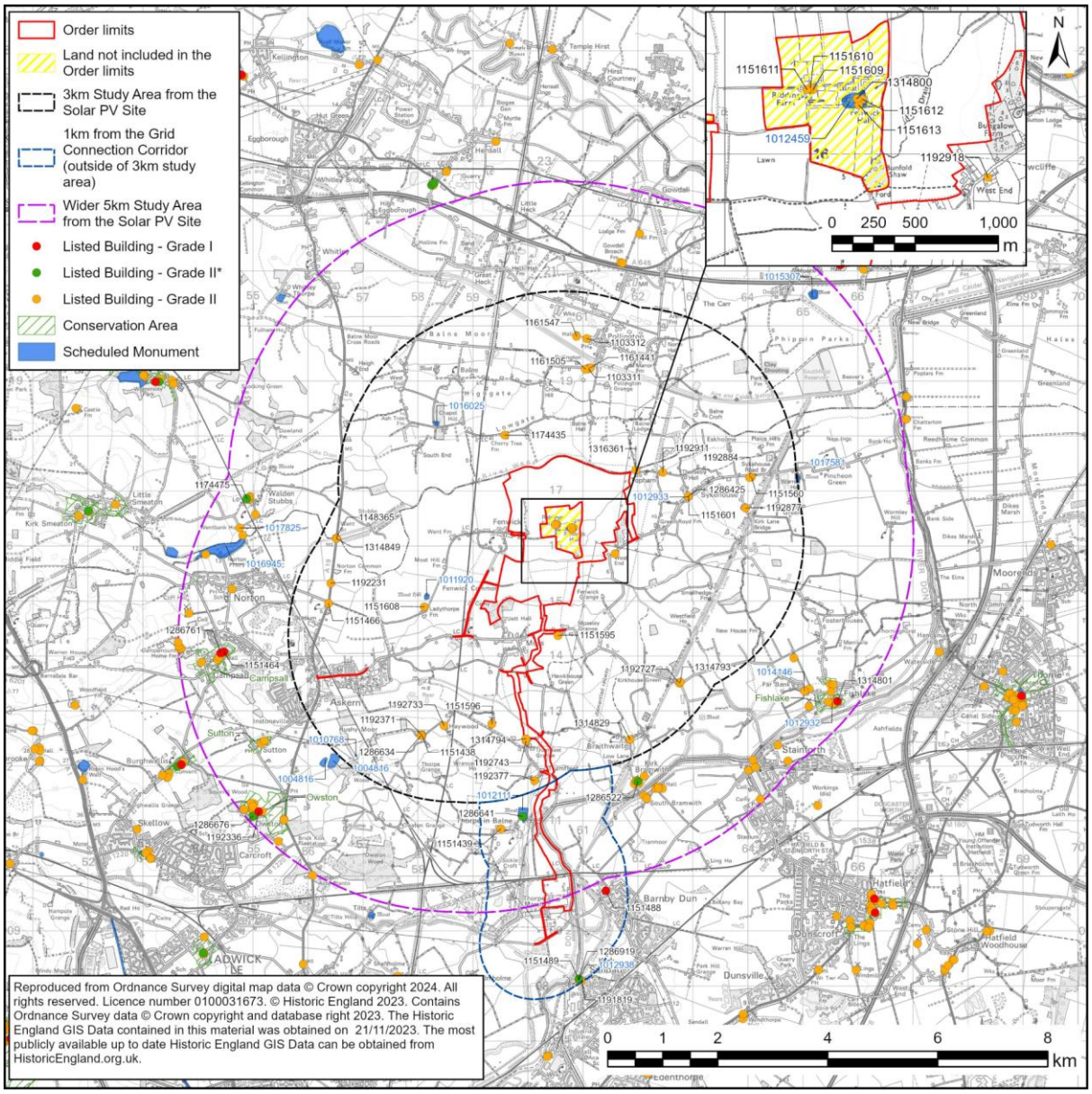


Figure 3-15: Heritage Assets near to the Order Limits

Key design considerations

a. The design of the Scheme should avoid direct impacts on heritage assets identified within and close to 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.

c. The design of the Scheme should be developed in response to mitigation strategies arising from archaeological geophysical surveys and trial trenching.

3.8 Flood Risk and Hydrology

Existing Context

3.8.1 From published Environment Agency flood mapping, the Solar PV Site is mostly located within Flood Zone 1 (low risk of flooding) and Flood Zone 2

(medium risk of flooding) with some areas of Flood Zone 3 (high risk of flooding). Flood Zones 2 and 3 are predominantly located to the north and east of the Solar PV Site, with west and southwestern areas falling in Flood Zone 1.

3.8.2 The Grid Connection Corridor is located largely within Flood Zone 3, with smaller areas of Flood Zone 2 along its central section and approximately 700 m within Flood Zone 1 toward its northern extent.

3.8.3 The Existing National Grid Thorpe Marsh Substation is located entirely within Flood Zone 2; however, the surrounding area is designated as a water storage area with flood defences present along adjacent watercourses. Flood Zones within and adjacent to the Order limits are illustrated in **ES Volume I, Chapter 7: Water Environment [EN010152/APP/6.1].**

3.8.4 Figure 3-16 illustrates the hydrological risk context.

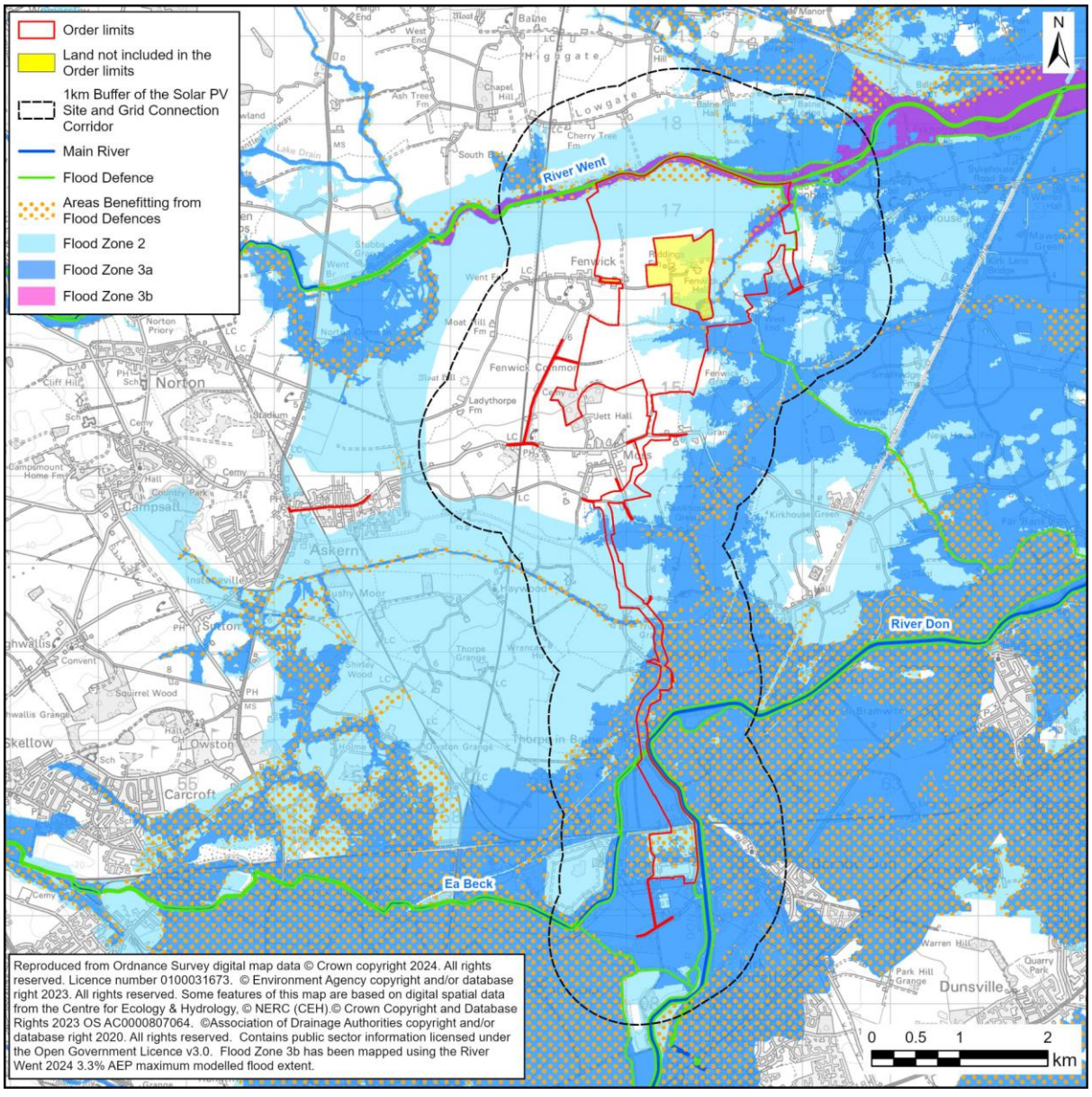


Figure 3-16: Flood Zone Mapping with Order Limits overlay

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 From the west, the A19 runs for approximately 18 km between the M62 Junction 34 and St Mary's Roundabout in Doncaster to the west of the Scheme. The A19 passes through more built-up areas such as Whitley to the north of the A19 and Askern, where it joins with Moss Road via a 3-arm signalised junction.

3.9.2 Moss Road is a single-carriageway road that runs west to east from the A19 through Askern and the village of Moss before changing to Kirkhouse Green Road just before the New Junction Canal near Kirkhouse Green

3.9.3 Fenwick Common Lane runs north from Moss Road for approximately 2 km before entering the village of Fenwick which then forms a junction with Lawn Lane and Fenwick Lane.

3.9.4 Fenwick Common Lane is characterised by a single-lane carriageway with no lane markings and no footways present on either side of the carriageway.

3.9.5 The Order limits also include a section of highway at the junction of the A19 and Station Road in the town of Askern to allow for abnormal indivisible load vehicle access and escort.

3.9.6 Figure 3-17 shows the Local Road Network in relation to the Order limits.

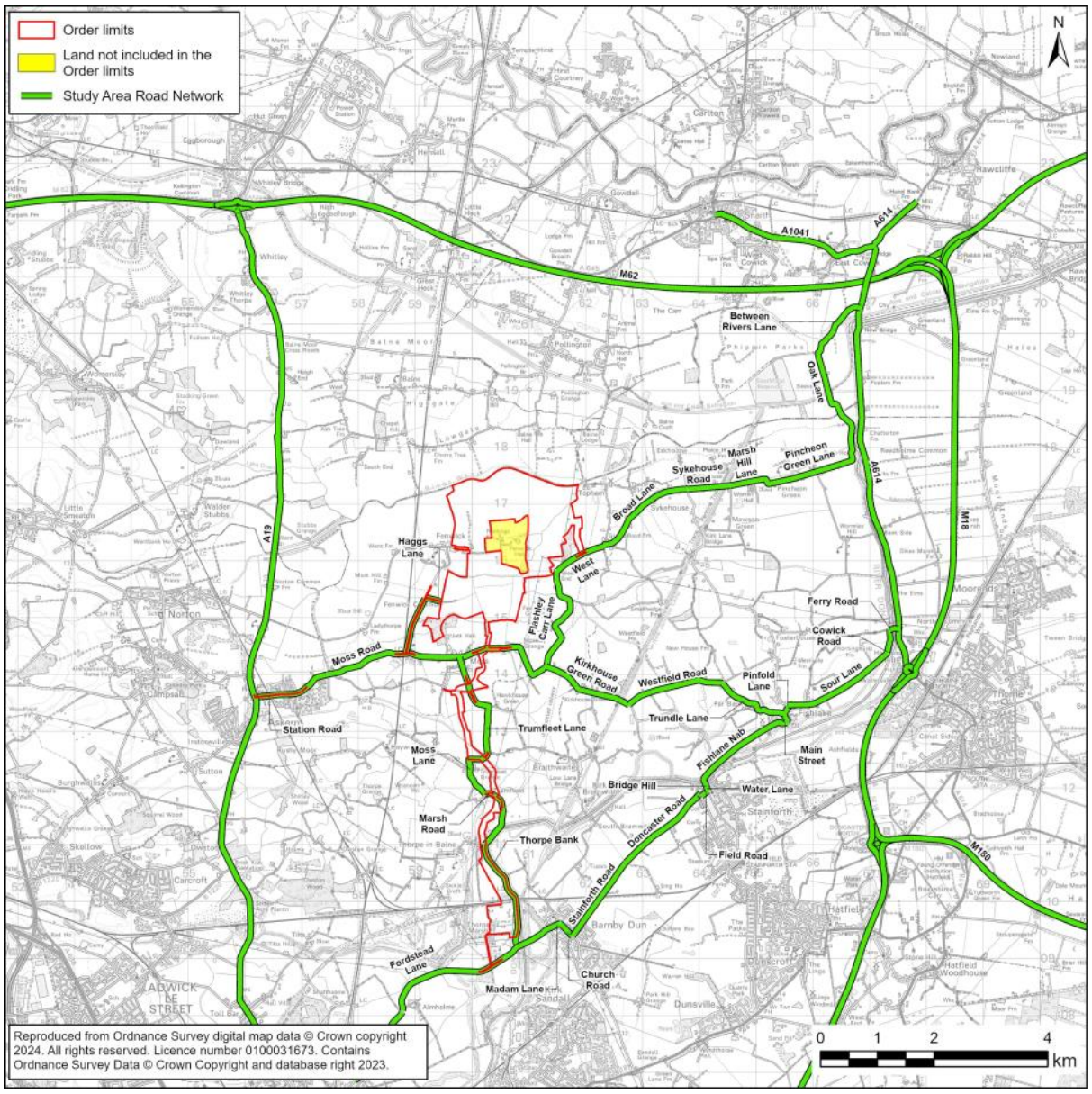


Figure 3-17: Local Road Network used to access the Solar PV Site

Public Rights of Way

3.9.7 There is a network of PRoW crossing fields and running alongside roads and rivers which intersect the Solar PV Site.

3.9.8 As shown on Figure 3-18 of this DAS, there are a number of PRoW extending to the north of the River Went. These routes connect with the local road network and include part of National Cycle Route 62 to the north of Topham.

3.9.9 To the east of the Solar PV Site, there are PRoW extending between West Lane and the New Junction Canal. To the south of the Solar PV Site, there are several PRoW extending towards Moss. To the west of the Solar PV Site, there are several PRoW within Fenwick and extending adjacent to the East Coast Main Line. There are no PRoW across the western part of the Solar PV Site, between Fenwick Lane and the River Went (old course).

3.9.10 The northern part of the Solar PV Site therefore reflects no public access to most of the land to the south of the River Went. The southern part of the Solar PV Site reflects the higher degree of public access between Fenwick

and Moss with the PRoW within the Solar PV Site forming part of these routes.

3.9.11 There are a number of PRoW to the east of the Grid Connection Corridor, extending between the villages and adjacent to field drains. These routes include parts of the Trans Pennine Trail between Braithwaite and Kirkhouse Green and the Thorne Round Walk to the south of Kirk Bramwith.

3.9.12 In contrast, there are a small number of PRoW across the southern part of the Grid Connection Corridor. PRoW mainly extend between Fordstead Lane, Almholme and the East Coast Main Line railway.

3.9.13 There are a number of PRoW to the west of the Grid Connection Corridor, extending across between Trumfleet, Thorpe in Balne and the East Coast Main Line.

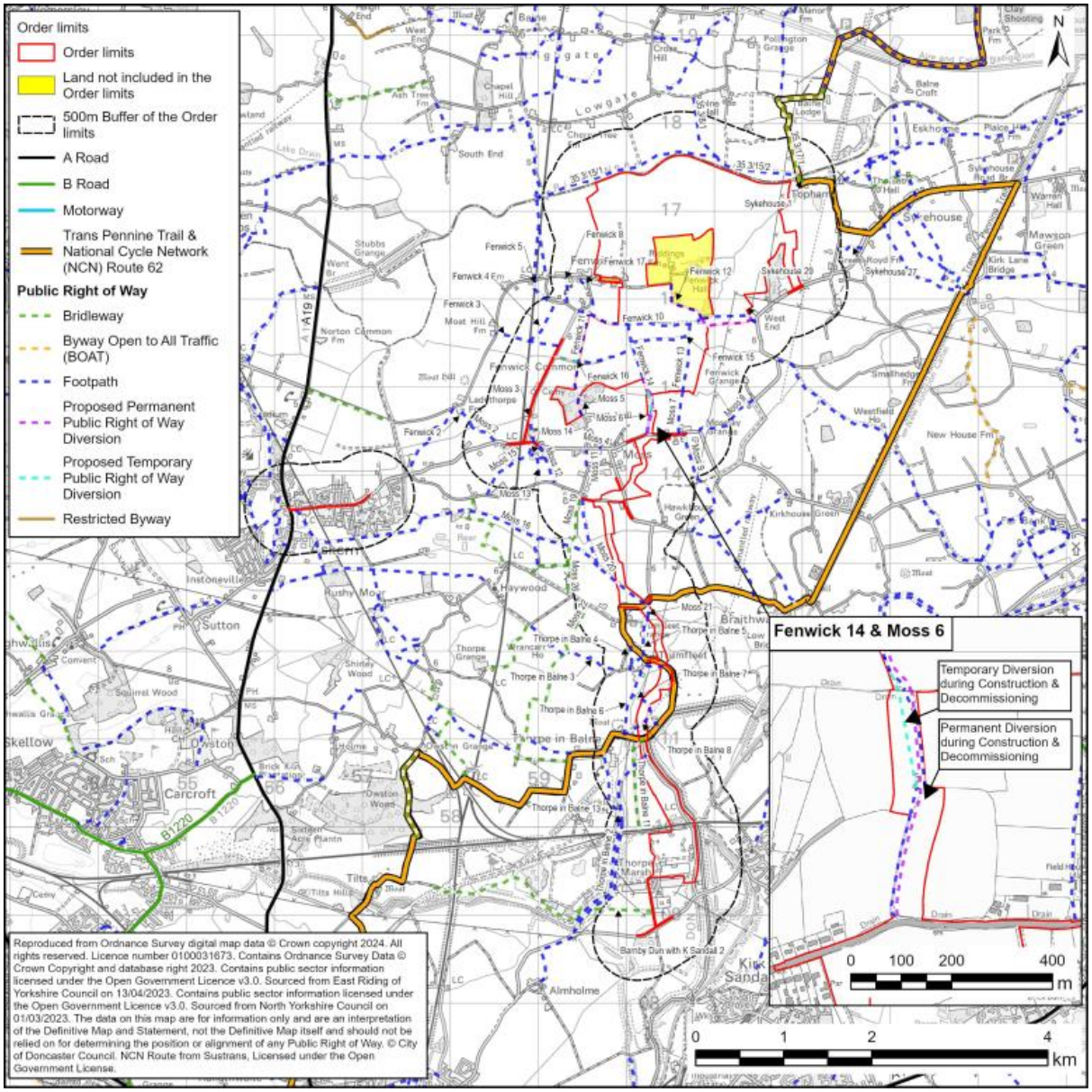


Figure 3-18: PRoW within and surrounding the Order limits

Key design considerations

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

b. 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 Principles

3.10.1 Table 2 below sets out the key design considerations from the review of the baseline context and the resulting design principles

Table 2: Development of Design Principles

Key design consideration	Design principle(s)
Network Connection, Irradiance and Topography	
To maximise energy generation, where practicable, the siting of solar PV on flat land should avoid close proximity to woodland blocks and other features which cause shade. 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.	**Principle 1:** The Scheme will efficiently generate a large amount of renewable energy for supply to the National Electricity Transmission System, maximising use of the available grid connection capacity, and contribute towards the UK meeting its net zero targets. **Principle 2:** The Scheme will minimise embodied carbon by selecting low-carbon materials where practicable, utilising efficient designs and implementing sustainable practices throughout construction, operation and maintenance and decommissioning. **Principle 3:** The Scheme will be designed to ensure that it is resilient to future climate change. **Principle 7:** The Scheme will acknowledge the ever-changing and progressing state of technology and strive to use current and advanced options to optimise efficiency.
Landscape Character, Green Infrastructure and Visual Receptors	

Key design consideration	Design principle(s)
Integrate the Scheme into the existing landscape pattern as far as practicable by retaining and following existing features, including vegetation.	**Principle 11:** The Scheme will be sensitively integrated into its landscape setting, respecting the distinctive and unique character of settlements adjacent to the Site and the surrounding countryside and exploring reasonable opportunities to mitigate visual impacts. **Principle 6:** The Scheme will be designed to maintain existing levels of public right of way connectivity through and across the Site and enhance routes within the Order limits, where practicable.
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.	
PRoW 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.	
Given the rural nature of the Site, there is a limited natural surveillance. Therefore, security measures that are sensitive to this context should be used where practicable.	
Land Use	
The siting of infrastructure to avoid permanent losses of BMV land.	**Principle 8:** The Scheme will seek opportunities for local communities and businesses to benefit economically through promoting employment opportunities locally and opportunities for local business to tender to supply services in delivery of the Scheme. **Principle 9:** The Scheme will seek to establish spaces that can serve for energy generation, biodiversity improvement, water and flood control, and green infrastructure.
Opportunity to reuse existing buildings and structures within the Solar PV Site.	
Integration of the design with existing utility infrastructure and layout considerations for minimising the effect of shading from vegetation and other structures	
As the area is dominated by agricultural use consider the grazing of sheep as a method of grassland management.	

Key design consideration	Design principle(s)
The proximity of recreational uses when considering the layout of the solar PV arrays to reduce views and visual impacts and visually screen the Solar PV Site.	**Principle 6:** The Scheme will be designed to maintain existing levels of public right of way connectivity through and across the Site and enhance routes within the Order limits, where practicable. **Principle 11:** The Scheme will be sensitively integrated into its landscape setting, respecting the distinctive and unique character of settlements adjacent to the site and the surrounding countryside and exploring reasonable opportunities to mitigate visual impacts.
As the area is dominated by agricultural use consider the grazing of sheep as a method of grassland management.	
Ecology	
Opportunity to enhance the quality and range of habitats within the Order limits and achieve a net gain in biodiversity.	**Principle 2:** The Scheme will minimise embodied carbon by selecting low-carbon materials where practicable, utilising efficient designs and implementing sustainable practices throughout construction, operation and maintenance and decommissioning. **Principle 9:** The Scheme will seek to establish spaces that can serve for energy generation, biodiversity improvement, water and flood control, and green infrastructure.
Opportunity to create new habitats and adopt planting strategies including hedgerows to improve the connectivity between existing and new habitats.	
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 and close to the Solar PV Site through avoidance and if this is not practicable, reduce impacts through mitigation.	**Principle 6:** The Scheme will be designed to maintain existing levels of public right of way connectivity through and across the Site and enhance routes within the Order limits, where practicable.

Key design consideration	Design principle(s)
The design should be sensitive to preserving the setting of, and key relationships, between heritage assets identified in the surrounding area.	**Principle 11:** The Scheme will be sensitively integrated into its landscape setting, respecting the distinctive and unique character of settlements adjacent to the site and the surrounding countryside and exploring reasonable opportunities to mitigate visual impacts. **Principle 12:** The Scheme will be designed sensitively with regards to cultural heritage assets and their settings.
Flood Risk and Hydrology	
The interaction of the Scheme with the large number of drainage ditches and small watercourses across the area.	**Principle 10**: The Scheme will be designed to safeguard the water environment and be resilient from flooding both now and in the future
Avoiding the location of above ground vulnerable infrastructure in areas at high risk of flooding where practicable.	
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.	**Principle 4:** The Scheme will demonstrate considerate neighbourly conduct during the construction, operational and decommissioning phases of the Scheme. **Principle 5:** Embrace open and transparent interactions with nearby communities, stakeholders, and residents, leveraging their local insights to mitigate and enhance the Scheme. **Principle 6:** The Scheme will be designed to maintain existing levels of public right of way connectivity through and across the
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.	

Key design consideration	Design principle(s)
	Site and enhance routes within the Order limits, where practicable. **Principle 11:** The Scheme will be sensitively integrated into its landscape setting, respecting the distinctive and unique character of settlements adjacent to the Site and the surrounding countryside and exploring reasonable opportunities to mitigate visual impacts.

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 **ES Volume I Chapter 3: Alternatives and Design Evolution [EN010152/APP/6.1].**

4.2 The Design Process

4.2.1 The Schemes 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 Paragraph 2.1.8 of NPS EN-3 (Ref. 3) confirms that through the design process:

"Applicants must show how any likely significant negative effects would be avoided, reduced, mitigated or compensated for, following the mitigation hierarchy. Early application of the mitigation hierarchy is strongly encouraged, as is engagement with key stakeholders including SNCBs, both before and at the formal pre-application stage."

4.2.3 The above approach has naturally fed into design considerations and the evolution of the Scheme. This process has been in line with paragraph 2.5.2 of NPS EN-3 (Ref. 3) which states:

"Proposals for renewable energy infrastructure should demonstrate good design, particularly in respect of landscape and visual amenity, opportunities for co-existence/co-location with other marine and terrestrial uses, and in the design of the project to mitigate impacts such as noise and effects on ecology and heritage."

4.2.4 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 (Ref. 1) and Ministry of Housing, Communities and Local Government (MHCLG) guidance (Ref. 17). The Applicant has also built relationships with key stakeholders to better understand their views and incorporate design changes where practicable. These stakeholders have included planning, highway, heritage, landscape, ecology and PRoW officers at City of Doncaster Council; the Environment Agency; Historic England; Natural England, South Yorkshire Fire and rescue Service, the relevant Internal Drainage Boards, elected councillors, the MP Parish Councils and the Local Community.

4.2.5 The team has developed design principles (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.

4.2.6 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 NPS EN-1 (Ref. 2). 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 and Non-Statutory Consultation Layout (Spring and Summer 2023).

b. Statutory Consultation Layout (Autumn 2023 to Spring 2024)

c. Order limits and Application Layout (Spring and Summer 2024)

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.

4.4 EIA Scoping

4.4.1 The Applicant submitted the **EIA Scoping Report** (**ES Volume III Appendix 1-1: EIA Scoping Report [EN010152/6.3])** to the Planning Inspectorate on 1 June 2023 setting out the initial details of the Scheme and the proposed scope of the surveys and assessments to be undertaken during the EIA process.

4.4.2 The Applicant initially identified a Grid Connection Corridor Search Area of approximately 2,010 ha and up to approximately 3 km wide, broadly between the railway line to the west and the River Don and the Village of Braithwaite to the east (see **ES Volume II Figure 3-7: EIA Scoping and Non-Statutory Consultation Boundary [EN010152/APP/6.2]** (represented as Figure 4-1 of this DAS). This layout was presented at both the EIA scoping and non-statutory consultation stages.

4.4.3 The EIA Scoping Layout was produced with limited data from desk based and preliminary environmental surveys. It comprised the initial boundary of land assembled by the Applicant for the Solar PV Site taking into account land availability, known planning and environmental constraints and other factors discussed in Section 3 of this DAS.

4.4.4 No detailed layout for the Scheme was presented at this stage. The Order Limits had not been confirmed, therefore the type of Solar PV Mounting Structure (panel orientation, fixed or tracker type) and the arrangement of BESS and supporting infrastructure such as inverters, transformers and switchgear (decentralised or centralised options) was also unconfirmed.

4.4.5 The EIA scoping process provided the Applicant with the opportunity to consult with Statutory Environmental Bodies such as Natural England, Environment Agency and Historic England. The process also enabled the early consultation with other key stakeholders including City of Doncaster

Council, National Highways, Yorkshire and Humber Drainage Boards, Yorkshire Water, South Yorkshire Police and South Yorkshire Archaeology Service.

4.5 Non- Statutory Consultation

4.5.1 The Applicant understood the importance of stakeholder engagement in the early development of the Scheme design. Early consultation is a useful mechanism to understand the objectives and requirements of key stakeholders, and to build trust and a productive relationship through an open, transparent and collaborative approach.

4.5.2 Non-statutory consultation launched on 27 June 2023 and closed on 24 July 2023. During this time, the Applicant held two online and two in-person events, which enabled stakeholders to learn more about the Scheme proposals and put their questions to project team members with all technical disciplines in attendance to provide information. Further to the verbal feedback received at the events, the Applicant encouraged those in attendance to submit written responses to the consultation through a range of available online channels.

4.5.3 The non-statutory public consultation provided the Applicant with an opportunity to gain a better understanding of the views, understanding and expectations of local stakeholders, including local communities, landowners, businesses, local authorities, and other political stakeholders at a local level.

4.5.4 The feedback gained from the non-statutory consultation prompted some important design considerations and alterations to the Scheme. Some of these considerations and actions include (but are not limited to) the following:

a. Additional land to the southwest and southeast of the EIA Scoping Layout was incorporated into the Solar PV Site following non-statutory consultation and discussions with landowners in the vicinity of the Solar PV Site;

b. Appropriate buffers from properties will be incorporated and new native tree and vegetation planting would be used to screen potential views of the Scheme;

c. Construction traffic would not pass through the village of Fenwick; and

d. The Applicant committed to minimising any disruption to footpaths as far as possible. The Applicant has taken steps to ensure access to existing Public Rights of Way will be maintained.

4.5.5 Chapter 2 of the **Consultation Report [EN010152/APP/5.1]** describes the feedback received at the co-design workshops in further detail, including what issues were raised, and changes made to the Scheme as a result.

4.5.6 Following the EIA Scoping and non-statutory consultation stages, 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.

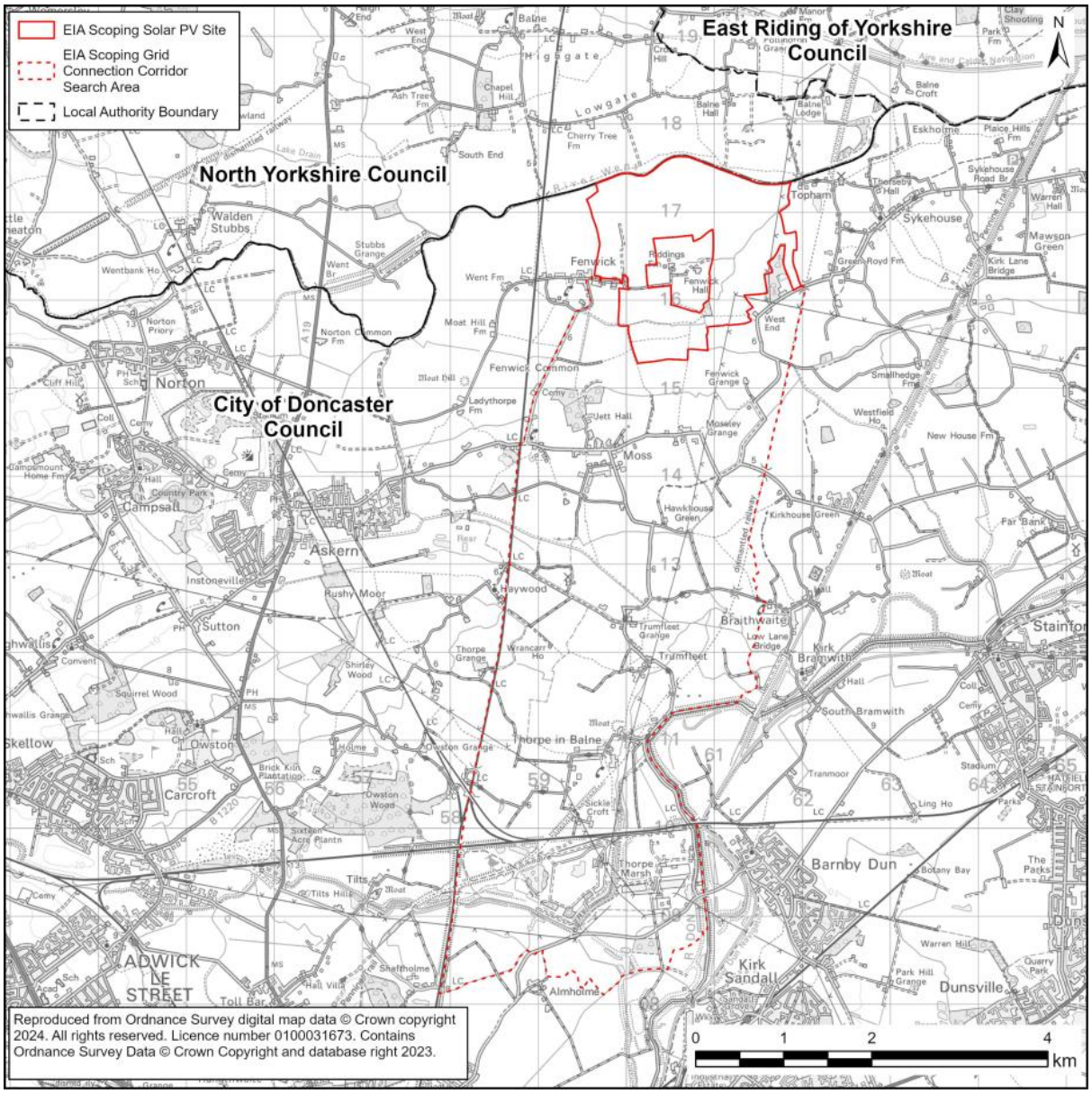


Figure 4-1. EIA Scoping and Non-Statutory Consultation Layout

Statutory Consultation Layout

4.5.7 The purpose of the statutory consultation was to provide information to the local community, affected stakeholders and anyone with an interest in the Scheme and seek views on the updated proposals following the design evolution resulting from the EIA Scoping and Non-Statutory consultation phases.

4.5.8 An updated indicative masterplan which was developed and consulted upon at the statutory consultation phase (see **ES Volume II Figure 3-8: EIA Scoping and Non-Statutory Consultation Boundary [EN010152/APP/6.2]** (represented as Figure 4-2 in this DAS). The area was significantly refined from that presented at EIA Scoping and Non-Statutory Consultation (Figure 4-1).

4.5.9 The Statutory Consultation phase gave those interested in the Scheme an opportunity to comment on the proposals, whilst proving an opportunity for

consultees to share their feedback on the changes made to the Scheme since non-statutory consultation. The changes presented at Statutory Consultation were as follows:

a. additional land incorporated into the proposed Solar PV Site in order to provide additional flexibility and to accommodate additional areas for environmental mitigation;

b. The Grid Connection Corridor was refined to an approximately 100 m wide corridor for statutory consultation (see **ES Volume II 3-6: Site Boundary for Statutory Consultation [EN010152/APP/6.2])** based on desk-based environmental information, engineering and construction requirements, and land constraints. The Grid Connection Corridor was designed to take a direct route whilst following existing linear features and avoiding sensitive receptors as far as practicable, such as habitat designations, residential and commercial properties, heritage assets and a large number of land interests;

c. confirmation that the scheme will use fixed south facing solar PV panels; and

d. refinement of the proposals for BESS so that they would be located in a single area within the Solar PV Site and at least 500 m from any residential property.

4.5.10 The statutory consultation for the Scheme ran for a period of six weeks in Spring 2024, from 18 April to 31 May 2024. This provided a period in excess of the statutory minimum of 28 days to provide consultees with sufficient time to understand and respond to the proposals.

4.5.11 The **Consultation Report [EN010152/APP/5.1**] describes the full statutory consultation process in greater detail. This provides further details on the stakeholder feedback received and how this has impacted on the design of the Scheme.

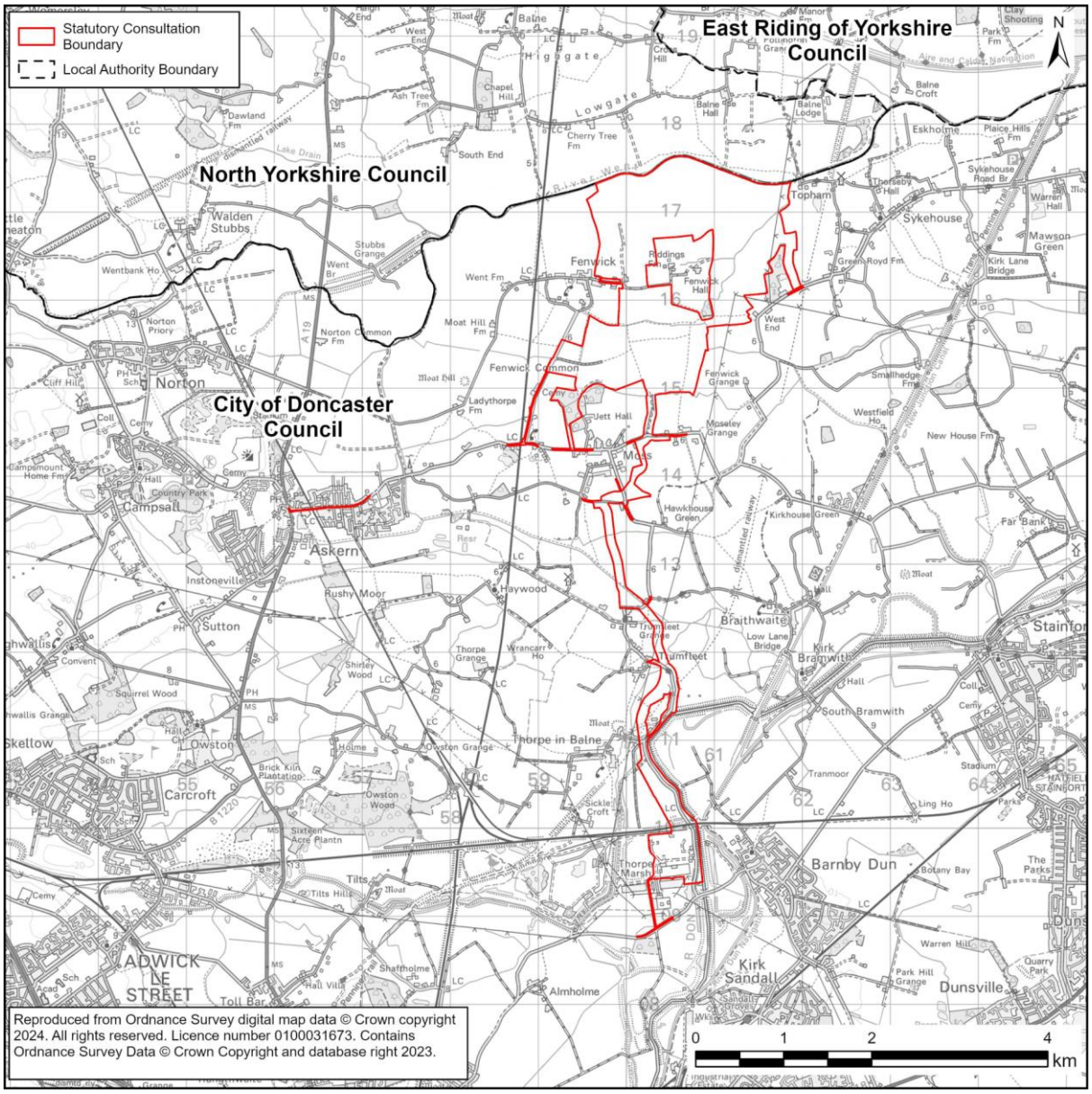


Figure 4-2: Indicative masterplan at Statutory Consultation stage

Order limits and Application Layout

4.5.12 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 [EN010152/APP/5.1]** and the **Consultation Report Appendices [EN010152/APP/5.2]**.

4.5.13 A number of specific design change requests were made as part of feedback to the statutory consultation. Some of these considerations include (but are not limited to) the following:

a. The Applicant has undertaken further survey work on affected watercourses to understand the appropriate crossing technique;

b. The Applicant has sought to reduce impacts on the junction near the level crossing by adopting a one-way route on Fenwick Common Lane, meaning construction vehicles will not use the junction of Fenwick Common Lane and Moss Lane to leave the site;

c. HGVs will not use Trumfleet Lane, but it will be required for smaller vehicles (tractor and trailer). This use will be temporary, during construction only;

d. Scrub and tree planting along the northern boundary of the Solar PV Site has been moved to the top of the bank, adjacent to the fence line boundary;

e. A 10-metre riparian buffer has been committed to; and

f. A proposed section of fencing has been moved in Field SE3.

4.5.14 The Scheme has undergone these various stages of design evolution which has resulted in changes to its layout and the extent of the land required for the Scheme referred to as the Order limits.

5. The Design Response

5.1 Introduction

5.1.1 The Applicant has developed the Scheme in response 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 principles. Good design will be secured by delivering the Scheme in a way that meets these design principles.

5.1.2 This section of the DAS details the Applicant's design principles that were developed to help guide the design of the Scheme. It also sets out how the Scheme's has responded to these principles with its final operational design. The Scheme's response includes design parameters which define the design for the Scheme by setting out commitments. These parameters are set out in the **Outline Design Parameters Statement [EN010152/APP/7.4]**.

5.2 Principles and the Design Response

Principle 1: The Scheme will efficiently generate a large amount of renewable energy for supply to the National Electricity Transmission System, maximising use of the available grid connection capacity, and contribute towards the UK meeting its net zero targets

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 over a 40-year lifetime, which would support the Government's carbon reduction and climate targets and deliver a significant CNP infrastructure asset.

5.2.2 To meet **Principle 1**, the Scheme design:

a. has a direct connection into NETS at the Existing National Grid Thorpe Marsh Substation, with no further offsite infrastructure required;

b. incorporates south facing fixed solar PV panels in rows. This orientation ensures that the panels will absorb the maximum amount of sunlight as the sun moves from east to west during the course of the day. The panels are tilted to an angle between 10 and 30 degrees from horizontal to maximise the potential energy generation;

c. over its 40-year design life the Scheme is expected to generate enough electricity to power approximately 120,000 homes per annum; and

d. involves BESS infrastructure located within field SW10 as shown on **ES Volume II Figure 2-3 Indicative Site Layout Plan** (Sheet 5 of 11). The BESS will have the ability to store PV generation from the Scheme and/or import energy from the NETS at times of excess generation, discharging the stored energy at times of peak demand and assisting in balancing the UK electricity grid.

Principle 2: The Scheme will minimise embodied carbon by selecting low-carbon materials where practicable, utilising efficient designs and implementing sustainable practices throughout construction, operation and maintenance and decommissioning.

Design Response

5.2.3 Mitigation measures in relation to achieving low carbon emission and sustainable practices have been embedded within the design and material choices.

5.2.4 To meet **Principle 2**, the following good practice GHG mitigation measures will be included within the Scheme design:

a. Use of motion detection security lighting and thermal /IR CCTV system to avoid permanent lighting and reduce energy demand of the Scheme;

b. Establish, monitor, and manage landscape and ecology mitigation and enhancement (BNG) design measures, secured through the **Framework Landscape and Ecological Management Plan (LEMP) [EN010152/APP/7.14];**

c. Regular maintenance of the Scheme will be conducted to optimise the efficiency of the Scheme infrastructure;

d. Operating the Scheme in such a way as to minimise the creation of waste and where practicable maximise the use of alternative materials with lower embodied carbon, such as locally sourced products and materials with higher recycled content;

e. Switching off vehicles and plant when not in use and ensuring vehicles conform to current EU emissions standards.

f. Adopting the Considerate Constructors Scheme (CCS) to assist in reducing pollution, including GHGs, from the Scheme by employing good industry practice measures which go beyond statutory compliance;

g. Encouraging all construction staff to use lower carbon modes of transport by identifying and communicating local bus and rail connections and pedestrian and cycle access routes to/from the Scheme and providing appropriate facilities for the safe storage of cycles;

h. Liaising with personnel on the potential to implement staff minibuses and car sharing options;

i. Increasing recyclability by segregating construction waste to be reused and recycled where reasonably practicable; and

j. Designing and constructing the Scheme in such a way as to minimise the creation of waste.

Principle 3: The Scheme is designed to be resilient to future climate change.

Design Response

5.2.5 A number of risks to climate change have been identified in **ES Volume I: Chapter 6: Climate Change [EN010152/APP/6.1].**

5.2.6 Mitigation measures have been incorporated into the early design stages of the Scheme and have been further developed at the ES stage. To meet **Principle 3**, mitigation measures embedded within the Scheme include:

a. Flood risk considerations and mitigation measures are outlined in the Flood Risk Assessment (**ES Volume III Appendix 9-3: Flood Risk Assessment [EN010152/APP/6.3]**) and discussed further under Design Principle 10. These design measures have been informed by hydraulic modelling undertaken which has included climate change scenarios. .

b. The implementation of the drainage strategy (**ES Volume III Appendix 9-4: Framework Drainage Strategy [EN010152/APP/6.3]**), including attenuation of surface water runoff using sustainable drainage systems (SuDS) to minimise flood risk at and from the components of the Scheme;

c. Adaptation measures to reduce the effect of projected temperature increases on electrical equipment over the course of the Scheme's design life. The solar PV inverters will have a cooling system installed to control the temperature and allow the inverters to operate efficiently in warmer conditions. The PV modules and transformers have a wide range of acceptable operation temperatures, and it has been determined that increasing temperatures will not adversely affect their operation

d. Measures specified in the **Framework CEMP [EN010152/APP/7.7]**, including but not limited to:

   i. Conducting regular planned maintenance of the plant and machinery to operate efficiently;

   ii. Storing topsoil and other construction materials outside of the 1 in 100-year floodplain extent, as far as reasonably practicable;

   iii. Named person(s) – likely Safety, Health and Environment Manager/ Clerk of Works – to monitor weather forecasts and receive Environment Agency flood alerts to allow works to be planned and carried out accordingly to manage extreme weather conditions such as storms and flooding; and

   iv. Health and safety plans developed for construction activities will be required to account for potential climate change impacts on workers, such as flooding and heatwaves. To include measures such as toolbox talks on training on dangers of extreme weather conditions.

Principle 4: The Scheme will consider neighbourly conduct during the construction, operational and decommissioning phases of the Scheme.

Design Response

5.2.7 The Applicant will ensure neighbourly conduct throughout construction, operation and decommissioning of the Scheme.

5.2.8 Methods to ensure there is minimal, noise, odour, vibration and pollution are set out in the **Framework CEMP [EN010152/APP/7.7]**, whilst methods to minimise these impacts are described in the **Framework DEMP [EN010152/APP/7.9]**.

5.2.9 To meet **Principle 4**, the Scheme has embedded the following construction mitigation measures:

a. Ensuring all appropriate processes, procedures and measures are in place to minimise noise before works begin and throughout the construction programme;

b. All contractors to be made familiar with current legislation and the guidance in British Standard 5228 which should form a prerequisite of their appointment;

c. Ensuring that, where reasonably practicable, noise and vibration are controlled at source (e.g. the selection of inherently quiet plant and low vibration equipment), review of the construction programme and methodology to consider quieter methods, consideration of the location of equipment on-site and control of working hours;

d. Use of modern plant, complying with applicable UK noise emission requirements;

e. Hydraulic techniques for breaking concrete or rocks to be used in preference to percussive techniques, where reasonably practicable (explosives will not be used for breaking of concrete or rocks);

f. When piling, use of lower noise piling where reasonably practicable;

g. Off-site pre-fabrication where reasonably practicable;

h. Regular and effective maintenance by trained personnel to be undertaken to keep plant and equipment working to manufacturer’s specifications;

i. All construction plant and equipment to be properly maintained, silenced where appropriate, operated to prevent excessive noise and switched off when not in use;

j. Loading and unloading of vehicles, dismantling of site equipment or moving equipment or materials around the Order limits to be conducted in such a manner as to minimise noise generation, as far as reasonably practicable;

k. All vehicles used on-site shall incorporate broadband reversing warning devices as opposed to the typical tonal reversing alarms to minimise noise disturbance where reasonably practicable;

l. Provision of information to the relevant local authority and local residents to advise of potential noisy works that are due to take place;

m. Unnecessary revving of engines will be avoided, and equipment to be switched off when not in use;

n. Drop heights of materials to be minimised;

o. Plant and vehicles to be sequentially started up rather than all together;

p. Plant to always be used in accordance with manufacturers' instructions. Care to be taken to site equipment away from noise-sensitive areas. Where practicable, loading and unloading would also be carried out away from such areas;

q. Noise generating activities near residential properties, such as use of power tools, will be limited to the hours between 08:00 and 18:00 from Monday to Friday and between 08:00 and 13:00 on Saturday; and

r. Core working hours on-site would run from 07:00 – 19:00 Monday to Friday and 07:00 to 13:00 on Saturday, daylight hours permitting.

Principle 5: The Scheme will embrace open and transparent interactions with nearby communities, stakeholders, and residents, leveraging their local insights to mitigate and enhance the Scheme.

Design Response

5.2.10 Openness and transparency with local communities, stakeholders, and residents has been a core value of the Applicant. The input from each of these groups has been integral to the Scheme to avoid so far as possible any adverse impact to residents, businesses and communities. The Applicant has welcomed local insights to mitigate potential adverse impacts and to enhance the quality of the Scheme.

5.2.11 As set out in the **Consultation Report [EN010152/APP/5.1]**, the Scheme has embraced a collaborative relationship with nearby communities, stakeholders, and residents throughout.

5.2.12 The Applicant has carried out statutory consultation in accordance with the Planning Act 2008 (Ref. 1) which is summarised in **ES Volume I Chapter 4: Consultation [EN010152/APP/6.1]** and described in detail in the **Consultation Report [EN010152/APP/5.1]** submitted as part of the DCO Application.

5.2.13 Through engagement with local communities, stakeholders, and residents, the Applicant has been able to make amendments to the design to enhance the Scheme and mitigate adverse impacts, including:

a. additional land incorporated into the south west of the proposed Solar PV Site;

b. refinement of the Grid Connection Corridor to a much narrower route;

c. confirmation that the scheme will use fixed south facing solar PV panels;

d. removal of passing bays along Fenwick Common Lane (owing to its proposed restriction to construction workforce vehicles);

e. removal of the access to the west of the village of Moss; and

f. refinement of the proposals for BESS so that they would be located in a single area within the Solar PV Site and at least 500 m from any residential property.

5.2.14 Should the Scheme be approved, the following measures are proposed to maintain an open and transparent relationship with nearby communities, stakeholders, and residents throughout and following construction through:

a. Development and implementation of a stakeholder communications plan before work commences within the Order limits.

b. Establishment of a Community Liaison Group (as per Requirement 3 in Schedule 2 of the **Draft DCO [EN010152/APP/5.1]** for construction), with a Community Liaison Officer (or alternative role) to lead discussions with local communities during construction and decommissioning.

c. Displaying of the name and contact details of person(s) accountable for site activities. This may be the environment manager/engineer or the site manager.

d. Displaying the head or regional office contact information.

e. Making the complaints log available to the local authority (City of Doncaster Council) when asked.

Principle 6: The Scheme will maintain existing levels of public right of way connectivity through and across the Site and enhance routes within the Order limits, where practicable

Design Response

5.2.15 To meet **Principle 6**, the Scheme is proposing the following design measures:

a. Maintaining access to/along PRoW during all phases of the Scheme, including any minimum legal widths for PRoW users;

b. Providing sufficient protection / separation between existing PRoW and the Scheme infrastructure (solar PV panels, BESS Area and the On-Site Substation). The design of the Solar PV Site proposes that, perimeter fencing will be installed at a minimum distance of 20 m on either side of the centre of the PRoW where solar infrastructure lies to both sides or 15 m if solar infrastructure is to one side of a PRoW only. These PRoW buffers will be planted and would provide a greater margin than is provided at existing field margins adjacent to PRoW;

c. Diverting PRoW Sykehouse 29, Moss 6 and Fenwick 14. The Applicant has ensured that the diversions are localised with minimal changes in journey lengths (ranging from a reduction in length of 30 m to an

increase in length of 40 m). This has been discussed and agreed with City of Doncaster PRoW officers.

d. During construction and decommissioning providing temporary PRoW diversion routes to avoid any PRoW closures. Each diversion will be clearly marked out, along with appropriate signage at either end of the diversion. The diversion routes will be agreed with the relevant local authority prior to the commencement of construction;

e. Managing areas where internal construction traffic routes cross any existing PRoW (where these are unable to be diverted), by maximising visibility between construction vehicles and other users (i.e., pedestrians, cyclists, equestrians), implementing traffic management (e.g., advanced signage to advise other users of the works), as well as manned controls at each crossing point (i.e., marshals or banksmen), with a default priority that construction traffic will give-way to other users;

f. Although it is considered unlikely that construction staff will access the Scheme on foot or bike, all pedestrian, cycle and equestrian routes will be maintained and remain unobstructed when in use, to ensure the continued safe passage of the public including when using the PRoW through the Site and at crossing points.

5.2.16 A **PRoW Management Plan [EN010152/APP/7.13]** accompanies the DCO Application. This management plan outlines how PRoW will be managed by the Applicant during all phases of the Scheme ensuring user safety and accessibility.

Principle 7: The Scheme will acknowledge the ever-changing and progressing state of technology and strive to use current and advanced options to optimise efficiency.

Design Response

5.2.17 It is necessary that there will be some flexibility built into the design of the Scheme so that the detailed design of the Scheme can be informed by technical considerations and post-consent work and take advantage of innovation in technology.

5.2.18 To meet **Principle 7,** the Scheme adopts the following approach:

a. Retention of 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. This is also the case for BESS. The final technology installed will be required to remain within the parameters defined by the **Works Plan [EN010152/APP/2.2]** and the **Outline Design Parameters Statement [EN010152/APP/7.4];**

b. The Applicant is also committed to, where practicable, providing quieter plant than that has been considered at this stage as part the final design. Quieter plant for Field Stations, BESS and the On-Site Substation would be the most effective way of controlling noise emissions from the Scheme and the Applicant will therefore take

advantage of evolving technology to reduce operational noise emissions; and

c. Solar PV Panel cleaning technology is evolving. At this stage cleaning technology assumes a tractor mounted system (currently the system typically used on UK solar farms) would be used, however this may change if better and more efficient technology becomes available.

5.2.19 Section 5.3 of this DAS provides further details on the approach to flexibility in this DCO application.

Principle 8: The Scheme will seek opportunities for local communities and businesses to benefit economically through promoting employment opportunities locally and opportunities for local business to tender to supply services in delivery of the Scheme.

Design Response

5.2.20 The Scheme would be located on a number of agricultural land holdings.

5.2.21 Within the Solar PV Site, fields currently used to grow arable crops (with some grazing) would cease to be part of a working farm. However, the Applicant has reached voluntary land agreements with all landowners in the Solar PV Site reflecting their consent to this land use change. The Applicant has also confirmed that there are no tenant farmers within the Solar PV Site, though it is likely that some contractors will be brought in for some farming activities.

5.2.22 The following measures are proposed to promote employment opportunities locally and to meet **Principle 8:**

a. The Scheme would support, on average, 225 total net jobs per annum during the construction phase. Of these, 102 jobs per annum would be expected to be taken up by residents within the local area;

b. further to on-site job creation, employment growth would arise locally through manufacturing services and suppliers to the construction process (indirect or supply linkage multipliers). The Applicant intends where practicable to utilise local services and will tender to supply services to businesses in the area. This is detailed in the **Framework Skills, Supply Chain and Employment Plan (SSCEP)** [**EN010152/APP/7.15]**; and

c. any direct impacts to land use and businesses have been and will continue to be managed and mitigated through engagement with stakeholders including landowners and owners of businesses.

Principle 9: The Scheme will seek to establish spaces that can serve for energy generation, biodiversity improvement, water and flood control, and green infrastructure.

Design Response

5.2.23 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 avoiding and minimising impacts through design mitigation measures and ecological enhancement.

5.2.24 Ecological enhancement measures have been developed as part of the Scheme design through its evolution. New habitat is proposed across the Solar PV Site seeking to deliver a minimum of 10% biodiversity net gain for habitat units as detailed in the **Biodiversity Net Gain Assessment Report [EN010152/APP/7.11]** and in line with the **Framework LEMP [EN010152/APP/7.14].** The **Biodiversity Net Gain Assessment Report [EN010152/APP/7.11]** does indicate that this target is likely to be significantly exceeded for all habitat types.

5.2.25 To meet **Principle 9**, the Scheme design:

a. avoids any direct and indirect impacts on nearby statutory ecological designated sites;

b. has been designed to avoid impacts on the LWS which is within the Solar PV Site, with the LWS retained within the northern part of the Solar PV Site;

c. has been designed to avoid direct or indirect impacts on other LWS, where practicable. Wrancarr Drain and Braithwaite Delves LWS, Trumfleet Pit LWS and Trumfleet Pond LWS will be crossed by the Grid Connection Cables however this will utilise trenchless methods;

d. avoids directly impacting Ancient Woodland. Through the design process, the Applicant incorporated an exclusion zone around Bunfold Shaw Ancient Woodland (approximately 10 m from the Solar PV Site) which enlarged the area that is excluded from the Solar PV Site;

e. ensures hedgerows are outside of the developable areas of the Scheme, with minimum 5 m undeveloped stand-off buffers which is increased to 15m or greater if required by root protection areas where hedgerow trees are present.

f. avoids developable areas within 15 m of all woodland;

g. ensures all trees within hedgerows, lines of trees and individual trees – will be protected by clearly defined root protection areas;

h. where practicable, the layout of the Scheme will use existing farm tracks and field openings as the preferred routes for construction access, minimising loss of hedgerows sections, where practicable. Therefore, the majority of this habitat will be retained;

i. incorporates minimum 10 m stand-off buffers from watercourses and ditches (10 m from the bank top) except where open cut trenching is

required as some watercourses and ditches will be crossed for cabling and access.

j. will retain veteran and ancient trees. The majority of trees are not classed as veteran or ancient, however any protected trees will be retained and buffered, and measures taken to avoid direct or indirect impacts.

k. retains and avoids the majority of habitats of value to breeding birds, bats, reptiles, terrestrial invertebrates and other mammals and amphibians including woodland, grassland margins, scrub, watercourse/ditch margins and hedgerows within the Solar PV Site;

l. will avoid badger setts within the Site. All setts within the Order limits will have an appropriate exclusion zone of 30 m around the sett to prevent disturbance and accidental damage where practicable;

m. provides local widening of the riparian corridor along the southern part of the River Went within the Solar PV Site through the creation of new areas of grassland on former agricultural land;

n. provides a new green corridor that follows the existing Fleet Drain through the northeast of the Solar PV Site;

o. provides native hedgerow planting with trees and hedgerow enhancement; native scrub; riparian edge trees and scrub; neutral grassland (moderate and good condition); modified grassland; wet grassland; and wetland scrapes across the Solar PV Site.

p. provides bat boxes upon retained trees, close to bat foraging habitats, such as tree lines, hedgerows, waterbodies and woodlands. These are to be located with the Ecology Mitigation Area; and

q. provides bird boxes on retained trees, where practicable 1.5m beneath the bat boxes with a clear flight path. A range of bird boxes are to be used to support a range of species. This also includes species-specific bird boxes. A minimum of five tree mounted or tower mounted barn owl boxes will be provided within the Solar PV Site.

Principle 10: The Scheme will seek to safeguard the water environment and be resilient from flooding both now and in the future.

Design Response

5.2.26 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 the design and mitigation measures, the Scheme will be resilient from flood risk both now and in the future and would not increase the flood risk elsewhere.

5.2.27 To meet **Principle 10**, the Scheme design has embedded the following mitigation:

a. a large proportion of the Solar PV Site is located within Flood Zone 1 (including the BESS and On-Site Substation) with a low probability of

flooding, with the remaining areas within Flood Zone 2, with some areas within Flood Zone 3.

b. where Solar PV Panels and associated On-Site Cables are located within Flood Zone 3, these will be raised to ensure a 300 mm freeboard above the design flood event (1% AEP plus 38% climate change) in that location. Where Solar PV Panels are located within the Credible Maximum Scenario flood extent, these would be raised 400 mm above the flood level associated with this event.

c. the design attenuates surface water to greenfield run-off rates, whilst accommodating allowances for climate change and minimising flood risk to the Site and surrounding areas (See **ES Volume III Appendix 9-4: Framework Drainage Strategy [EN010152/APP/6.3])**.

d. The BESS would be located within Flood Zone 1 and would be bunded to provide protection during the unlikely event of a breach of the flood defences. The height of this bund would be 300 mm above the maximum flood depths during the River Don breach scenario.

e. new impermeable areas associated with the BESS Area and On-Site Substation additional attenuation in the form of swales will be incorporated to control any increase in the rate of flow towards receiving watercourses, and to provide treatment for any contaminants collected on areas of hardstanding.

f. Solar PV panels will be offset from watercourses by 10m. This will ensure the protection of watercourses.

g. The **Framework CEMP [EN010152/APP/7.7]** provides greater detail regarding the mitigation to be implemented to protect the water environment from adverse effects during construction.

Principle 11: The Scheme will be sited sensitively in the landscape, respecting the distinctive and unique character of settlements adjacent to the Site and the surrounding countryside and exploring reasonable opportunities to mitigate visual impacts.

Design Response

5.2.28 To meet **Principle 11**, the overall objective of the landscape design is to sensitively integrate the Scheme into the landscape, avoiding or minimising adverse landscape and visual impacts as far as practicable. It 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. In doing so, the following mitigation has been embedded into the design of the Scheme:

a. All Solar PV Panels have been sited within the existing field pattern, protecting existing vegetation, and maximising the natural screening provided by field boundary vegetation.

b. Larger infrastructure, such as the On-Site Substation and BESS Area, have been located away from residential receptors, which are identified

as being amongst the most sensitive receptors, to minimise potential visual effects.

c. The Solar PV Site mostly avoids land abutting settlement boundaries, such as fields immediately adjacent to Fenwick. Where this has not been possible, offsets (measuring a minimum of 50 m) and new planting has been incorporated to retain a sense of openness whilst screening the Solar PV Panels.

d. The Solar PV Site mostly avoids land adjacent to the local road network to minimise the visual impact on people travelling. Where this has not been possible, bespoke offsets and mitigation planting to provide screening has been incorporated.

e. The siting of Solar PV Panels and associated infrastructure seeks to minimise instances of development on both sides of PRoW. Where development is proposed on one side of a PRoW, an offset of 15 m from the centre line has been incorporated. Where development is proposed on both sides of a PRoW, a minimum offset of 20 m either side of the centre line has been integrated (creating a 40 m wide corridor between the fence lines), as well as areas of wider offsets to vary the extent of views experienced across the Solar PV Site where practicable. There would be a further 5 m from the perimeter fence to the Solar PV Panels. Where practicable new planting or the gapping up of existing planting is proposed to reduce instances where Solar PV Panels would be on both sides of PRoW.

f. Conserving existing vegetation patterns.

   i. Offsets from trees and woodlands have been incorporated to ensure the health and longevity of vegetation, retaining the existing structure of the landscape. This includes minimum offsets of:

      - 15 m from individual trees (or greater if required by the root protection area);
      - 15 m from woodland;
      - 5 m from hedgerows; and
      - 10 m from watercourses.

   ii. The design uses existing tracks, lanes and access points across the Solar PV Site, wherever practicable, in order to minimise the disturbance of existing vegetation.

   iii. Important hedgerows, as identified under Schedule 1 of the Hedgerow Regulations 1997, will be retained.

g. Creating new green infrastructure;

   i. A substantial offset has been integrated along the eastern side of Fleet Drain, forming a green corridor to retain and enhance the green infrastructure network across the Solar PV Site.

   ii. The introduction of neutral and modified grassland beneath the Solar PV Panels, and across the extent of the wider Solar PV Site, will enhance biodiversity compared to the current agricultural landscape.

iii. A substantial offset has been integrated along the southern side of the River Went, protecting the character of the river corridor through retaining a sense of openness. Mitigation planting would be located along the northern boundary of the Solar PV Panels, allowing for an open mosaic of habitats to be retained along the river corridor, in keeping with local character and enhancing the green infrastructure network.

iv. Hedgerows would generally be improved through 'gapping up' where they are currently fragmented, improving landscape structure and ecological connectivity.

h. Sensitive design in relation to form and materials;

i. Fencing around the Solar PV Site would be timber posts with stock proof mesh-type fencing, measuring up to 2.2 m high, allowing visual permeability and thereby minimising its visual impact.

i. Sensitive design of lighting (as outlined in the **Framework CEMP [EN010152/APP/7.7]**); and

j. The re-use existing buildings where practical. This includes the re-use of an existing agricultural building (shown on Figure 3-13 of this DAS) for storage purposes. In addition, the siting of the Operations and Maintenance Hub next to the existing agricultural building and the requirement that its external finish match the prevailing environment (as required by the **Outline Design Parameters Statement [EN010152/APP/7.4]),** will ensure that the Operations and Maintenance Hub appropriately responds to its local context.

Principle 12: The Scheme will be developed sensitively with regard to cultural heritage assets and their settings.

5.2.29 The Scheme design has been carefully considered to avoid, reduce or mitigate likely significant effects on cultural heritage assets:

a. Avoidance - where practicable, cultural heritage assets have been avoided in order to reduce or remove potential impacts upon them, via Heritage Buffer Areas. These avoidance measures have been implemented in a staged, iterative manner as the potential impacts of the Scheme are understood.

b. Reduction – areas of soft landscaping/screening around parts of the perimeter of the Scheme have been built into the design of the Solar PV Site. The aim is to screen the panel arrays and associated infrastructure from view and thus reduce impact upon the settings of heritage assets. This landscaping has been carefully considered to integrate itself into the existing landscape and largely comprises the enhancement of existing hedgerows/boundaries.

c. Investigation – a programme of archaeological evaluation surveys of the Solar PV Site has been undertaken. This has identified areas of archaeological interest that have been set out as Heritage Buffer Areas within the Scheme design to enable preservation in-situ of these remains.

5.2.30 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.

5.2.31 To meet **Principle 12,** specific embedded mitigation measures that have already been identified within the Scheme design. These include:

a. The exclusion from development of a number of fields immediately surrounding the listed buildings at Fenwick Hall Farm [1314800] and Lily Hall (at Riddings Farm) [1151609] and the Scheduled Monument Fenwick Hall moated site [1012459], so as to preserve the open, pasture fields in their immediate surrounds;

b. Heritage Buffer Area in the field adjacent to the Scheduled Monument Fenwick Hall moated site [1012459]. This Heritage Buffer Area incorporates a 20 m setting buffer as agreed with Historic England, and has been extended to the full extents of the field to incorporate archaeological remains that may be associated with the moated site

c. Enhancement of existing hedgerows along Lawn Lane to reduce visual intrusion and change to the setting of the non-designated Haggs Farm and Croft Farm and to protect the character of the approach to the designated assets at Fenwick Hall and Riddings Farm;

d. Replanting/enhancement of existing hedgerows/boundaries that are remnants of the medieval/post-medieval historic landscape in order to maintain the historic connectivity with associated heritage assets such as Fenwick Hall moated site;

e. Retention and enhancement of hedgerows identified as ‘important’ hedgerows;

f. Enhancement of existing hedgerows in proximity to designated heritage assets in order to screen views of the Scheme and reduce potential impacts to their setting, including along the western-most extent of the Solar PV Site;

g. Inclusion of Heritage Buffer Areas for areas of archaeological interest identified from the archaeological evaluation surveys, of potentially high sensitivity to impacts. These areas include archaeological remains that may be associated with the Scheduled Monument Fenwick Hall moated site in Field SE1; possible Iron Age/Romano-British settlement corridor that extends along the northern extent of the Fleet Drain through Fields NE11, NE12, NE10, NE8, and SE1; and a possible Romano-British settlement site located within Field NE11; and

h. potential use of concrete feet as a mitigation strategy to enable preservation in-situ of archaeological remains

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 and BESS 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 deliver critical national priority infrastructure by make an important contribution to achieving the Government's 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 [EN010152/APP/6.1/6.2/6.3/6.4]** has been undertaken on the basis of the works proposed in the **Works Plan [EN010152/APP/2.2]**, the maximum area of land anticipated to be required, and the parameters set out in the **Outline Design Parameters Statement [EN010152/APP/7.4]**. 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. 2) 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 principles 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 Parameters Statement [EN010152/APP/7.4]**. 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 [EN010152/APP/3.1]** proposes requirement 4 to manage the detailed design process. This requirement would ensure that the detailed design of the Scheme conforms to the **Outline Design Parameters Statement [EN010152/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 design principles and parameters identified. These include the:

a. **Works Plan [EN010152/APP/2.23]** which sets out the location of PV arrays and associated infrastructure including the On-Site Substation ecology mitigation areas and access.

b. **Framework Landscape and Ecological Management Plan (LEMP) [EN010152/APP/7.14]** sets out the framework for delivering the landscape strategy and ecological mitigation and enhancement for the Scheme.

c. **ES Volume I Appendix 9-4: Framework Drainage Strategy [EN010152/APP/6.3]** which sets out the proposed measures to be implemented for drainage design.

d. **Framework PRoW Management Plan [EN010152/APP/7.13]** outlines how PRoW be managed by the Applicant for the Scheme.

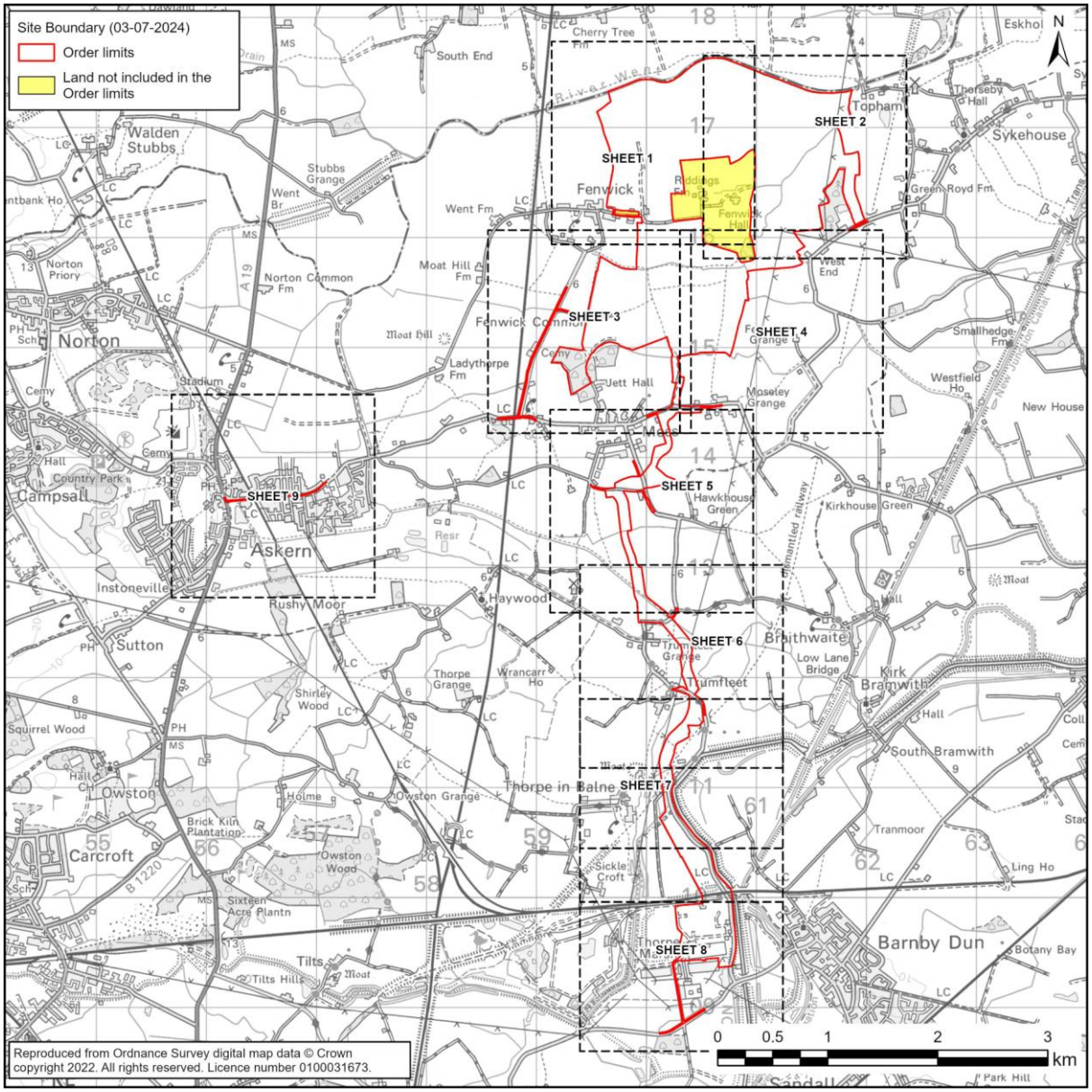
e. **Framework Operational Environmental Management Plan [EN010152/APP/7.8]** which sets out the control measures for the operational including maintenance activities of the Scheme.

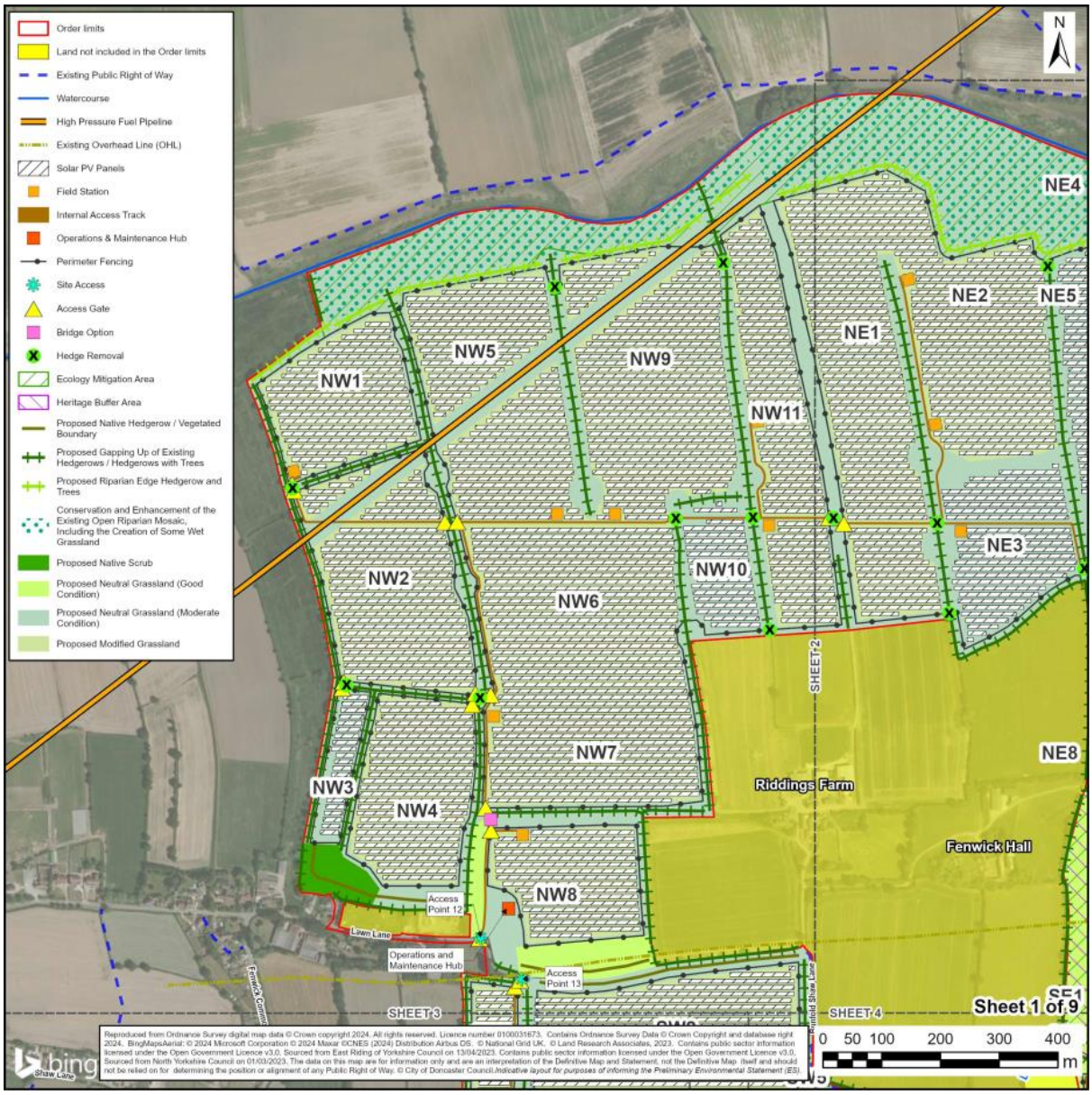
f. **Framework Battery Safety Management Plan [EN010152/APP/7.16] which explains**

5.4 Scheme Design Masterplan

5.4.1 The indicative site layout for the Solar PV Site illustrates how the Scheme could incorporate the features and approaches described in this DAS. These demonstrate how the design response incorporated into the indicative site layout and landscape masterplan could deliver and meet the design principles sought by the Scheme at its inception. These plans are provided at Figure 5-1.

Figure 5-1: Final Indicative Site Layout Plan

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Watercourse
High Pressure Fuel Pipeline
Existing Overhead Line (OHL)
Solar PV Panels
Field Station
Internal Access Track
Operations & Maintenance Hub
Perimeter Fencing
Site Access
Access Gate
Bridge Option
Hedge Removal
Ecology Mitigation Area
Heritage Buffer Area
Proposed Native Hedgerow / Vegetated Boundary
Proposed Gapping Up of Existing Hedgerows / Hedgerows with Trees
Proposed Riparian Edge Hedgerow and Trees
Conservation and Enhancement of the Existing Open Riparian Mosaic, Including the Creation of Some Wet Grassland
Proposed Native Scrub
Proposed Neutral Grassland (Good Condition)
Proposed Neutral Grassland (Moderate Condition)
Proposed Modified Grassland
N
NE4
NE2
NE5
NE1
NW5
NW9
NW1
NW11
NE3
NW10
NW2
NW6
SHEET 2
NW7
NE8
NW3
Riddings Farm
NW4
Fenwick Hall
NW8
Access Point 12
Lawn Lane
Operations and Maintenance Hub
Access Point 13
SHEET 3
SHEET 4
Sheet 1 of 9
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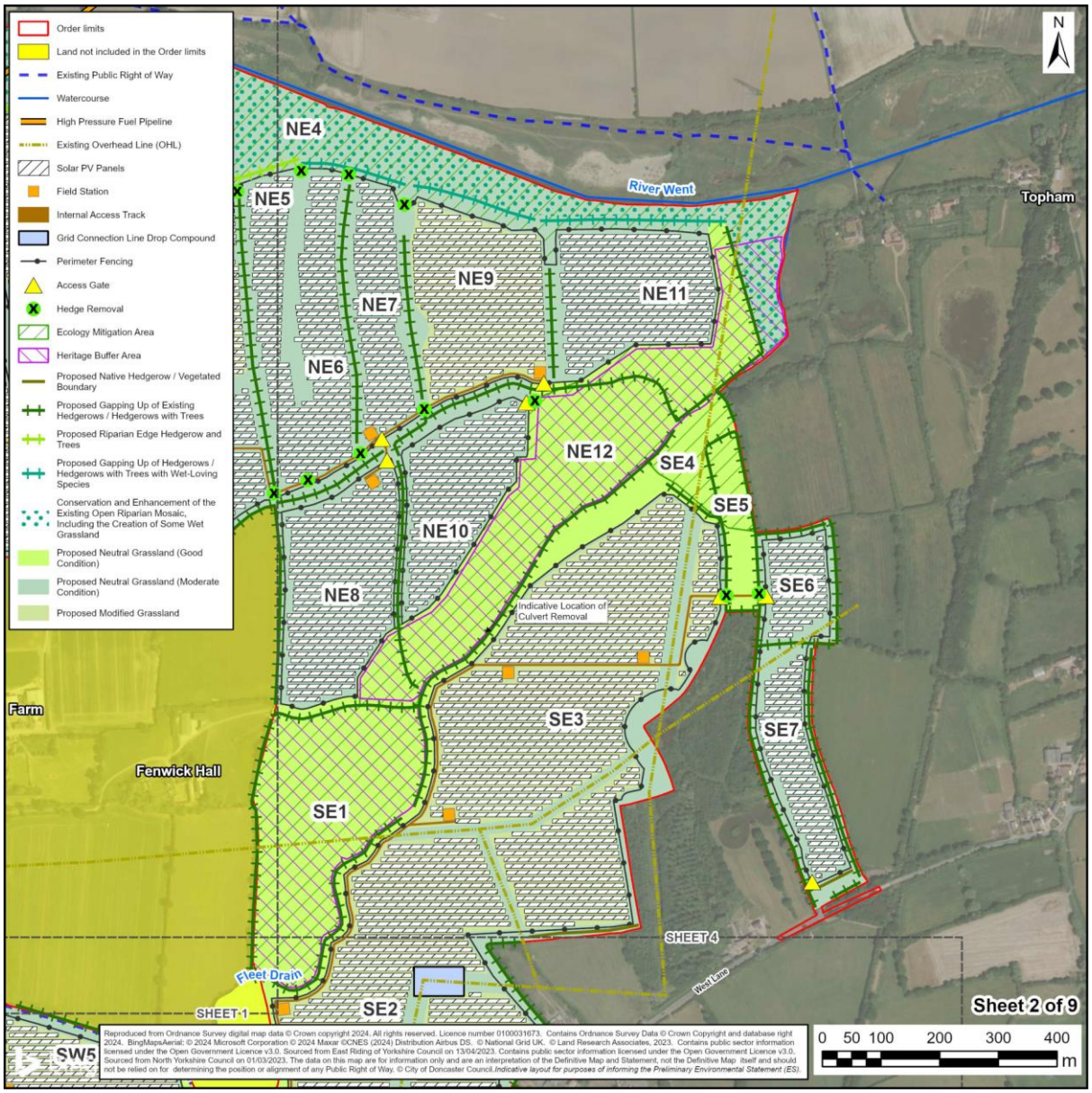
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Watercourse
High Pressure Fuel Pipeline
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Solar PV Panels
Field Station
Internal Access Track
Grid Connection Line Drop Compound
Perimeter Fencing
Access Gate
Hedge Removal
Ecology Mitigation Area
Heritage Buffer Area
Proposed Native Hedgerow / Vegetated Boundary
Proposed Gapping Up of Existing Hedgerows / Hedgerows with Trees
Proposed Riparian Edge Hedgerow and Trees
Proposed Gapping Up of Hedgerows / Hedgerows with Trees with Wet-Loving Species
Conservation and Enhancement of the Existing Open Riparian Mosaic, Including the Creation of Some Wet Grassland
Proposed Neutral Grassland (Good Condition)
Proposed Neutral Grassland (Moderate Condition)
Proposed Modified Grassland
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NE4
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NE11
NE12
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SE2
SE3
SE4
SE5
SE6
SE7
River Went
Topham
Fenwick Hall
Farm
Indicative Location of Culvert Removal
SHEET 1
SHEET 4
Fleet Drain
West Lane
SW5
Sheet 2 of 9
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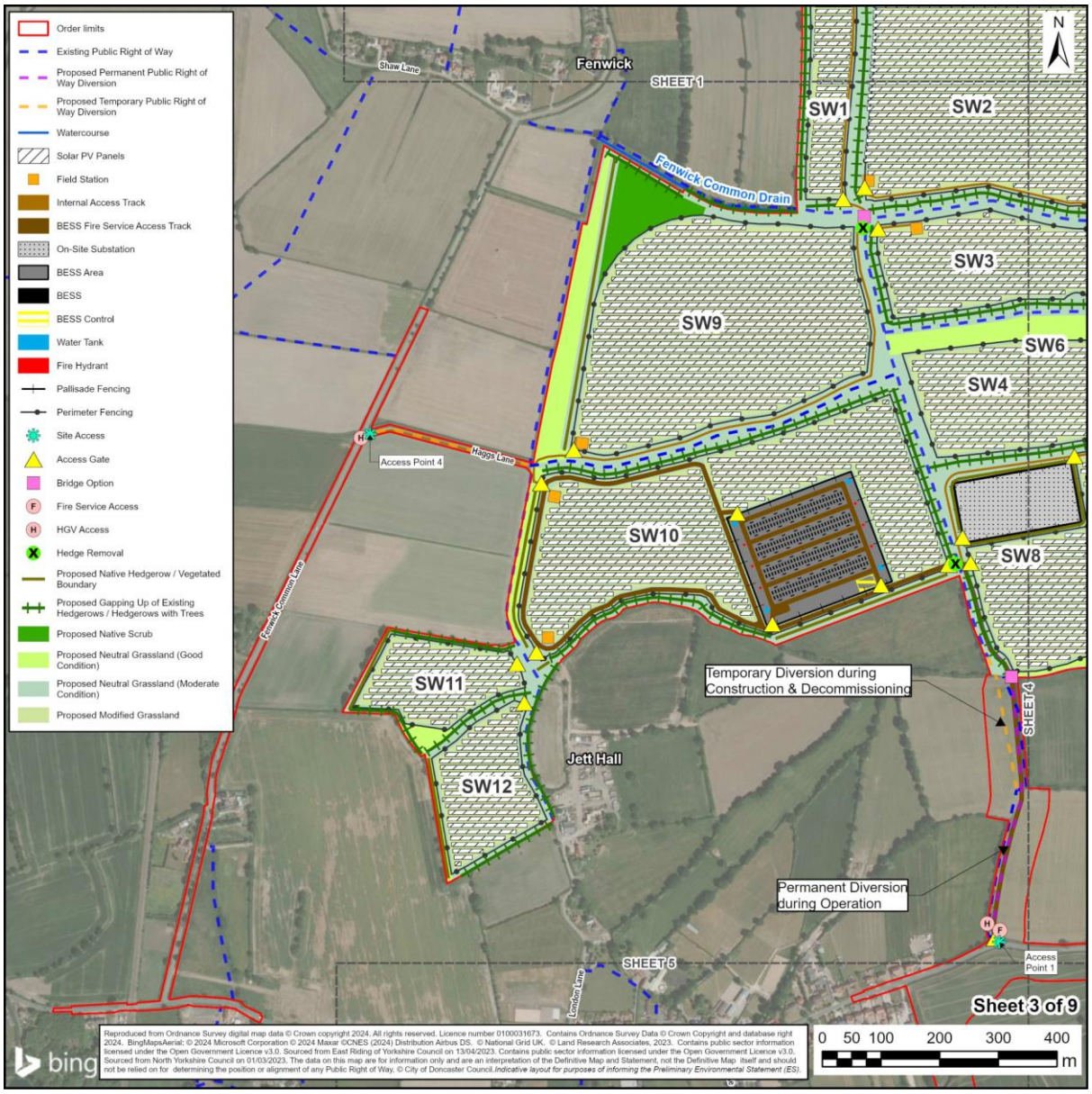
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Proposed Temporary Public Right of Way Diversion
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Solar PV Panels
Field Station
Internal Access Track
BESS Fire Service Access Track
On-Site Substation
BESS Area
BESS
BESS Control
Water Tank
Fire Hydrant
Pallisade Fencing
Perimeter Fencing
Site Access
Access Gate
Bridge Option
Fire Service Access
HGV Access
Hedge Removal
Proposed Native Hedgerow / Vegetated Boundary
Proposed Gapping Up of Existing Hedgerows / Hedgerows with Trees
Proposed Native Scrub
Proposed Neutral Grassland (Good Condition)
Proposed Neutral Grassland (Moderate Condition)
Proposed Modified Grassland
N
Shaw Lane
Fenwick
SHEET 1
SW1
SW2
Fenwick Common Drain
SW3
SW9
SW6
SW4
Access Point 4
Hagg Lane
SW10
SW8
Fenwick Common Lane
SW11
Temporary Diversion during Construction & Decommissioning
SHEET 4
Jett Hall
SW12
Permanent Diversion during Operation
Access Point 1
SHEET 5
London Lane
Sheet 3 of 9
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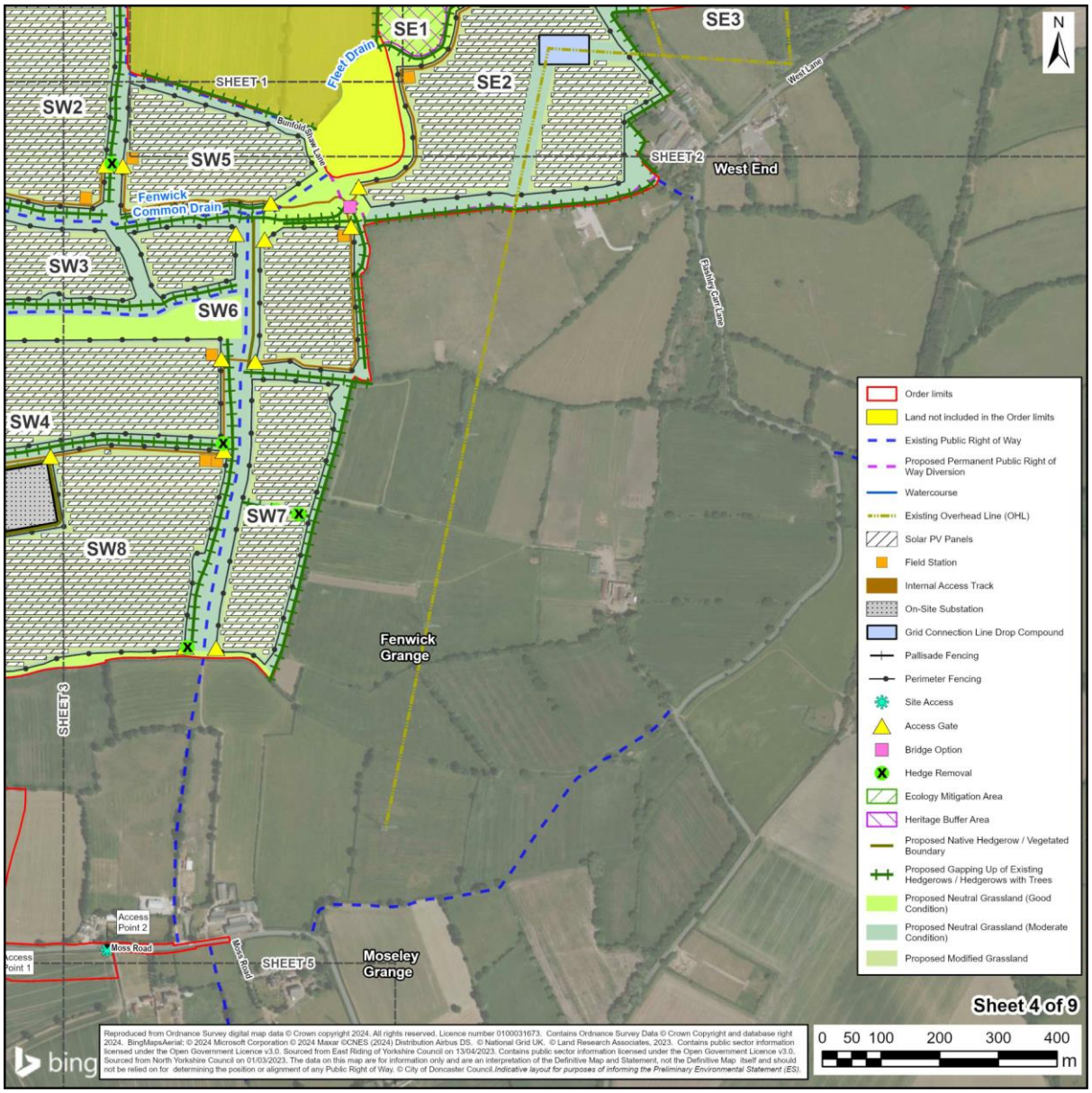
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SHEET 1
SHEET 2
SHEET 3
SHEET 5
Fleet Drain
Bunfold Drain Lane
Fenwick Common Drain
West Lane
West End
Flashy Carr Lane
Fenwick Grange
Moseley Grange
Access Point 2
Moss Road
Mire Road
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Order limits
Land not included in the Order limits
Existing Public Right of Way
Proposed Permanent Public Right of Way Diversion
Watercourse
Existing Overhead Line (OHL)
Solar PV Panels
Field Station
Internal Access Track
On-Site Substation
Grid Connection Line Drop Compound
Pallisade Fencing
Perimeter Fencing
Site Access
Access Gate
Bridge Option
Hedge Removal
Ecology Mitigation Area
Heritage Buffer Area
Proposed Native Hedgerow / Vegetated Boundary
Proposed Gapping Up of Existing Hedgerows / Hedgerows with Trees
Proposed Neutral Grassland (Good Condition)
Proposed Neutral Grassland (Moderate Condition)
Proposed Modified Grassland
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Order limits
Existing Public Right of Way
Site Access
Point 1
Moss
Moss Road
London Lane
SHEET 3
SHEET 4
Pollard Lane
Heyworth Lane
Access Point 3
Brick Kiln Lane
Access Point 5
Hawkhouse Green
Trumfleet Lane
SHEET 6
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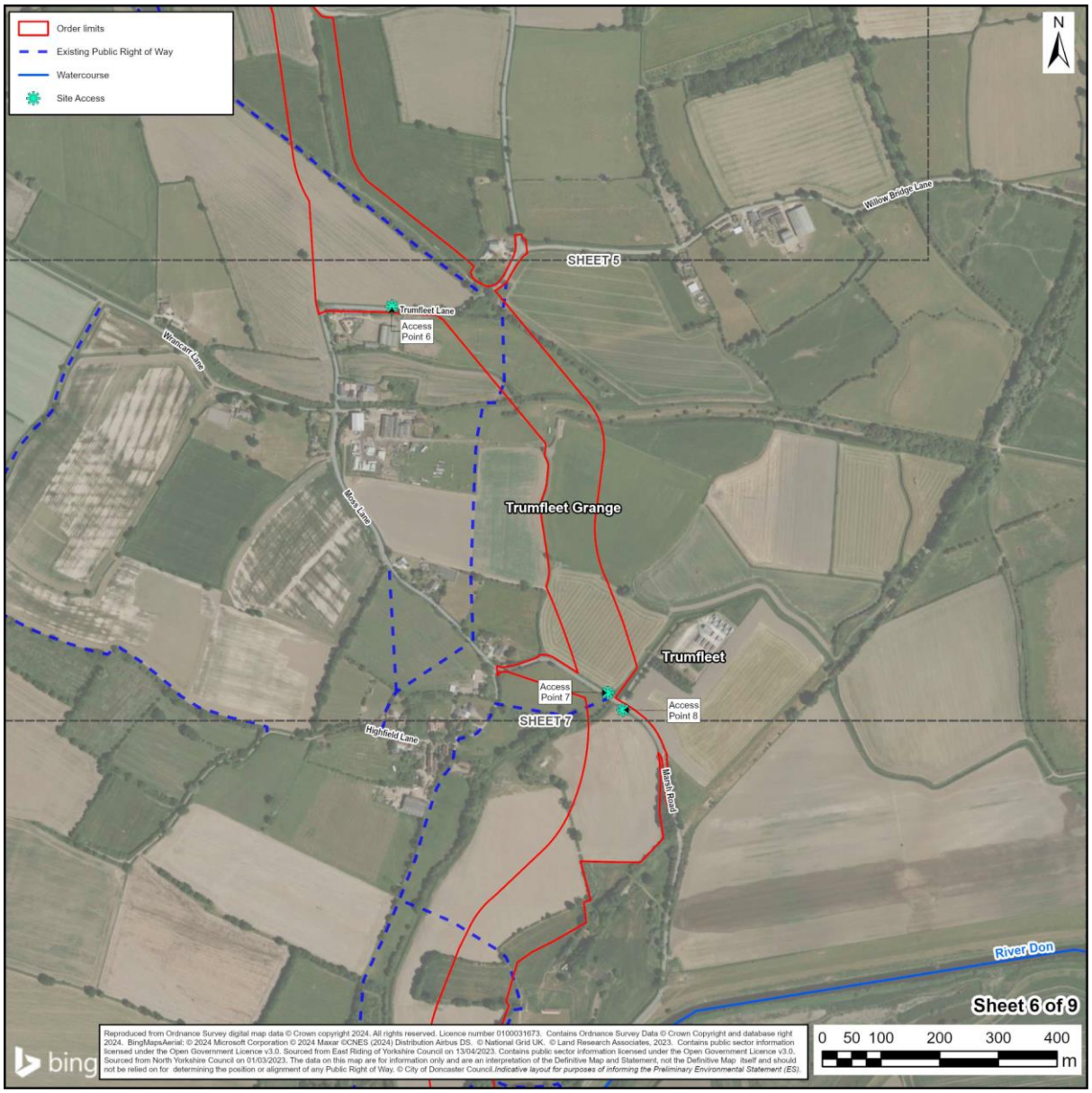
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Existing Public Right of Way
Watercourse
Site Access
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Willow Bridge Lane
SHEET 5
Trumfleet Lane
Access Point 6
Wrancarr Lane
Moss Lane
Trumfleet Grange
Trumfleet
Access Point 7
Access Point 8
SHEET 7
Highfield Lane
Marsh Road
River Don
Sheet 6 of 9
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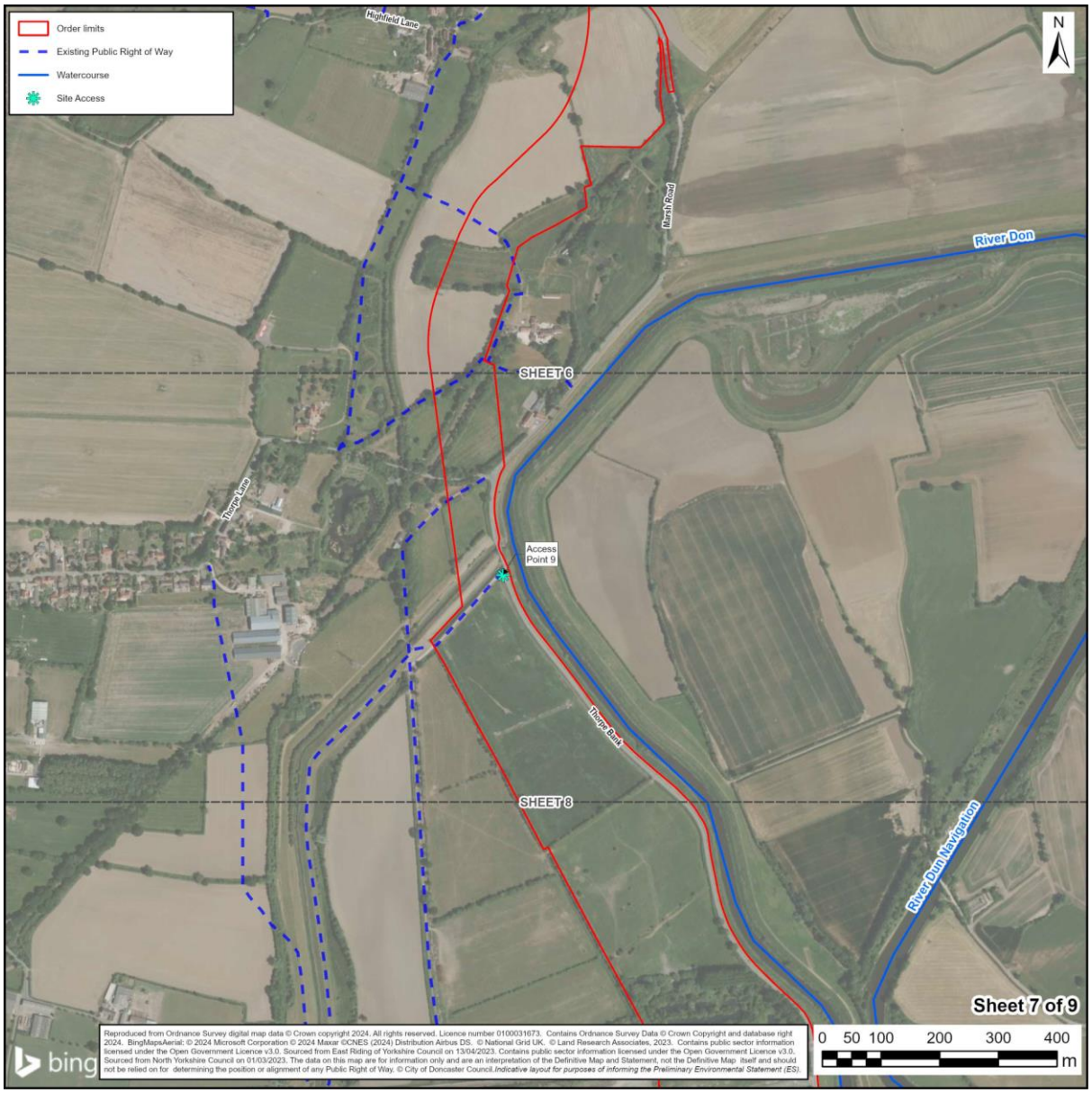
Order limits
Existing Public Right of Way
Watercourse
Site Access
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Highfield Lane
Marsh Road
River Don
SHEET 6
Thorpe Lane
Access Point 9
Thorpe Bank
SHEET 8
River Don Navigation
Sheet 7 of 9
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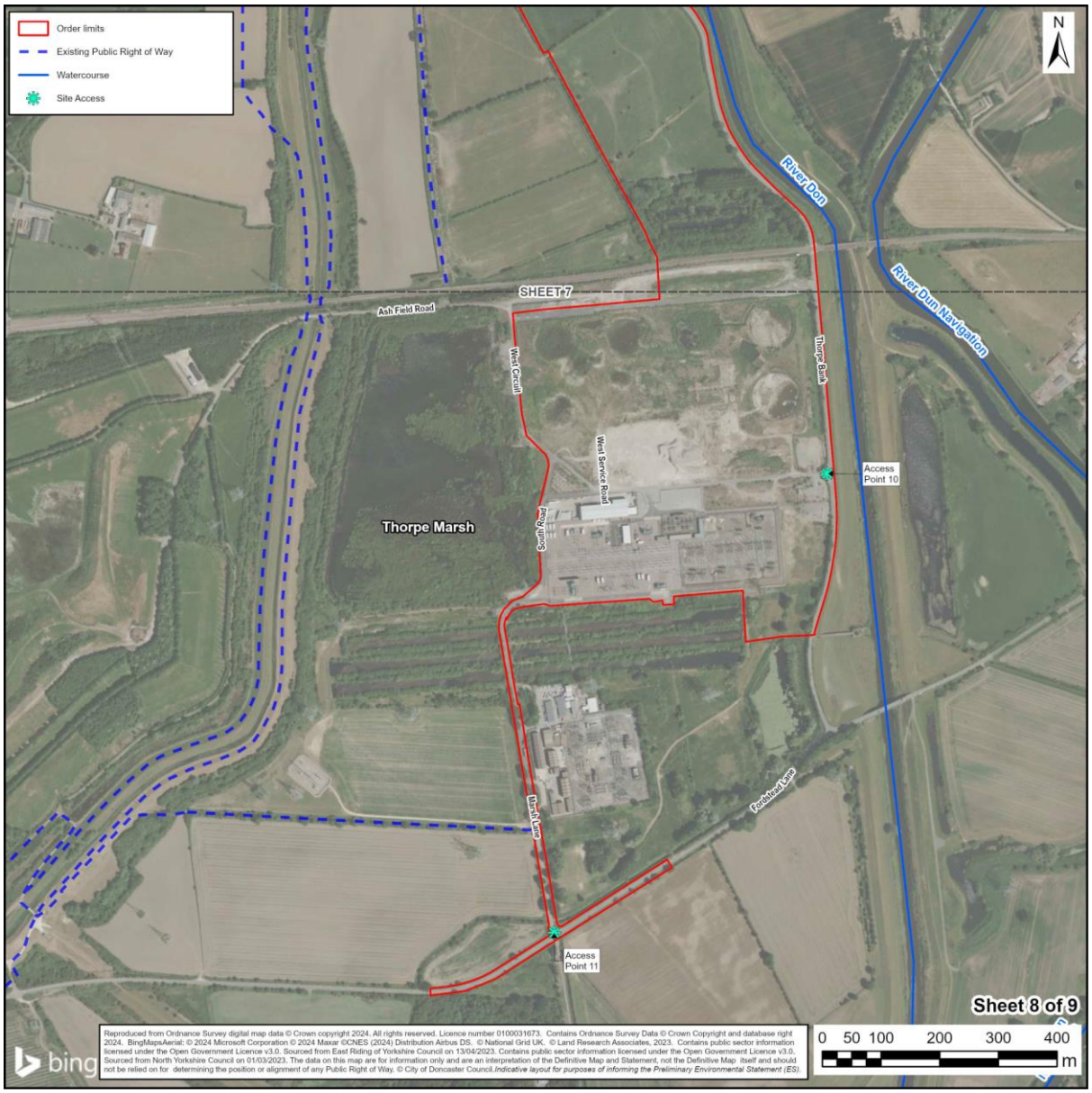
Order limits
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Watercourse
Site Access
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River Don
River Don Navigation
SHEET 7
Ash Field Road
West Circuit
Thorpe Bank
West Service Road
Access Point 10
Thorpe Marsh
Goole Moor Road
Marsh Lane
Fordstead Lane
Access Point 11
Sheet 8 of 9
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Order limits
Existing Public Right of Way
N
Swan Court
Station Road
Askern
Thompson Terrace
King's Road
Queen's Road
Moss Road
Newmarche Drive
Marlborough Road
Instoneville
Sheet 9 of 9
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7. Abbreviations

Abbreviation/Term	Definition
PA 2008	The Planning Act 2008
MW	Megawatts
kW	Kilovolts
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
NSIP	Nationally Significant Infrastructure Project
LCT	Landscape Character Type
LCA	Landscape Character Area
ALC	Agricultural Land Classification
SAC	Special Areas of Conservation
SPA	Special Protection Areas
SSSI	Site of Special Scientific Interest
NNR	National Nature Reserve
LNR	Local Nature Reserve
LWS	Local Wildlife Sites
SuDs	Sustainable Urban Drainage Systems
PRoW	Public Right of Way
BMV	Best and Most Versatile Land
Ha	Hectares
km	Kilometres
EIA	Environmental Impact Assessment
POC	Point of Connection

BESS	Battery Energy Storage System
CNP	Critical National Priority
AIL	Abnormal Indivisible Load
MVPS	Medium Voltage Power Station

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	Fenwick 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.

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.
Grid Connection Corridor	Corridor which represents the maximum extent of land within which the cable route would be located.
On-Site 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 Cabless which includes haul road, spoil storage, cable trench and temporary drainage during cable installation.
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.
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 Grid Connection Corridor and the Existing National Grid Thorpe Marsh Substation.
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 Site	The part of the Site which comprises of Solar PV panels. 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.
Thorpe Marsh Substation	The substation at the Existing National Grid Thorpe Marsh Station, northeast of Doncaster, South Yorkshire, owned and operated by National Grid and where the Grid Connection Cables will connect to.
Transformers	Transformers control the voltage of the electricity generated across the site before it reaches the electrical infrastructure.