Tillbridge Solar

Tillbridge Solar Project
EN010142

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Design and Access Statement
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ES2 The Scheme is made up of the Principal Site, the Cable Route Corridor and works to the existing National Grid Cottam Substation. The Principal Site comprises the solar PV arrays, electrical substations, grid balancing infrastructure, cabling and areas for landscaping and ecological enhancement.

ES3 The associated development element of the Scheme includes but is not limited to access provision; a Battery Energy Storage System (BESS), to support the operation of the ground mounted solar PV arrays; the development of on-site substations; underground cabling between the different areas of solar PV arrays; and areas of landscaping and biodiversity enhancement.

ES4 The Scheme also includes a 400kV underground Cable Route Corridor of approximately 18.5km in length connecting the Principal Site to the National Electricity Transmission Network System (NETS) at the existing National Grid Cottam Substation. The Scheme will export and import electricity to the NETS.

ES5 The application is time limited for 60 years. Design objectives for the Scheme have been developed to achieve a high-quality design that delivers urgent and critical national priority infrastructure, whilst being informed by local context and surroundings. The design process has been informed by both constraints and opportunities. This has included consideration of the availability of network connection, irradiance, topography, landscape character, residential amenity, impacts upon and connections to Public Rights of Ways, access, land use change and impacts (including agricultural land classification), biodiversity, consideration of flood risk and impacts upon built and archaeological cultural heritage.

ES6 This Design and Access Statement (DAS) describes the process that the Applicant's design team has taken to identify and respond to these constraints and opportunities and from this to set out ten design objectives for the Scheme to ensure good design. The DAS sets out national design policy and guidance and demonstrates how the Scheme will be in accordance with this. This is through setting out the context within which the Scheme is located and how the design has evolved in response to the design objectives of the Scheme. Due regard has been given to the feedback provided during statutory and ongoing consultation and engagement through the design process.

ES7 The indicative site layout plan for the Principal Site and the illustrative 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 and objectives 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 Tillbridge Solar Limited (hereafter referred to as 'the Applicant') is applying for a Development Consent Order (DCO) for Tillbridge Solar Project (hereafter referred to as 'the Scheme'). The application for the DCO (the 'Application') is submitted to the Planning Inspectorate, with the decision whether to grant a DCO being made by the Secretary of State for Energy Security and Net Zero (the 'Secretary of State') pursuant to the Planning Act 2008 (PA 2008) (Ref 1).

1.1.2 The Scheme will comprise the construction, operation (including maintenance), and decommissioning of ground-mounted solar photovoltaic (PV) arrays. The Scheme will also include associated development to support the solar PV arrays.

1.1.3 The Scheme is made up of the Principal Site, the Cable Route Corridor and works to the existing National Grid Cottam Substation. The Principal Site comprises the solar PV arrays, electrical substations, grid balancing infrastructure, cabling and areas for landscaping and ecological enhancement.

1.1.4 The associated development element of the Scheme includes but is not limited to access provision; a Battery Energy Storage System (BESS), to support the operation of the ground mounted solar PV arrays; the development of on-site substations; underground cabling between the different areas of solar PV arrays; and areas of landscaping and biodiversity enhancement.

1.1.5 The Scheme also includes a 400kV underground Cable Route Corridor of approximately 18.5km in length connecting the Principal Site to the National Electricity Transmission Network System (NETS) at the existing National Grid Cottam Substation. The Scheme will export and import electricity to the NETS.

1.1.6 The Order limits comprises approximately 1,670 hectares (ha) of land, with two distinct sections, which are:

a. 'the Principal Site,' which is the location where ground mounted solar photovoltaic (PV) panels, electrical substations, grid balancing infrastructure, cabling and areas for landscaping and ecological enhancement will be installed; and

b. 'the Cable Route Corridor,' which will comprise the underground electrical infrastructure required to connect the Principal Site to the national transmission system at the National Grid Cottam Substation.

1.1.7 The Principal Site measures approximately 1,350ha and the Cable Route Corridor measures approximately 320ha. **Plate 3-1**~~**Plate 3-1**~~ shows the full extent of land falling within the Order limits.

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1.1.8 The Scheme is located within the administrative boundaries of West Lindsey District Council, Lincolnshire County Council, Bassetlaw District Council and

Nottinghamshire County Council. The Principal Site is located solely within the administrative area of West Lindsey District Council within Lincolnshire. The Cable Route Corridor is split between all of the administrative areas described above.

1.2 Structure and purpose of this document

1.2.1 The principal focus of this Design and Access Statement (DAS) is to demonstrate how good design principles have been embedded within the Scheme through explaining how the design process has been carried out and to set out its design evolution from the early stages of the Scheme to submission. It explains how the design process has ensured that the Scheme has responded to its local context to avoid, reduce and mitigate against adverse impacts and to provide opportunities to enhance the Scheme and its interaction with local context.

1.2.2 A detailed description of the Scheme and its components in terms of its proposed use, scale, appearance, and materials can be found in **Chapter 3: Scheme Description** of the **Environmental Statement (ES) [EN010142/APP/6.1]** and is therefore not repeated in this DAS. The **Outline Design Principles Statement [EN010142/APP/7.4]** defines the design parameters that the detailed design will need to be substantially in accordance with and to be secured by a requirement forming part of the DCO.

1.2.3 The construction and decommissioning design of the Scheme and the design evolution associated with the Cable Route Corridor Order limit extents are not discussed in detail within this DAS. This is described in **Chapter 3: Scheme Description** of the ES **[EN010142/APP/6.1]** and **Chapter 4: Alternatives and Design Evolution** of the ES **[EN010142/APP/6.1]** and will be principally managed through the Construction Environmental Management Plan (CEMP) and Decommissioning Environmental Management Plan (DEMP) which will be secured through the requirements of the DCO (see Schedule 2 of the **draft DCO [EN010142/APP/3.1]**). A **Framework CEMP [EN010142/APP/7.7]** and a **Framework DEMP [EN010142/APP/7.9]** are submitted with the Application which will provide a framework for the CEMP and LEMP to adhere to. Draft requirements 12 and 20 of the **draft DCO [EN010142/APP/3.1]** seek to ensure that the CEMP and DEMP are substantially in accordance with the framework plans and the Scheme is implemented in accordance with the approved CEMP and DEMP.

1.2.4 This DAS is 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 Principal Site and Cable Route Corridor.

c. **Section 4: Design Process and Evolution** – describes the process of developing the design, its different stages of evolution; and the how the outline design will be secured.

d. **Section 5: The Design Response** – details how the design meets the Scheme's design objectives and how design commitments are to be secured; and presents an indicative scheme design masterplan.

e. **Appendix A: Figures** – provides the plates identified in this DAS in a larger format.~~, as well as the addition of **Figure 5-2 Indicative Scheme Design Masterplan**, referenced in section 5.4 of this DAS~~.

2. Good Design

2.1 Introduction

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

2.1.2 This section of the DAS also discusses the need for and approach to design flexibility in achieving good design.

2.2 Planning Policy Context

National Policy Statements

2.2.1 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 the Scheme being brought forward 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) also 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 NPS 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) sets 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 (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 7.7.10 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, that 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*". 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."*

2.2.10 Adapting to climate change is also identified by NPS EN-1 (Ref 2) at section 4.10 (Ref 2) as a key consideration of design. Specifically, paragraph 4.10.8 expects applicants to *"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".*

2.2.11 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 comprising a generating station exceeding 50MW. Paragraph 2.1.8 of NPS EN-3 (Ref 3) confirms that whilst solar is CNP infrastructure that:

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

2.2.12 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.* "

2.2.13 NPS 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
b. Network connection
c. Proximity to dwellings
d. Agricultural Land Classification
e. Accessibility
f. Public Rights of Way
g. Security and Lighting

2.2.14 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.

2.2.15 Further design considerations set out in paragraphs 2.10.49 to 2.10.72 of NPS EN-3 (Ref 3) relate to the need to maximise the power output of the site having regard to the type, spacing and aspect of panel arrays.

2.2.16 NPS EN-3 (Ref 3) at paragraphs 2.10.66 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."

2.2.17 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 and design guidance

2.2.18 The National Infrastructure Commission (NIC) design group published the Design Principles for National Infrastructure in 2020 (Ref 4). 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.

2.2.19 According to the NIC, *"design is about how something works and how it looks"* (Ref 4). 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.

2.2.20 The National Design Guide (Ref 5) 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.

j. Lifespan – made to last.

2.2.21 Other guidance relevant to the scheme also references good design when supporting the delivery of major infrastructure projects. The Landscape Institute's Technical Guidance Note 04/20 (Ref 6) provides multi-disciplinary guidance on the planning, design and management of infrastructure. It is *stated "Achieving good design 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 idea and perspectives."*

2.2.22 In terms of local planning policy, Policies S53 and 14 of the adopted Central Lincolnshire Local Plan 2023 (Ref 7) relate to design and amenity considerations with respect to renewable energy schemes. Policy S62 of the adopted Central Lincolnshire Local Plan 2023 (Ref 7) relates to Areas of Outstanding Natural Beauty and Areas of Great Landscape Value (AGLV). This states that:

"Where a proposal may result in adverse impacts, it may exceptionally be supported if the overriding benefits of the development demonstrably outweigh the harm – in such circumstances the harm should be minimised and mitigated through design and landscaping."

2.2.23 Policy DM4 of the adopted Bassetlaw District Core Strategy and Development Management Policies Development Plan Documents (Ref 8) sets out general design principles for major development. The review of the Bassetlaw Local Plan is at an advanced stage with main modifications published in August 2023 and adoption of the plan expected in the summer of 2024. Policy ST35 relates to design quality.

2.2.24 There are a number of adopted Neighbourhood Plans relating to settlements within the Order limits. Each of these include policies seeking to ensure that new development is of good design and includes:

a. Corringham Neighbourhood Plan (Ref 9) Policy CNP5: Local character and the design.

b. Sturton by Stow and Stow Neighbourhood Plan (Ref 10) Policy 5: Delivering Good Design.

c. Hemswell and Harpswell Neighbourhood Plan (Ref 11) Policy 6: Design Principles.

2.2.25 An Energy Efficiency Design Guide (Ref 12), forming a Supplementary Planning Document to the Central Lincolnshire Local Plan (2023) was published in April 2023. This provides guidelines on the implementation of Policy S6: Design Principles for Efficient Buildings forming part of the Central Lincolnshire Local Plan. This includes measures seeking the optimisation of local renewable energy generation and use. Section 4.2 sets out design challenges associated with the feasibility of renewable energy generation including:

a. Site layout and context; and

b. Grid export limitations.

3. Context and Analysis

3.1 Introduction

3.1.1 This section summarises the existing context and characteristics of the Principal Site and Cable Route Corridor and the surrounding areas. Given that the majority of the above ground infrastructure is within the Principal Site, most of the design considerations are based on this area. However, the Cable Route Corridor has also been designed in terms of extents to reflect and respond to its surroundings, therefore this is considered in broad terms within this DAS for completeness. This relates to the inter-relationship of the Scheme with other NSIP projects and how this has influenced design evolution.

3.1.2 This section sets out key design considerations that were identified to help guide the Scheme's design. These characteristics have informed the development of the design for the operational above ground components of the Scheme and the alignment and extent of the Order limits forming the Cable Route Corridor.

3.1.3 This process has included identification of opportunities and constraints at both the Principal Site and Cable Route Corridor in relation to landscape character, green infrastructure, ecology and biodiversity, hydrology, access and movement, and cultural heritage (built heritage and archaeology). This has been informed by extensive desk-based and field work surveys.

3.2 The Order limits

3.2.1 The Order limits, which are shown in **Plate 3-1**~~**Plate 3-1**~~, comprise approximately 1,670 ha of land. The Principal Site includes a contiguous site area of approximately 1,350 ha and the Cable Route Corridor extends to an area of 320 ha.

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3.2.2 The Order limits associated with the Principal Site is located in close proximity to the hamlets and villages of Hemswell and Hemswell Cliff. Hemswell is located approximately 500m to the north of the Order limits and Hemswell Cliff is located approximately 800m to the east of the Principal Site, at its closest point. Harpswell and Glentworth lie to the east of the Principal Site and Fillingham to the south-east. These villages are located off Middle Street (B1398) with Harpswell being situated to the north of Fillingham to the south along Middle Street. Corringham, Springthorpe and Heapham are located to the west of the Principal Site accessed off the A631. The A631 forms the northern boundary of the Principal Site. Springthorpe Road and Common Lane extend southwards from the A631 connecting Springthorpe with Heapham.

3.2.3 The Order limits associated with the Cable Route Corridor is located close to the settlements of Upton, Kexby, Willingham-by-Stow, Normanby-by-Stow, Stow, Marton and Cottam with the Order limits extending broadly in a south-west direction from the edge of the Principal Site to the point of connection at the National Grid Cottam Substation.

3.2.4 The nearest town to the Order limits is Gainsborough located approximately 4km to the west of the Principal Site. Lincoln lies to the south-east of the Order limits located approximately 10km from the National Grid Cottam Substation.

Plate 3-1 The Order limits

3.2.5 **Chapter 2: Site Location** of the **ES [EN010142/APP/6.1]** includes a detailed description of the location of the Principal Site and Cable Route Corridor, along with a description of the surrounding area.

3.2.6 The Order limits comprise the following elements as shown in **Plate 3-2~~Plate 3-2~~:**

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a. Principal Site – approximately 1,350ha of land, which will contain the ground mounted solar photovoltaic (PV) panels and associated infrastructure including invertors, switchgear, transformers and battery energy storage system (BESS), two on-site substations, biodiversity zones, landscape mitigation, sensitive archaeological sites, solar centre and storage area and other ancillary equipment;

b. Site Accesses – land required to facilitate access to the Principal Site and Cable Route Corridor including the alteration of the layout of existing roads, the improvement of existing accesses to include visibility splays and the provision of new accesses;

c. The Cable Route Corridor – this is the area in which the underground cables linking the on-site substations to the National Grid Cottam Substation will be installed. The Cable Route Corridor extends to

approximately 18.5km in length taken from the south-west of the southern extent of the Principal Site.

3.2.7 The elements of the Scheme relating to the Principal Site described above as shown in **Plate 3-2**~~**Plate 3-2**~~ below.

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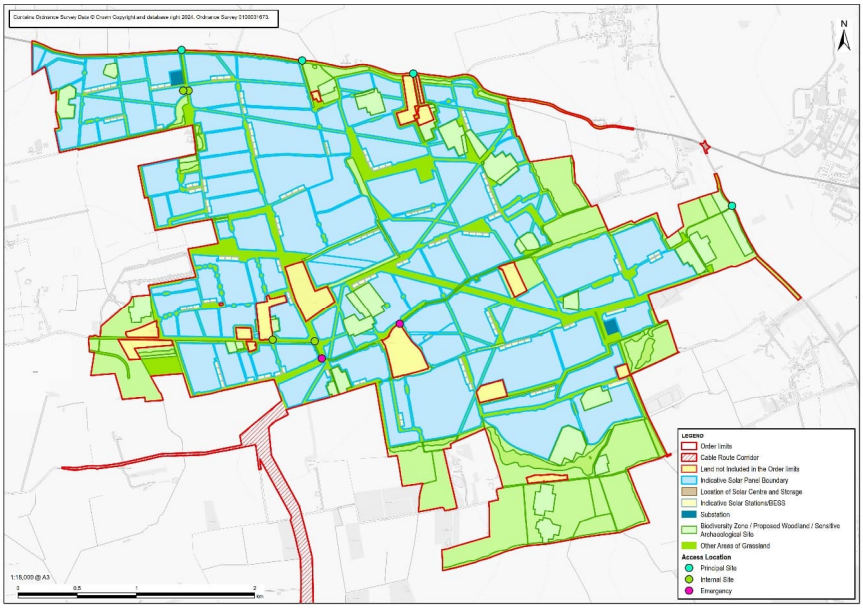

Plate 3-2 Elements of the Order limits

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

3.3 Network Connection, Irradiance, Topography

Baseline Analysis

3.3.1 **Chapter 4: Alternatives and Design Evolution** of the ES **[EN010142/APP/6.1]** sets out the site selection methodology and process that was adopted in identifying the Order limits. This explains the key considerations associated with site selection with respect to solar including the need for an available network connection and the importance of site location with respect to irradiance and topography.

3.3.2 The wider area within which the Scheme is located has a history of energy generation comprising both coal and gas fired power stations and onward strategic connectivity to the National Electricity Transmission network. As national planning policy seeks to support the decarbonisation of electricity generation from low carbon and renewable sources and the transition to net zero, these traditional and fossil fuel power stations have ceased operation or are transitioning to low-carbon power sources within both Lincolnshire and Nottinghamshire. The Cable Route Corridor close to the point of connection with the National Grid Cottam Substation lies within the Trent Valley. The River Trent historically resulted in the siting of power stations along its length due to the availability of cooling water from the river and the availability of coal to fuel the power stations from the Nottinghamshire coalfields. As the coal fired power stations are being decommissioned, this means that there is available grid connection capacity at these locations providing an opportunity to support the delivery of the next generation of electricity generating stations fuelled by low carbon and renewable sources.

3.3.3 For the Scheme to deliver its renewable energy generation to the National Electricity Transmission System, the Applicant identified a point of connection and capacity at a spare bay at the existing National Grid Cottam Substation through discussions with National Grid. This spare capacity follows the decommissioning of the coal fired Cottam Power Station in 2019. The National Grid Cottam Substation is approximately 18.5km from the southern extent of the Principal Site. In addition, the characteristics of the land forming the Order limits lends itself to the generation of renewable energy by solar PV. The Order limits are situated in an area with good levels of irradiation to generate energy and with large areas of flat land, which reduces shading between arrays, enabling panels to be optimally configured for best production levels. The topography of the area is relatively flat with existing elevation ranges between 20 metres and 27 metres Above Ordnance Datum (AOD). **Plate 3-3**~~**Plate 3-3**~~ below shows the topography associated with the Order limits:

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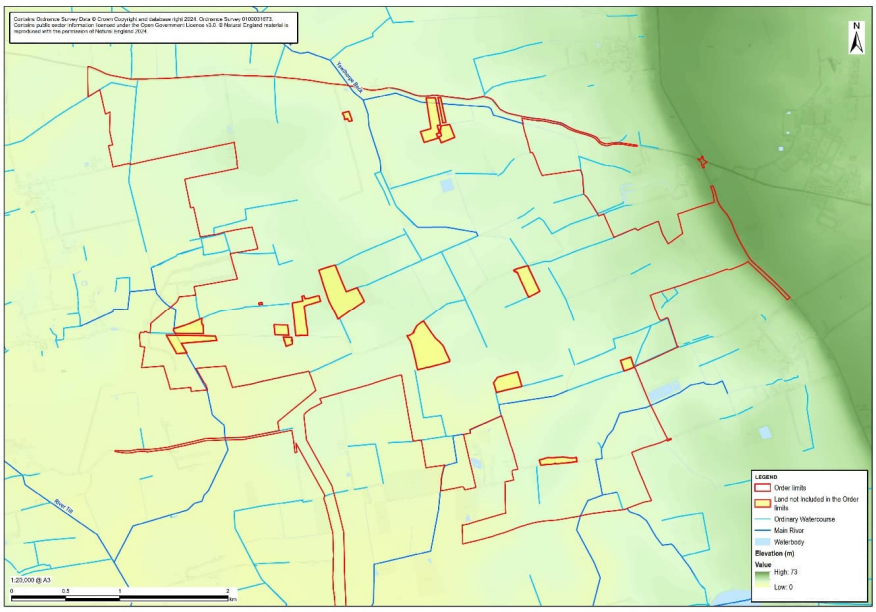

Plate 3-3 Topography of the Order limits

3.3.4 Large open fields with a flat topography is particularly suitable for the deployment of large-scale solar development since it provides an increased ability to minimise landscape and visual impacts through being able screen development within the existing landscape as much as possible, as well as reducing shadowing.

3.3.5 The following key design considerations were identified following the baseline analysis:

Key design considerations

a. **To efficiently generate a large amount of renewable energy on flat land avoiding close proximity to woodland blocks and other features that will 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 and Visual Impact

Existing Context

Principal Site

3.4.1 The Principal Site is located on farmland between the settlements of Springthorpe and Heapham in the west; Hemswell and Harpswell in the northeast; and Glentworth to the east.

3.4.2 The land within the Principal Site is generally flat and low-lying but dominated in the east by the scarp slope of Lincoln Cliff (or Edge). The Cliff is designated as an Area of Great Landscape Value (AGLV) within the adopted Central Lincolnshire Local Plan (2023) (Ref 7) and is a notable topographic feature in Lincolnshire, extending in a relatively straight, north-south line from around Scunthorpe to Grantham.

3.4.3 Although relatively modest in elevation (rising to around 67m Above Ordnance Datum (AOD) above Glentworth), the Cliff contrasts with the low-lying farmlands in the west that comprise much of the Principal Site, making the latter a prominent local feature. Expansive views are available from the crest (scarp) of the Cliff, extending across the Trent valley. Also visible are the cooling towers of coal-fired power stations of the Trent Valley: West Burton to the north, and Cottam (now decommissioned) in the south.

3.4.4 Away from the Cliff, the land dips imperceptibly from a watershed along Common Lane to low points of around 20m AOD, to the north on the A631 near Hemswell Grange; and to the south on Kexby Lane. A slight watershed also runs north-south through the centre of the Principal Site, falling very gently west towards Springthorpe from a high point of 27m AOD near Harpswell Wood.

3.4.5 Ditches or small watercourses form the boundaries to some fields, particularly in lower-lying areas. Many have been straightened through agricultural improvement and generally drain south or west, towards the River Till that rises near Corringham and flows towards Lincoln, where it is named the Foss Dyke. Tributaries to the west of Harpswell flow north, into the River Eau. There are also a small number of isolated ponds.

3.4.6 The Principal Site largely comprises fields that are medium to large scale and rectilinear, reflecting planned enclosure and modern consolidation of fields. These are almost exclusively managed as arable farmland.

3.4.7 The fields are generally bounded by hedges, occasionally with trees, but hedges are often cut low and sometimes absent. Hedgerows closer to the edges of villages and along some roads or tracks are often wider and taller, with more numerous trees.

3.4.8 Tree cover is relatively sparse, mainly comprising isolated blocks of woodland. Harpswell Wood (11ha) is the largest, with others including belts of deciduous (mainly dominated by oak and ash) or mixed woodland along field boundaries.

3.4.9 Built form is limited to isolated farmsteads and houses. Most are associated with outbuildings such as modern agricultural portal barns. Older properties

are red brick with pantile roofs. The majority have small garden areas, sometimes bounded by hedges and trees. There are also a very small number of isolated barns not associated with residences.

3.4.10 Part of the former Sturgate Airfield is within the southwest of the Principal Site: a former World War II RAF base that has been partly returned to agricultural use, with remnant sections of runway used for the storing of materials. The operational airfield lies outside the Order limits to the west.

3.4.11 Overall, the combination of low-lying farmland with limited woodland cover, sparse built form and low or absent hedgerows creates a very expansive character with open and long-range views. The exception is the locally distinctive landform of Lincoln Cliff to the east, which provides a backdrop to many of these views, as well as offering panoramas from the feature itself. **Plates 3-4 to 3-7** are representative views of the Principal Site from the surrounding area, to illustrate the existing landscape character.

Plate 3-4 View from Middle Street at Glentworth looking towards the Principal Site

Plate 3-5 View from The Cliff (Middle Street) looking into the Principal Site

Plate 3-6 View from Kexby Road at Glentworth Grange looking north-west towards the Principal Site

Plate 3-7 View from Common Lane looking east towards the Principal Site

Landscape Character Areas

3.4.12 At the national level, as defined by national level published landscape character assessments, the Principal Site is within Natural England's National Character Area (NCA) (Ref 13) NCA 45: North Lincolnshire Edge with Coversands, and NCA 48: Trent and Belvoir Vale. The Cable Route Corridor is within NCA 48: Trent and Belvoir Vale. The National Landscape Character Areas are shown in **Plate 3-8**~~**Plate 3-8**~~ below:

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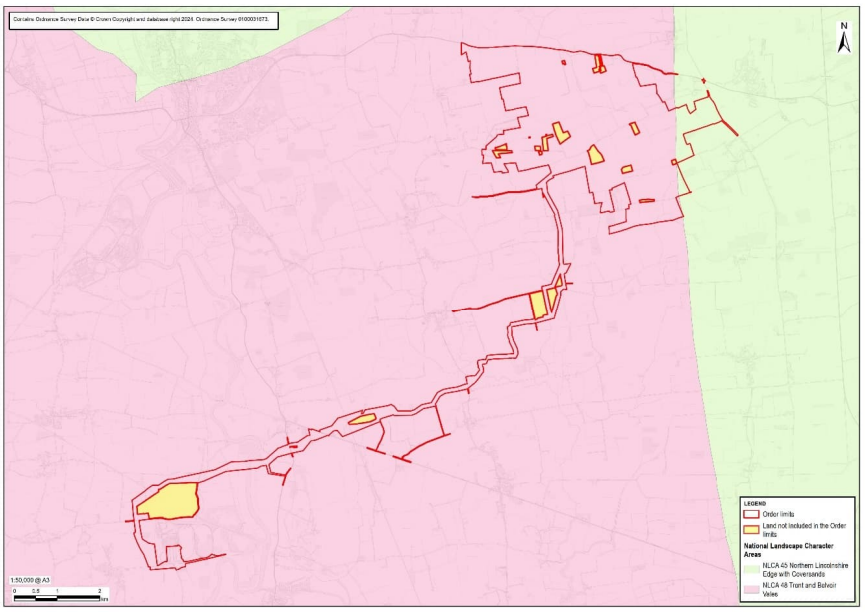

Plate 3-8 National Landscape Character Areas

3.4.13 At a regional level, The East Midlands Regional Landscape Character Assessment (Ref 14) defines the Principal Site as falling within Regional Landscape Character Type (RLCT) 4a: Unwooded Vales and with a minor part of the east of the Principal Site located within character area RLCT 6a: Limestone Scarps and Dipslopes,

3.4.14 At a local level, the West Lindsey Landscape Character Assessment (1999) (Ref 15). defines the Principal Site as falling within Landscape Character Type (LCT) LCT 3: The Till Vale, and LCT 4: The Cliff. The Local Landscape Character Areas are shown in **Plate 3-9**~~**Plate 3-9**~~ below:

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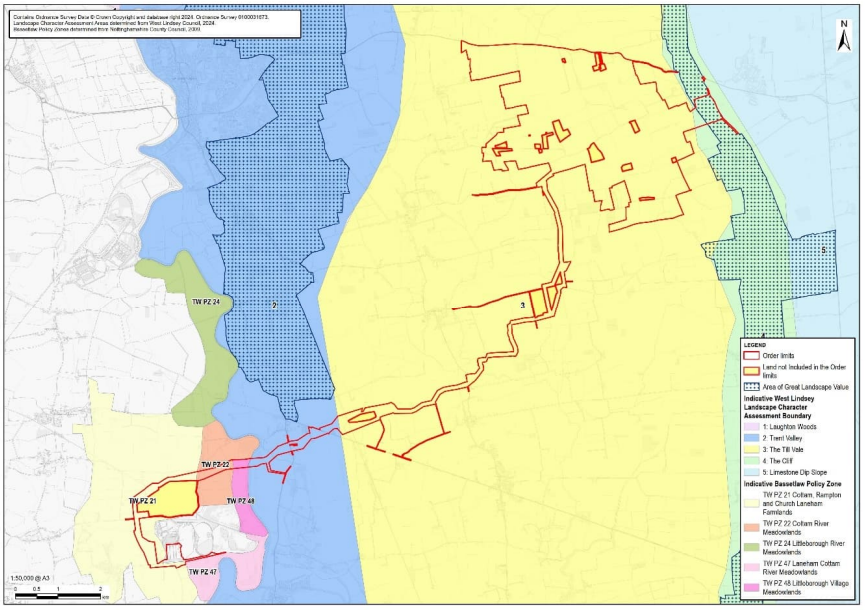

Plate 3-9 Local Landscape Character Areas

3.4.15 **Table 12-4** of **Chapter 12: Landscape and Visual Amenity** of the ES **[EN010142/APP/6.1]** sets out the key landscape characteristics of these Landscape Character Areas.

Visual Receptors Principal Site

Views from Residential Locations

3.4.16 There are no residential properties within the Order limits, but there are several located close to the boundary of the Principal Site that could have potential views of the Scheme. These are shown in **Plate 3-11~~Plate 3-11~~** represented through viewpoints 3, 7, 8, 9, 12, 13, 16, 17, 19, 21, 23 and 28 and include:

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a. Properties in the hamlet of Yawthorpe.
b. Properties along the north side of the A631, including Moorlands, Hemswell Grange and Grange Cottage.
c. Properties at Harpswell Hill Mobile Home Park.
d. Properties along the south side of the A631, including Harpswell Low Farm and Harpswell Grange.
e. Properties to the southern edge of Hemswell.
f. Properties along Lincoln Cliff, around Hemswell and Harpswell, including Millfield and Hill Top Lodge.
g. Properties in Harpswell, including Hall Farm and Hermitage Farm.

h. Properties to the northern and western fringe of Glentworth including Northlands Cottages, along Northlands Road, Glentworth Hall and adjacent buildings.

i. Properties along Middle Street, around Glentworth Hall Farm.

j. Properties on High Street, above Fillingham village.

k. Properties along Common Lane, including Hermitage Low Farm. Billyards Farm, Manor Farm, Heapham Cliff, Grange Farm and South View.

l. Properties on Kexby Road, including Westlands Farm, Spitals Farm, Low Farm, Glentworth Grange, Grange Court and nos. 1 and 2 Grange Cottages.

m. Isolated properties to the southwest of the Site, along Cow Lane, including Low Field Farm and Grove Farm;

n. Properties to the eastern edge of Heapham and Sturgate.

o. Properties to the eastern edge of Springthorpe.

p. Church Farm, nos. 33 and 34 (Grange Cottages) and Springthorpe Grange, on School Lane.

q. Properties to the eastern edge of Corringham

Views from Public Rights of Way

3.4.17 Public Rights of Way within and immediately adjacent to the Principal Site are shown in **Plate 3-10~~Plate 3-10~~** below.

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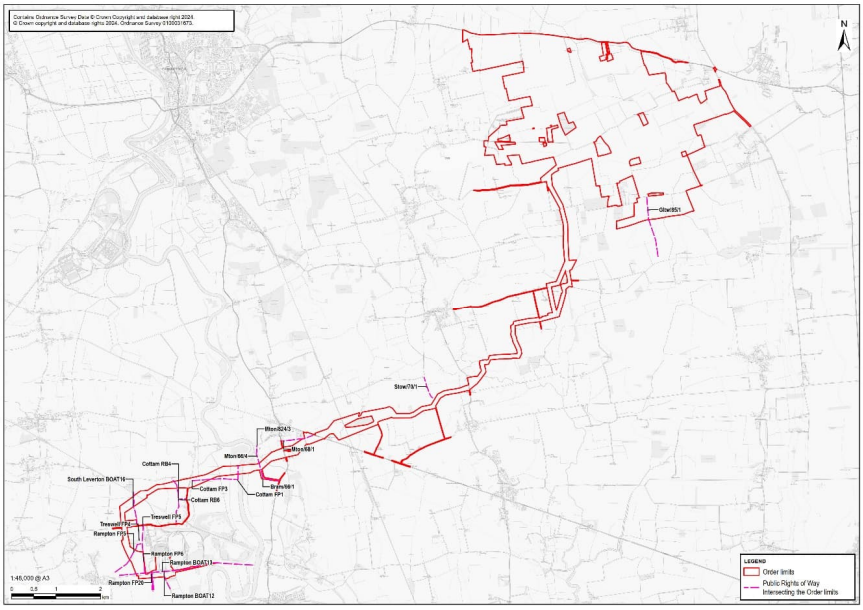

Plate 3-10 Public Rights of Way

3.4.18 There is only one Public Right of Way (PRoW) within the Principal Site (Bridleway Gltw/85/1), a bridleway connecting Common Lane to Kexby Road. PRoWs within and adjacent to the Principal Site that could provide views of the Scheme include:

a. Bridleway Gltw/85/1, located within the Principal Site.
b. Harp/92/1, located to the south-east of Harpswell Hall Farm
c. Kirton-Gate Lane Heap/1170/1 recently adopted by-way, east of Sturgate.
d. Public footpath Hems/787/82, Millfield, Hemswell
e. Footpaths Hems16/1, Hems19/1, Hems19/2, Hems787/1 and Hems788/1 within and south of Hemswell;
f. Footpath Wltn/14/1, on Lincoln Cliff, south of Willoughton;
g. Bridleway Fill/85/2, single-track Willingham Road between Fillingham and Willingham by Stow
h. Bridleway Gltw/88/1 from Glentworth to Fillingham;
i. Footpaths Ing/17/2, Ingh/20/3 and Ingh21/2, on Lincoln Cliff above Ingham;
j. Footpaths Heap/56/2, Heap57/2 and Heap57/3 around Heapham and Sturgate; and

3.4.0 Further to the above, views may also be available for receptors using a temporary, voluntary permissive path east of Sturgate, linked to Kirton Gate Lane; permissive access land south of Hall Farm in Harpswell; and permissive paths, associated with the latter, around the former medieval moat and adjacent fields at Hall Farm.

3.4.1 An application has been made by Glentworth Parish Council to add a bridleway (PRoW) between Harpswell and Glentworth (DMMO 1209) to the Lincolnshire definitive public right of way map. The claimed PRoW, if confirmed will run north-south seeking to connect Harpswell and Glentworth within the eastern extent of the Principal Site. The draft Order is opposed and as such, will be referred to the Secretary of State who will determine whether PRoW is confirmed and then added to the definitive map. No timescale is in place to deal with this matter.

Views from Roads

3.4.2 It will be possible to view the Principal Site from surrounding roads, including:

a. A631 Harpswell Road, between Corringham and Harpswell;
b. Hemswell Lane, between the A631 and Hemswell;
c. The unclassified road between the A631 and Willoughton;
d. B1398 Middle Street;
e. School Lane, east of Springthorpe;
f. Common Lane, between Sturgate and Harpswell; and

g. Kexby Road and Cow Lane, between Upton and Glentworth.

3.4.3 Some of the rural roads referred to above will be used for recreational purposes, including horse riding, walking, running and cycling with potential views afforded of the Principal Site from some of these locations.

3.4.4 Views may also be available to the studio workshops and open garden at Hall Farm in Harpswell and for receptors in aircraft arriving and departing from Sturgate airfield to use its private facilities.

3.4.5 **Plate 3-11** below shows the locations of the key viewpoints/visual receptors of the Principal Site as described above.

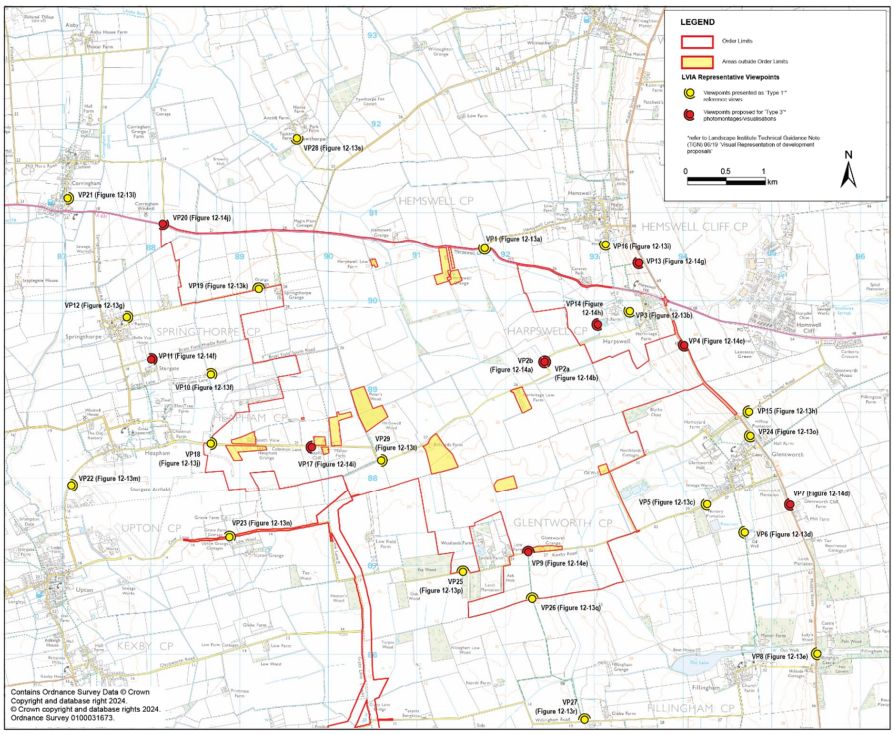

Plate 3-11 Key Viewpoints of the Principal Site

Landscape design considerations

3.4.6 Considering these baseline conditions, the following design considerations were identified to inform landscape and visual design objectives:

Landscape design considerations

a. **Integrate the Scheme into the existing landscape as far as is practicable by retaining existing woodland, trees, hedgerows and habitat. Plant new and enhance existing habitats.**

b. **Reduce residual landscape visual impacts as far as possible through the indicative layout of the Principal Site being sensitive to residential views, avoiding or reducing change where possible and filtering and screening more prominent components of the Scheme.**

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

3.5 Land Use

Existing Context – Principal Site

3.5.1 The Principal Site is characterised by agricultural use associated with a number of land holdings and farm businesses. There are no non-agricultural businesses located within the Order limits.

3.5.2 There are a number of non-agricultural businesses located close to or adjoining the Principal Site. This includes some services and facilities located within the villages located along Middle Street and to the west of the Principal Site including Glentworth Village Hall, Hemswell post office, village store and antique market centre, a florist in Willlingham-by-Stow and café/coffee shops located in Hemswell Cliff. The private Sturgate Airfield is located immediately to the west of the Principal Site, the home of Lincoln Glider Club. There are a number of storage uses located adjoining the Principal Site, including a premises situated off Common Lane associated with the installation of marquees and 'Big Tops' used at events. There are also businesses located close to the Principal Site providing visitor accommodation and dog grooming and breeding establishments.

3.5.3 The Principal Site contains a number of statutory undertaker assets that will be subject to easements. This includes:

a. Uniper gas pipeline running broadly in a north-south direction through the Principal Site;

b. Cadent gas pipeline running in an east-west direction across the Principal Site; and

c. 33kV overhead lines extending east-west across the northern part of the Principal Site and other electrical distribution assets.

3.5.4 ~~Plate 3-12~~**Plate 3-12** shows the location of the above utilities within the Principal Site.

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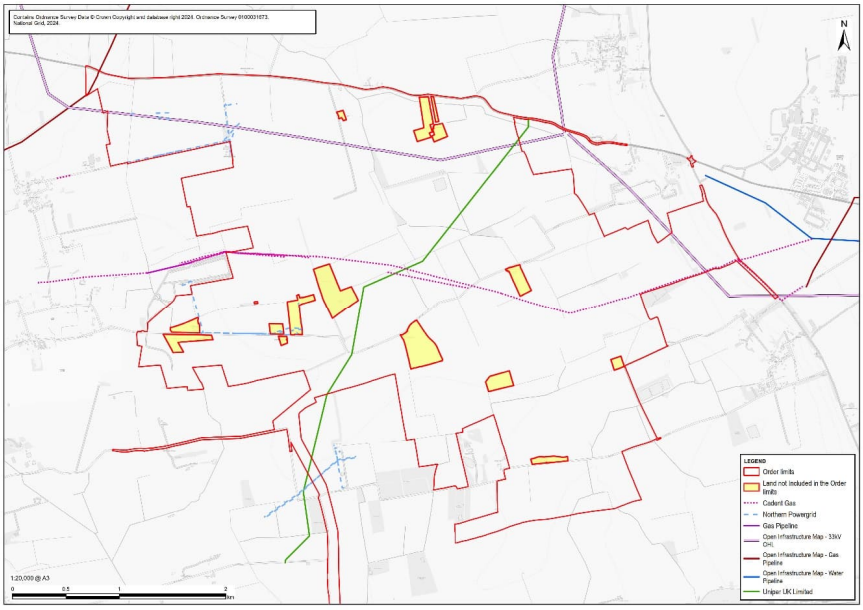

Plate 3-12 Utilities within the Principal Site

3.5.5 Soil surveys were carried out across the Principal Site between September 2022 and 2023 to confirm whether any of the agricultural land is best and most versatile, this being defined as grades 1, 2 and 3a. The soil surveys completed confirmed that the majority of the land within the Principal Site is moderate quality Subgrade 3b, this being defined as moderate quality, and not best and most versatile land by Natural England Guidance entitled Guide to assessing development proposals on agricultural land (Ref 16). There are eight small areas of Subgrade 3a located within small pockets situated within the northern, southern, western, north-eastern and eastern edges of the Principal Site. There is one small areas of Subgrade 2 land included within the Principal Site, located on the eastern edge of the Principal Site immediately adjoining The Cliff/Middle Street. The majority of the agricultural land within the Principal Site is therefore not Best and Most Versatile (BMV) land. **Plate 3-13**~~**Plate 3-13**~~ below shows the location of the BMV land within the Principal Site shown in dark green (Subgrade 3a) and blue (Subgrade 2).

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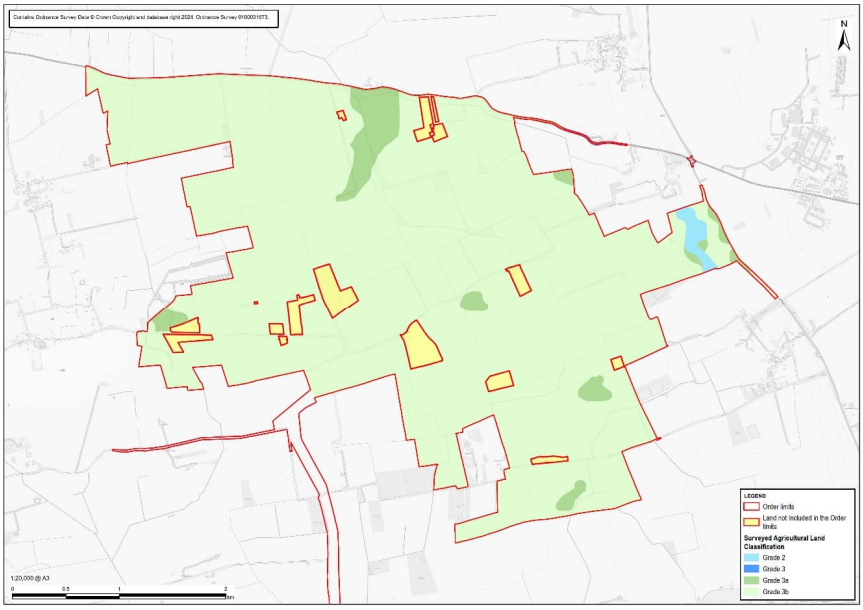

Plate 3-13 Location of BMV land within the Principal Site

3.5.6 There is an existing operational oil well site (Glentworth K) located outside of the Order limits but within proximity to south-eastern part of the Principal Site, with its access off Northlands Road. Located to the west of the existing oil well site, is a site whereby planning permission was granted on 8 February 2024 for the construction and operation of a hydrocarbon well site and ancillary development by IGas Energy (Local Planning Authority Ref: PL/0135/22).

Existing Context – Cable Route Corridor

3.5.7 The Cable Route Corridor is largely in agricultural use. With respect to overlapping consents, planning permission was granted on the 29 November 2022 for the erection of two agricultural storage barns on land off High Street, Marton. This planning permission has not been implemented but is located within the Order limits associated with the Cable Route Corridor.

3.5.8 In addition, there are three other solar NSIP projects whose Order limits overlap the Order limits of this Scheme. These are the Gate Burton Energy Park [EN010131] (Ref 17)**,** the Cottam Solar Project [EN010133] (Ref 18) and the West Burton Solar Project [EN010132] (Ref 19). Each of these solar NSIP projects are at a different stage to this Scheme. The examination of the Gate Burton Energy Park closed on 4 January 2024, the examination of the Cottam Solar Project closed on 5 March 2024 and the examination of the West Burton Energy Project ends on the 8 May 2024. **Plate 3-14~~Plate 3-14~~** below shows how the other NSIP projects overlap with the Scheme.

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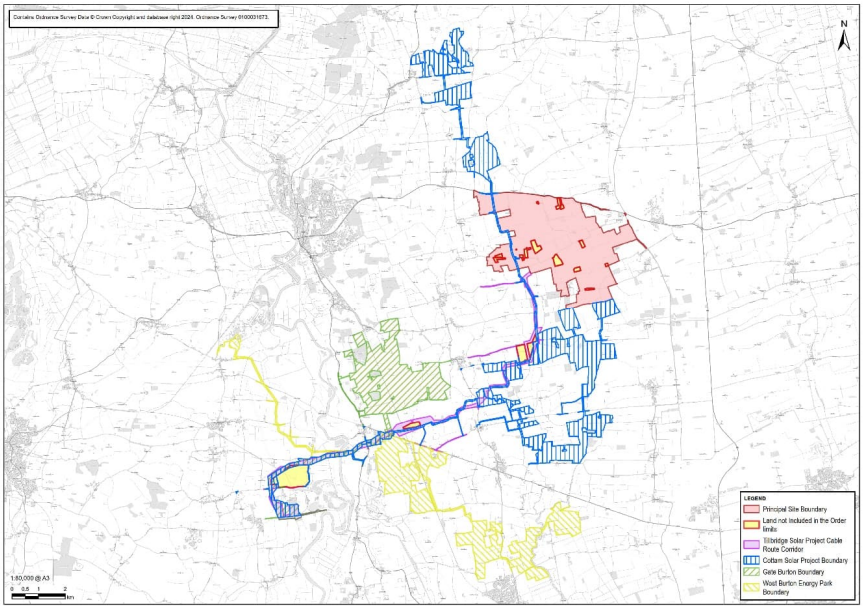

Plate 3-14 The location of the Principal Site in relation to other NSIP solar projects

3.5.9 The Order limits associated with the Cable Route Corridor extend in a south-west direction from the southern edge of the Principal Site towards the point of connection at the National Grid Cottam Substation. The Order limits associated with the Cable Route Corridor is located to the east of Willingham-by-Stow, the south of Marton and to the north of Cottam village.

Land-use design considerations

3.5.10 The following design considerations were identified to inform land-use change objectives to be addressed by the design evolution of the Scheme:

Land-use design considerations

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

b. **Integration of the design with existing utility assets and layout considerations to minimise the effect of and consented and emerging schemes either through the Town and Country Planning Act (1990) or the Planning Act 2008.**

c. **Opportunity for collaborative working with other NSIP solar schemes to create a shared Cable Route Corridor to minimise potential environmental effects.**

d. **Incorporation of battery safety measures within the design with respect to BESS.**

3.6 Ecology

Existing Context – Principal Site

3.6.1 The land within the Principal Site is dominated by intensive agriculture with irrigation and artificial drainage used to sustain the arable fields. The artificial lowering of water levels by water abstraction for irrigation purposes and use of agricultural chemicals may negatively impact rivers and drains, which in turn may further impact on wildlife that rely on these habitats.

3.6.2 There are no sites internationally designated for their biodiversity importance within 10km of the Order limits nor any for which bats are a qualifying feature within 30km of the Order limits. There are no Local Wildlife Sites (LWS) within the Principal Site.

3.6.3 The Principal Site comprises a total of 1,067 tree features, formed of 651 individual trees, 170 tree groups, 220 hedgerows and 26 woodlands. Of these features, 123 are high quality (category A), 243 are moderate quality (category B), 593 are low quality (category C) and 108 are unsuitable for retention (category U). Of these trees, 42 are veteran and one is an ancient tree. Multiple trees within the Order limits of the Principal Site are native ash with signs and symptoms of ash dieback.

3.6.4 **Plate 3-15~~Plate 3-15~~** below shows the location of the LWS in relation to the Order limits.

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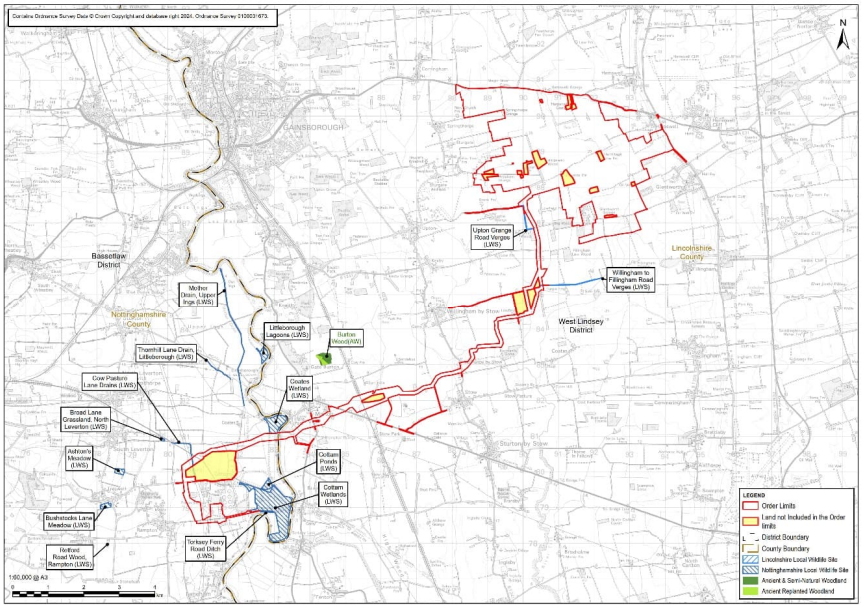

Plate 3-15 Location of Local Wildlife Sites within the Order limits

Existing Habitat Context – Order limits

3.6.5 The land within the Order limits is generally flat and low lying and dominated by arable agriculture (1,420.70ha / c.86%), the fields being intersected by a network of drainage ditches (c.25km). Other habitat includes improved grassland fields (66.1ha / 4.0%), mature trees and hedges (c.85km), small, wooded copse (c.20ha / 1-2%)) and ponds (<25). The remaining land does not have any biodiversity value comprising predominantly roads making up 8% of the Order limits. The surrounding habitat is mainly arable, with small pockets of mature broad-leaved woodland (plantation and semi-natural).

3.6.6 **Table 9-11** of **Chapter 9: Ecology and Nature Conservation** of the ES **[EN010142/APP/6.1]** provides a summary of legally protected and/or notable species present within the Order limits confirming that the majority of species and habitats are of local importance. There are several 'important' hedgerows located within the Principal Site and thereby protected under the Wildlife and Landscape criteria of the Hedgerows Regulations (Ref 20). The location of these is shown in Plate 3-16 below:

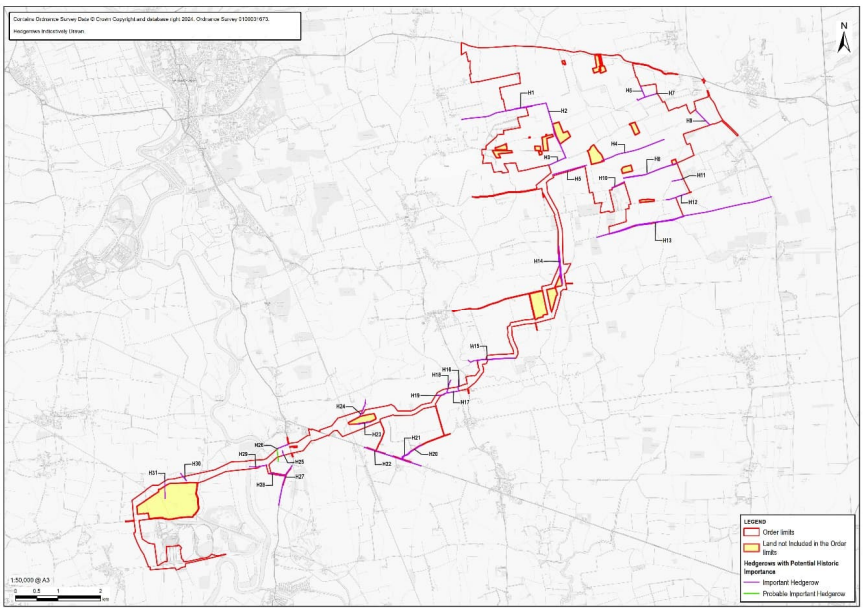

Plate 3-16 Location of 'important' hedgerows within the Order limits

Ecology design considerations

3.6.7 Considering these baseline conditions, the following design considerations were identified to inform biodiversity design objectives to be addressed by through the design evolution of the Scheme:

Ecology design considerations

a. **Opportunity to enhance the quality and range of habitats within the Principal Site to achieve a net gain in biodiversity.**

b. **Opportunity to create new habitats and adopt planting strategies including hedgerows, trees belts, grassland for ground nesting birds, wetlands, species rich meadows and native woodland to improve the connectivity between existing and new habitats.**

c. **Protect ancient and veteran trees within the Principal Site.**

d. **Adoption of habitat avoidance measures to avoid key nature conservation and ecological features present within or adjacent to the Order limits**

3.7 Cultural Heritage

Cultural Heritage Context – Principal Site

Built Heritage context

3.7.1 There are no designated heritage assets within the Principal Site.

3.7.2 To the east of the Principal Site are what is referred to as the Spring-line or Cliff Villages comprising Harpswell, Glentworth and Fillingham. Glentworth and Hemswell are designated as conservation areas and are located approximately 700m south and east and 630m north-east respectively of the Principal Site.

3.7.3 Glentworth conservation area is centred on the historic medieval core of the village, which includes several small clusters of buildings around the Grade II* listed Church of St Michael, with four other Grade II listed buildings located within its boundary. The setting of the Conservation Area to the west towards the Principal Site is of a relatively flat open landscape with fields, trees and hedgerows, whereas to the north the village is screened by small woodland plantations. Glentworth Hall, Grade II* listed, is located a short distance outside the conservation area to the north-west and contributes to the setting and character of the Glentworth Conservation Area.

3.7.4 Hemswell Conservation Area is centred around the Grade II* listed Church of All Saints, with five other listed buildings within its boundary. The setting of the village comprises the surrounding rural landscape with open fields, which contributes to its character. The A631 lies to the south and south-west of the conservation area, which is lined with trees and hedges, with the road demarcating the northern extent of the Principal Site.

3.7.5 Springthorpe Conservation Area is located approximately 730m west of the Principal Site. It includes the Grade I listed Church of St Lawrence and St George, and the Grade II listed 20 Hill Road, a mid-18th century residential property, with the focus on the village green. The setting of the village comprises the surrounding rural landscape with open fields, which contribute to its character.

3.7.6 There are a number of views to and from designated heritage assets to the Principal Site as well as interrelationships between heritage assets and the landscape. Of particular importance with respect to context in terms of informing design principles is the relationship of the Scheme to:

a. Glentworth Hall, is a Grade II* large country house dating to the 17th century situated around 700m to the south and east of the Principal Site located just outside of the Glentworth Conservation Area.
b. Corringham Windmill is a Grade II listed former windmill located approximately 200m to the north-west of the Principal Site.
c. Harpswell Hall scheduled monument, located approximately 340m to the east of the Principal Site comprising a former moat and prospect mound that afford views into the open landscape of the Principal Site.

3.7.7 The location of designated assets in relation to the Principal Site are shown in **Plate 3-17**~~**Plate 3-17**~~ below:

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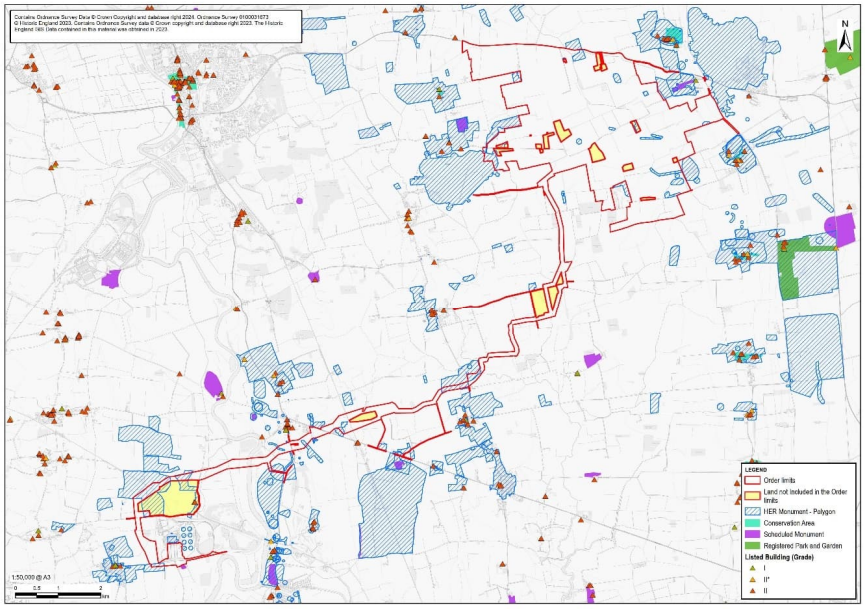

Plate 3-17 Location of designated heritage assets and non-designated heritage assets of archaeologocal remains in relation to the Principal Site

Archaeological context

3.7.8 There are a number of non-designated archaeological remains located within the Principal Site from Bronze Age, medieval and post medieval periods including found artefacts, earthworks and remnants of farmsteads. Trial trenching across the Principal Site has confirmed that there are 26 areas of archaeological value. These are shown on **Plate 3-18~~Plate 3-18~~** as 'Sensitive Archaeological Sites.'

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3.7.9 The winter camp of the Viking Great Army **[MLI125067]** is also a non-designated heritage asset denoting archaeological remains located on a prominent ridge and bluff overlooking a curve in the River Trent, just to the west of the A156. This is located within the Cable Route Corridor.

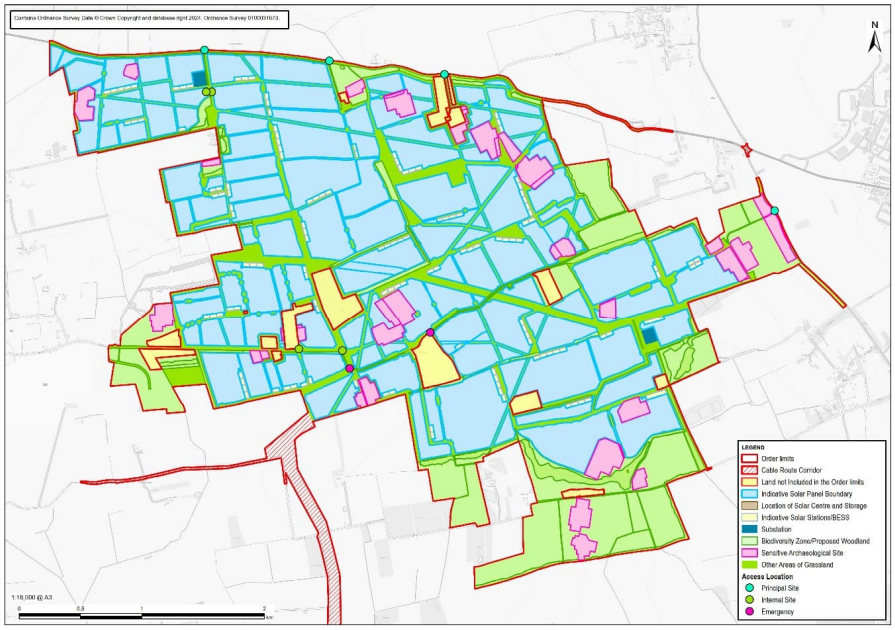

Plate 3-18 Location of non-designated Sensitive Archaeological Sites within the Principal Site

3.7.10 Following consideration of the baseline position with respect to cultural heritage, the following design conditions have been identified:

Cultural heritage design considerations

a. **The design of the Scheme should be sensitive to preserving the setting of, and key relationships, between heritage assets identified in the surrounding area and reduce impacts through mitigation.**

b. **The design of the Scheme should preserve or enhance the character of a conservation area.**

c. **The design of the Scheme should protect and preserve non-designated areas of Sensitive Archaeological Significance.**

3.8 Flood Risk and Hydrology

Existing Context – Principal Site

3.8.1 The vast majority of the Principal Site is located in Flood Zone 1, indicating a low risk of flooding from fluvial sources. There are however some watercourses located within the Principal Site that are at a higher risk of flooding and are located within Flood Zone 2 and 3, with these being:

a. The River Eau (ordinary watercourse flowing west along the northern boundary, with a tributary flowing north within the Principal Site)

b. A tributary to Fillingham Beck (ordinary watercourse flowing westwards from the Glentworth area across the south-eastern part of the Principal Site)

c. A tributary to the Till (the Witham, which is a main river, flowing southwards in the extreme west of the Principal Site)

d. A square, water holding, reservoir located within the Principal Site in the north, south of Harpswell Grange.

3.8.2 **Plate 3-19**~~**Plate 3-19**~~ below shows flood risk from fluvial sources associated with the Order limits:

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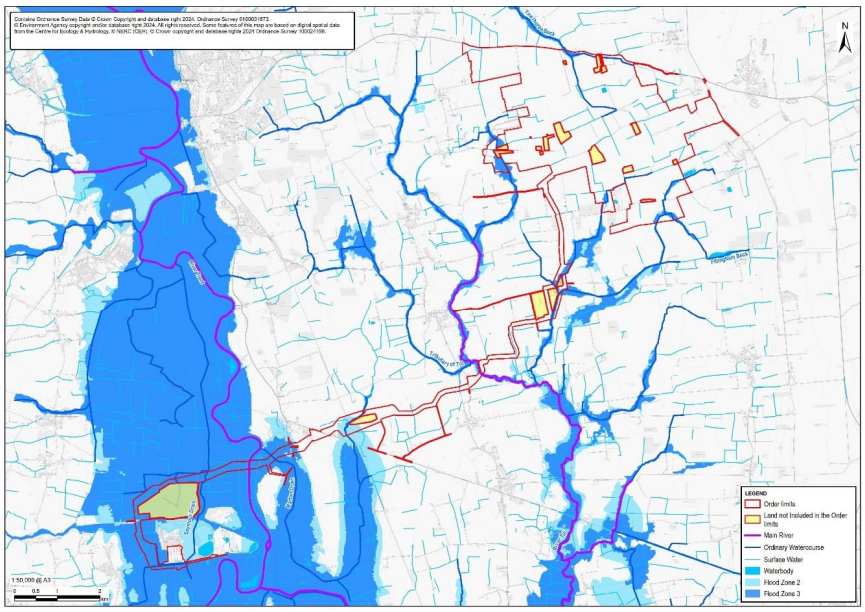

Plate 3-19 Flood risk

3.8.3 Following the baseline assessment, which included the Sequential Test being applied to site selection followed by the Exception Test, the following flood risk and hydrological design considerations have been identified for the scheme:

Flood risk and hydrological design considerations

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

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

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

3.9 Accessibility

Existing Context – Principal Site

Highway Network

3.9.1 The A631 is a key route that runs along the northern boundary of the Principal Site in an east-west direction. The B1398 Middle Street is a local

route that runs along the eastern extent of the Principal Site. A small section of the Order limits, measuring approximately 500m in length, fronts the B1398 between the villages of Harpswell and Glentworth and includes an existing farm track access road into the Principal Site. The B1398 connects with the A631 to the north and the A1500 (Till Bridge Lane) to the south. The B1398 provides connections to local villages including Harpswell, Glentworth and Fillingham.

3.9.2 Common Lane is a narrow rural road which runs in an east-west direction towards Heapham to the west and Harpswell to the east. Common Lane is located within the Principal Site, providing access to the A631 in the east and the B1241 in the west.

3.9.3 Kexby Road is a narrow rural road which runs in an east-west direction towards Upton to the west and Glentworth to the east. Kexby Road is located within the Principal Site, providing access to the B1398 (Middle Street).

3.9.4 There are a number of existing farm access tracks within the Principal Site which present an opportunity for potential upgrades to facilitate access for the construction and operation of the Scheme and to minimise the need to create any new access tracks.

3.9.5 **Plate 3-20**~~**Plate 3-20**~~ below shows the hierarchy of the road network associated with the Principal Site and Cable Route Corridor:

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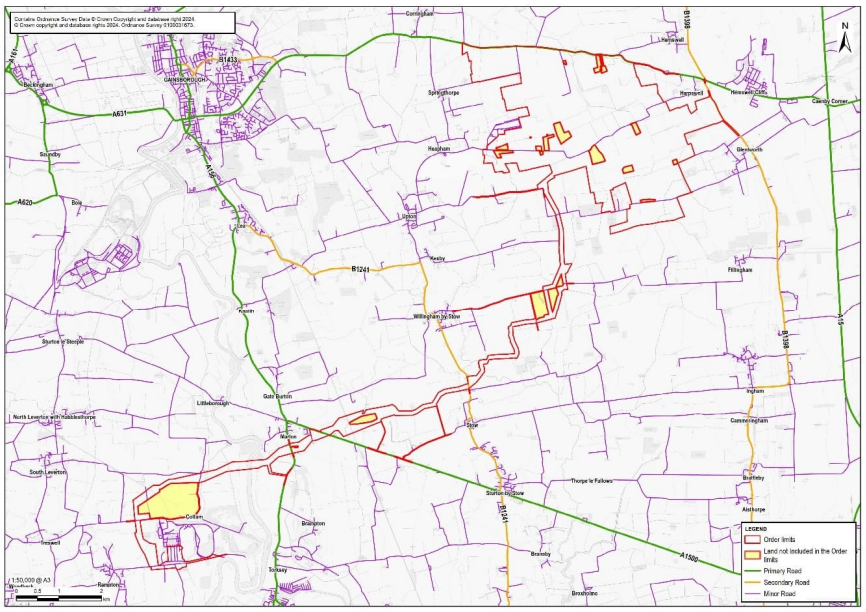

Plate 3-20 Local Highway Network

Existing Context – Principal Site

Public Rights of Way

3.9.6 PRoW are notably limited within the Principal Site, with only one route being on the definitive map. This is a bridleway (Gltw/85/1) located within the southern extent of the Principal Site extending south from Kexby Road near Glentworth Grange, towards Willingham Road.

3.9.7 An application has been made to add a bridleway (PRoW) between Harpswell and Glentworth (DMMO 1209) to the Lincolnshire definitive public right of way map. This is not a confirmed public right of way with an objection made to the modification Order.

Existing Context – Cable Route Corridor

Public Rights of Way

3.9.8 PRoW are generally limited east of the River Trent. There are ten PRoWs located within the Order limits to the west of the River Trent and a further two claimed routes.

3.9.9 **Plate 3-10~~Plate 3-10~~**shows the location of confirmed PRoWs in relation to the Order limits.

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Access design considerations

3.9.10 Consideration of the existing highway and PRoW baseline has identified the following opportunities and constraints to inform the design evolution of the Scheme:

Access design considerations

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

b. **There is potential to improve connectivity with existing PRoW and to provide additional routes (permissive paths) for PRoW users within the Principal Site**

c. **Opportunity to use existing tracks and access points to minimise the need for the creation of new access routes**

3.10 Design objectives

Table 3-1

~~**Table 3-1**~~ below sets out how the existing context and characteristics of the Principal Site and Cable Route Corridor and the surrounding areas has informed the design objectives for the Scheme derived from opportunities and constraints identified through analysis of this context . This sets out key environmental and planning considerations to inform the design process. Due to the selection process for the Principal Site set out in **Chapter 4:Alternatives and Design Evolution** of the ES **[EN010142/APP/6.1]**, these design objectives were adopted at an early stage informing the design evolution of the Scheme leading up to the non-statutory consultation stage in July 2022 and informing design evolution up to submission of the DCO application. The key design considerations enabled the development of design objectives for the Scheme's design to respond to.

Table 3-1 Key Design Considerations

Key design consideration	Design objective(s)
Network Connection, Irradiance and Topography	
To efficiently generate a large amount of renewable energy on generally flat and low-lying land avoiding close proximity to woodland blocks and other features that will 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.	**Objective 1:** The Scheme will seek to efficiently generate a substantial capacity of renewable energy to the National Electricity Transmission System through its careful siting, thereby supporting the delivery of the Government's objectives and commitments for the development of a secure, affordable and low carbon energy system.
Landscape Character, Green Infrastructure and Visual Receptors	
Integrate the Scheme into the existing landscape as far as possible by retaining existing woodland, trees, hedgerows and habitat. Plant new and enhance existing habitats within the Principal Site.	**Objective 2:** The Scheme will be sensitively integrated into its landscape setting, to minimise adverse landscape and visual effects as far as possible.

Key design consideration	Design objective(s)
Reduce residual landscape visual impacts as far as possible through the indicative layout of the Principal Site being sensitive to residential views, avoiding or reducing change where possible and filtering and screening more prominent components of the Scheme.	**Objective 3:** The Scheme will respond sensitively to its proximity to residential dwellings, settlements and PRoW with regard to visual impact, noise and lighting.
PRoW partially cross and surround the Scheme. The layout of the Scheme should ensure that suitable buffers are provided to protect PRoW and views from within, avoiding or reducing change wherever practicable	
Land Use	
The siting of infrastructure to avoid permanent losses of BMV land.	**Objective 4:** The Scheme will be sensitive to the existing land quality and its resources and other land uses.
Integration of the design with existing utility assets and layout considerations to minimise the effects upon consented and emerging schemes either through the Town and Country Planning Act (1990) or the Planning Act 2008.	
Opportunity for collaborative working with other NSIP solar schemes to create a shared Cable Route Corridor to minimise potential environmental effects.	
Incorporation of battery safety measures within the design with respect to BESS.	**Objective 5:** The Scheme will ensure that battery safety is managed ensuring the inclusion of embedded design mitigation to minimise risks.
Ecology	
Opportunity to enhance the quality and range of habitats within the Order limits and achieve a net gain in biodiversity.	**Objective 6:** The Scheme will seek avoid adverse impacts and to enhance existing biodiversity through the creation of new green infrastructure and the creation of new habitat for wildlife to achieve a minimum 10% in Biodiversity Net Gain.
Opportunity to create new habitats and adopt planting strategies including hedgerows, trees belts, grassland for ground nesting birds, wetlands,	

Key design consideration	Design objective(s)
species rich meadows and native woodland to improve the connectivity between existing and new habitats.	
Protect ancient and veteran trees within the Principal Site.	
Adoption of habitat avoidance measures to avoid key nature conservation and ecological features present within or adjacent to the Order limits	
Cultural Heritage	
The design of Scheme should be sensitive to preserving the setting of, and key relationships, between heritage assets identified in the surrounding area and reduce impacts through mitigation.	**Objective 7:** The Scheme will be sensitive to heritage assets and their setting.
The design of the Scheme should protect and preserve non-designated areas of Sensitive Archaeological Significance.	
Flood Risk and Hydrology	
Avoiding the location of above ground vulnerable infrastructure in areas at a high risk of flooding where practicable.	**Objective 8**: The Scheme will safeguard the water environment, be resilient from flooding both now and in the future and not increase the risk of flooding elsewhere.
Avoiding an increase in flooding within and outside of the Order limits as a result of the Scheme.	
The interaction of the Scheme with the large number of drainage ditches and small watercourses across the area ensuring there is no increase in surface water flooding through the adoption of SuDs.	
Accessibility	
Access design should consider safety and accessibility to minimise impacts on the local transport network.	

Key design consideration	Design objective(s)
There is potential to improve connectivity with existing PRoW and to provide additional routes (permissive paths) for PRoW users within the Principal Site.	**Objective 9:** The Scheme will provide safe accesses and minimise residual cumulative impacts on the road network as far as possible. **Objective 10:** The Scheme will enhance, where possible, the existing connectivity within the network of PRoW through the provision of permissive paths to be available for public use during the operation of the authorised development to improve accessibility.
Opportunity to use existing tracks and access points to minimise the need for the creation of new access routes.	**Objective 9:** The Scheme will provide safe access and mitigate impacts on the local highway network to avoid significant effects.

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 site selection process, alternatives and design evolution are also explained in **Chapter 4: Alternatives and Design Evolution** of the ES **[EN010142/APP/6.1].**

4.2 The Design Process

4.2.1 The Scheme's design has been developed by a team of qualified and experienced professionals comprising solar technical designers, highway engineers; civil engineers, electrical engineers, planners; landscape architects; ecologists; heritage specialists, noise consultants and other environmental professionals.

4.2.2 The multi-disciplinary design team developed the design objectives following the site selection process that was informed by the key design considerations set out in section 3.0. The key design considerations were informed by initial opportunity and constraints mapping undertaken of the Principal Site and Cable Route corridor as described in **Chapter 4: Alternatives and Design Evolution** of the ES **[EN010142/APP/6.1]** and was informed by the relevant design characteristics set out within the National Design Guide (Ref 5) and the National Infrastructure Commission Design Principles Guide for National Infrastructure (Ref 4) with respect to:

a. Appreciating the wider context
b. Climate – measuring emissions over the course of its lifespan
c. People – monitor people's requirements
d. Places – use clear measures to determine whether the scheme is meeting its objectives to provide social, environmental and economic benefits.
e. Movement
f. Nature
g. Resources
h. Lifespan
i. Engage meaningfully
j. Continually measure and improve

4.2.3 The **Consultation Report [EN010142/APP/5.1]** and **Consultation Report Appendices [EN010142/APP/5.2]** forming part of the DCO application sets out how and to what extent pre-application consultation and stakeholder engagement has been carried out in accordance with the Statement of Community Consultation (SoCC). The **Consultation Report [EN010142/APP/5.1]** and **Consultation Report Appendices [EN010142/APP/5.2]** demonstrates how the Scheme has had regard to the

relevant responses received in accordance with Section 49 of PA 2008 (Ref 1) and Guidance on the pre-application process published by the Ministry of Housing, Communities and Local Government (MHCLG) in 2013 and updated in 2015 (Ref 21).

4.2.4 In addition, the Scheme has been informed by and iterated through collaboration with developers of solar DCOs within the area. This has included, the Gate Burton Energy Park, the Cottam Solar Project and the West Burton Project, two of which (Gate Burton Energy Park and Cottam Solar Project) also have a point of connection at the National Grid Cottam Substation. Hereafter, these are referred to as the 'other solar DCOs'. The objective of this collaboration was to derive a shared Cable Route Corridor with the other projects to environmental impacts. In particular, this has included the refinement of access points so that these are shared where practicable; co-ordination at strategic crossing points including the disused railway line at Cottam power station, the River Trent, the live railway crossing to the east of Marton; and the inter-relationship of the Cable Route Corridor in relation to the Solar PV sites associated with the other projects, in particular, the Cottam Solar Project. More details with respect to design evolution of the Cable Route Corridor is set out in **Chapter 4: Alternatives and Design Evolution** of the ES **[EN010142/APP/6.1].**

4.2.5 This demonstrates how the Scheme has undertaken meaningful engagement throughout the process which has resulted in improvements and iteration of the Scheme to address comments made in the interests of good design and positive engagement. By way of example, the non-statutory consultation undertaken as part of the Scheme between May to July 2022 included the hosting of co-design workshops. This format encouraged key stakeholders to interact with the design evolution of the Scheme and for the design team to gain a further understanding of design parameters. This input informed key decision making and design evolution with respect to appreciating the wider context of the Order limits, addressing as far as possible people's requirements, informing an access strategy for the Scheme and maximising benefits through the provision of green infrastructure and biodiversity enhancements.

4.2.6 Consultation and engagement has continued throughout the duration of the pre-application phase of the Scheme with the host authorities, statutory consultees, parish councils and local residents. This engagement has informed the evolution of the Scheme design and enabled the Scheme to be adapted to address and have regard to comments made. This has included but is not limited to meetings held and actions agreed with:

a. Natural England – Soils and Species Licensing
b. Historic England
c. County Archaeologist
d. Local Authority Historic Environment Officers
e. Environment Agency, Lead Local Flood Authority and Internal Drainage Boards
f. Local Highway Authorities

g. Local Authority Tree Officers
h. Landscape architects representing the host authorities
i. Lincolnshire and Nottinghamshire Wildlife Trust
j. Lincolnshire Fire and Rescue Service
k. Local residents to discuss specific queries and to allow an appreciation of views and settings from sensitive receptors towards the Principal Site
l. Railway Paths and Sustrans

4.2.7 In accordance with NPS EN-1 (Ref 2), a design champion led the design of the Scheme and its iteration throughout to address comments made. The design champion led the multidisciplinary team from the site-selection stage and onwards to the preliminary and masterplan stages of the Scheme that now forms part of the submission.

4.2.8 The design champion was critical in chairing design workshops and acting as an intermediatory between the technical and environmental teams and key stakeholders. The design champion led design decisions balancing the needs of multiple stakeholders to ensure that the Scheme minimised environmental effects and sought to resolve conflict where this arose. The design champion was also responsible for the development of **Chapter 3: Scheme Description** of the ES **[EN010142/APP/6.1],** reviewed the **Design and Access Statement [EN010142/APP/7.3]** and inputted into the **Outline Design Principles Statement [EN010142/APP/7.4]** to inform the detailed design of the Scheme following the approval of the DCO.

4.2.9 The design champion was a key member of the project team, identifying opportunities to enhance and influence the design to reduce impacts, respond to technical requirements and have regard to comments from landowners, consultees and stakeholders. A summary of stakeholder engagement with respect to design evolution is set out **Tables 4-1** and **4-2 of Chapter 4: Alternatives and Design Evolution** of the ES **[EN010142/APP/6.1]**

4.3 Design Stages

4.3.1 The Scheme has undergone several stages of design evolution which has resulted in changes to the indicative site layout of the Principal Site and Cable Route Corridor, which in turn has informed the components of the authorised development described **in Schedule 1** of the **draft DCO [EN010142/APP/3.1],** the **Works Plans [EN010142/APP/2.3]** and the **Outline Design Principles Statement [EN010142/APP/7.4]. Chapter 4: Alternatives and Design Evolution** of the ES **[EN010142/APP/6.1]** describes the site selection methodology that was adopted to derive the Order limits, so this is not repeated in this Statement. This Statement sets out the design changes made to the Scheme at key milestones including:

a. Non-Statutory Consultation Layout (July 2022).
b. EIA Scoping Layout (September 2022)
c. Statutory Consultation Layout (July 2023).
d. Order limits and Application Layout (March 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 referred to in paragraph 4.2.5.

4.4 Non-Statutory Consultation

4.4.1 The non-statutory consultation was undertaken in the form of co-design workshops and the circulation of community newsletters represented the maximum extent of land being considered for the Scheme. At this stage, the Principal Site comprised an area of 1,700 ha. This was informed by the site selection process set out in **Chapter 4: Alternatives and Design Evolution** of the ES **[EN010142/APP/6.1]** and the design objectives set out in section 3.10.

4.4.2 The Cable Route Corridor extended south-west from the southern corner of the Principal Site along an approximate 18.5km length before connecting with the National Grid Cottam Substation. The Cable Route Corridor measured between 0.6km and 1.8km in width and comprised two options around the village of Willingham by Stow.

4.4.3 At this point of the design process, an indicative site layout plan for the Principal Site had not been developed. The indicative Order limits were informed by the initial opportunities and constraints mapping and RAG (Red, Amber, Green) assessment to inform the potential split between developable land for solar PV and non-developable land for ecological and landscape enhancement and mitigation. This is explained further in **Chapter 4: Alternatives and Design Evolution** of the ES **[EN010142/APP/6.1].**

4.4.4 The design concept also recognised the need to work collaboratively with the developers of the other solar DCOs within the area to develop a shared cable route corridor to minimise environmental impacts.

4.4.5 The alternative cable route to the north of Willingham by Stow, as shown in **Plate 4-2** was sought at this time due to the need to undertake further technical work to confirm whether the Cable Route Corridor could be shared with the Cottam Solar Project due to the interaction of the Cable Route Corridor with its Solar PV Site.

4.4.6 The design concept also sought the inclusion of 200ha of land to the west of Springthorpe as an area for ecological enhancement and mitigation**. Plate 4-1~~Plate 4-1~~** below shows the early design concept for the Scheme. This followed Stages 1 to 4 of the site selection process set out in **Chapter 4: Alternatives and Design Evolution** of the ES **[EN010142/APP/6.1]. Plate 4-1~~Plate 4-1~~** shows the extent of the Principal Site located to the north-east of the National Grid Cottam Substation with the developable area shown in dark blue hatching and green infrastructure shown in green. The maximum extent of the Cable Route Corridor is shown by purple hatching with the alternative route to the north of Willingham by Stow shown with brown hatching. This image also shows how the Scheme interacts with the other solar NSIP projects.

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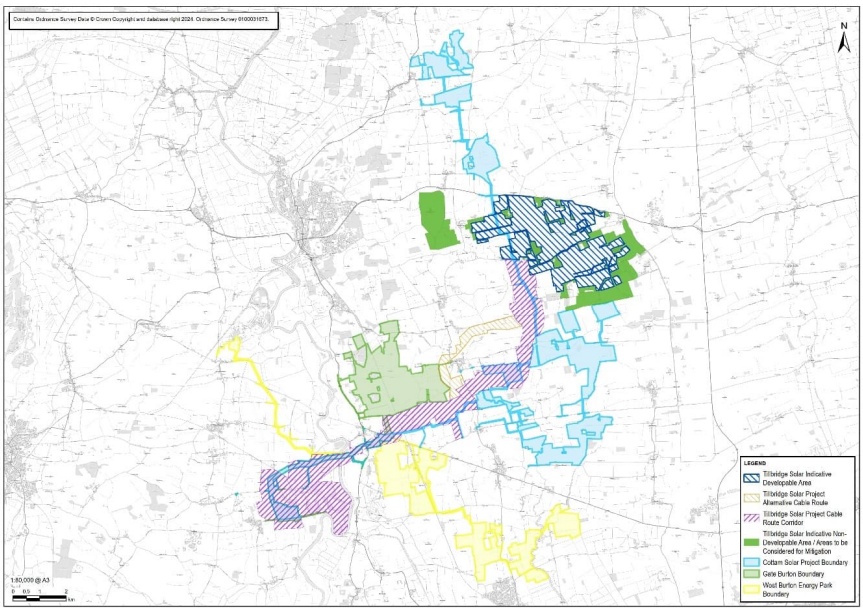

Plate 4-1 Non-statutory consultation design of the Principal Site showing solar PV and areas for landscape/ecology mitigation and emergence of shared Cable Route Corridor with other NSIP projects

4.4.7 Flexibility was sought at this stage on the type of PV panels to include fixed south facing and east-west tracking panels. Both options result in different land takes and site layout arrangements with the Order limits needing to retain sufficient flexibility for both options.

4.4.8 The co-design workshops also sought input from stakeholders on matters relating to:

a. Cumulative Impact;
b. Site Selection;
c. Ecology and Biodiversity;
d. Cultural Heritage;
e. Landscape and Visual;
f. Traffic and Access;
g. Water Environment;
h. Socio-Economics and Land-use; and
i. Community Benefits;

4.4.9 **Appendix A** of the **Consultation Report Appendices [EN010142/APP/5.2]** summarises the feedback received at the co-design workshops. This includes a copy of the post-collaboration workshop report (September 2022). **Table 2** of the **Consultation Report Appendices [EN010142/APP/5.2]** sets

out how the design of the Scheme was evolved to have regard to the comments made.

4.5 EIA Scoping

4.5.1 The scoping boundary was further refined with the Principal Site reduced to 1,500 ha following responses to the non-statutory consultation and consideration of potential landscape and visual effects, ecological impacts and the opportunity for biodiversity enhancement and improved habitat connectivity. The scoping boundary associated with the Cable Route Corridor remained the same as the non-statutory consultation stage and is shown in **Plate 4-2~~Plate 4-2~~** below:

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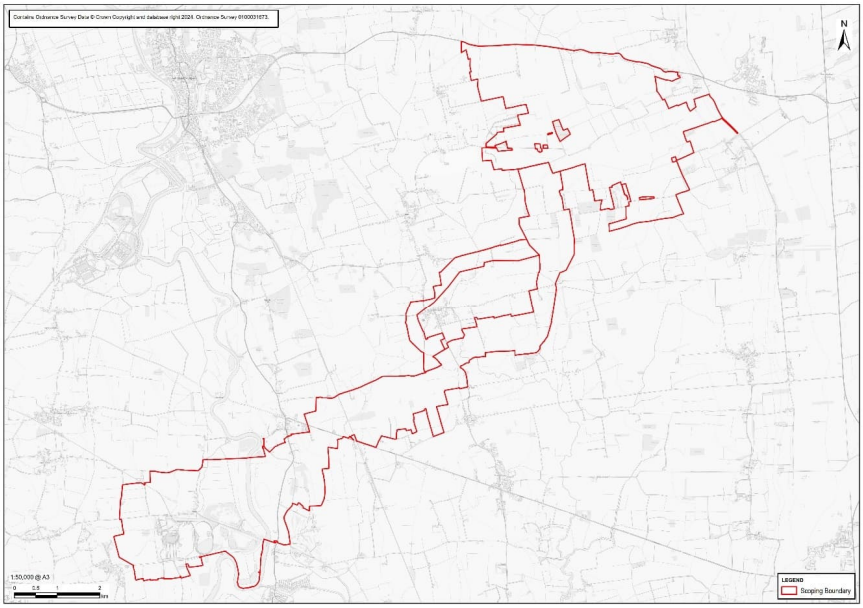

Plate 4-2 Scoping Boundary

4.5.2 The Scheme sought to establish an access strategy for construction and operation at an early stage seeking to utilise the opportunity associated with the Principal Site of it having direct access onto the local highway network via the A631, which adjoins the northern boundary of the Principal Site. This is shown in **Plate 3-20~~Plate 3-20~~** above.

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4.5.3 The Scoping Report submitted to the Secretary of State was informed by environmental constraints mapping to assist in refining the scope of the Environmental Impact Assessment and to inform the design evolution of the Scheme. This is shown in **Plate 4-3~~Plate 4-3~~** below:

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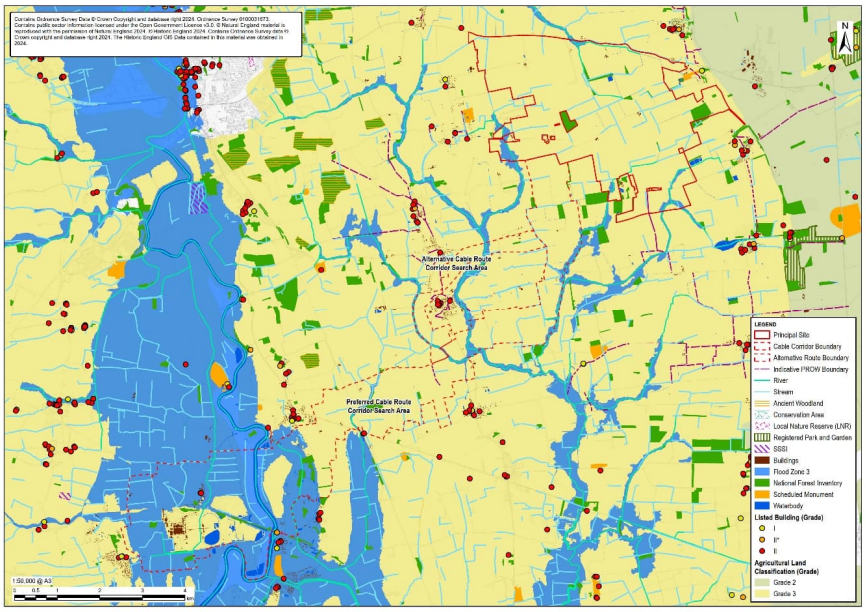

Plate 4-3 Environmental Constraints

4.5.4 **Table 4-1** below also explains the design changes that were made after the non-statutory consultation to the Scheme, and which fed into the scoping boundary.

Table 4-1 EiA Scoping Design Response

Design Objective	Design Response
Objective 1: The Scheme will seek to efficiently generate a significant amount of renewable energy to the National Electricity Transmission System through its careful siting, thereby supporting the delivery of the Government's objectives and commitments for the development of a secure, affordable and low carbon energy system.	The point of connection at the National Grid Cottam Substation was secured by the Applicant by way of a Bilateral Connection Agreement originally in January 2020.
Objective 2: The Scheme will be sensitively integrated into its landscape setting, to minimise adverse landscape and visual effects as far as possible.	To take account of views of Middle Street (The Cliff), the developable areas were pulled in from the east away from Middle Street (The Cliff) to have regard to views and the setting of Glentworth. The Order limits were pulled in from the south having regard to the setting of Fillingham and Middle Street (The Cliff).

Design Objective	Design Response
	Inclusion of land to the eastern extent of the Principal Site to provide landscape screening. Consideration of the local landscape value of the Lincoln Cliff and its contribution to local landscape character being elevated compared to the general character of the area defined by flat open fields.
Objective 3: The Scheme will respond sensitively to its proximity to residential dwellings, settlements and PRoW with regard to visual impact, noise and lighting.	Land to the east of Springthorpe was removed to have regard to the proximity of a byway and temporary permissive bridleway located to the east of Springthorpe and to also have regard to comments made by the parish council at the non-statutory consultation event and at a subsequent meeting. Recognition of some dwellings adjoining the Principal Site and the need to consider suitable buffers to protect residential and visual amenity.
Objective 4: The Scheme will be sensitive to the existing land quality and its resources and other land uses.	At this stage, an Agricultural Land Classification Survey had not been commissioned. The Scoping Report **Appendix 1-1** of the ES **[EN010142/APP/6.2]** confirmed that this would be undertaken to inform the baseline assessment of the presence of best and most versatile land to then inform the design process.
Objective 5: The Scheme will ensure that fire safety is managed ensuring the inclusion of embedded design mitigation to minimise risks.	Early design acknowledged the potential fire risk associated with battery storage and committed to the preparation of a framework battery safety management plan to inform the design of the Scheme. This was set out in the Scoping Report **Appendix 1-1** of the ES **[EN010142/APP/6.2]**.
Objective 6: The Scheme will seek to avoid adverse impacts to enhance existing biodiversity through the creation of new green infrastructure and the creation of new habitat for wildlife to achieve a minimum 10% Biodiversity Net Gain.	The Principal Site comprising large, flat open fields with limited hedgerows and trees and with some scattered woodland presenting an opportunity for enhancement.

Design Objective	Design Response
	Land to the west of Springthorpe removed following consideration of baseline ecological data and due to concerns raised by local landowners.
Objective 7: The Scheme will be sensitive to heritage assets and their setting.	Consideration of the historic importance of the villages situated off Middle Street acknowledging the presence of designated heritage assets, conservation areas, the Scheduled Monument at Harpswell and the Registered Park and Garden associated with Fillingham Castle.
Objective 8: The Scheme will safeguard the water environment, be resilient from flooding both now and in the future and not increase the risk of flooding elsewhere.	The site selection process for the Principal Site undertook a sequential approach to its location and design as set out in **Chapter 4: Alternatives and Design Evolution** of the ES **[EN010142/APP/6.1].** This explains that a contiguous site was required by the Applicant to deliver a large-scale solar Scheme and in a location at a low risk of flooding. Land for the Principal Site was discounted early on in the site-selection process which was located in areas of high flood risk. The Principal Site forming part of the scoping boundary was generally at a low risk of flooding from fluvial and surface water sources.
Objective 9: The Scheme will provide safe access and mitigate impacts on the local highway network to avoid significant effects, where possible.	The Scheme sought to establish an access strategy for construction at an early stage seeking to utilise the opportunity associated with the Principal Site having direct access onto the local highway network via the A631, which adjoins the northern boundary of the Principal Site. Consideration was also given of the Principal Site's inter-relationship with the PRoW network.

Design Objective	Design Response
Objective 10: The Scheme will enhance, where possible, the existing network of PRoW through the provision of permissive paths to be available for public use during the operation of the authorised development to improve accessibility	Land to the east of Springthorpe was removed to have regard to the proximity of a byway and temporary permissive bridleway located to the east of Springthorpe and to have regard to comments made by the parish council at the non-statutory consultation event and at a subsequent meeting.

4.6 PEI Report Layout

4.6.1 Following the non-statutory consultation and EIA Scoping stage, the indicative design of the Principal Site and extent of the Order limits associated with the Cable Route Corridor were further refined and iterated.

4.6.2 At this stage, design considerations and parameters evolved further informed by technical designs, preliminary highway and civils designs and preliminary environmental reports and baseline data including but not limited to:

a. Cultural Heritage Desk Based Assessment
b. Preliminary Ecological Appraisal
c. Aquatic Ecology Baseline Report
d. Survey Report for Breeding Birds
e. Badger Survey Report
f. Preliminary Flood Risk Assessment
g. Preliminary Drainage Strategy
h. Landscape and Visual baseline (viewpoint descriptions and a preliminary assessment of landscape and visual effects)
i. Baseline noise survey and modelling
j. Partial Agricultural Land Classification Report
k. Preliminary Transport Assessment

4.6.3 The design parameters and inputs described above fed into the preparation of an indicative site layout plan for the Principal Site in which to inform consideration of the preliminary environmental effects of the Scheme. **Plate 4**~~**Plate 4**~~ below shows the indicative site layout plan of the Principal Site that formed part of the PEI Report:

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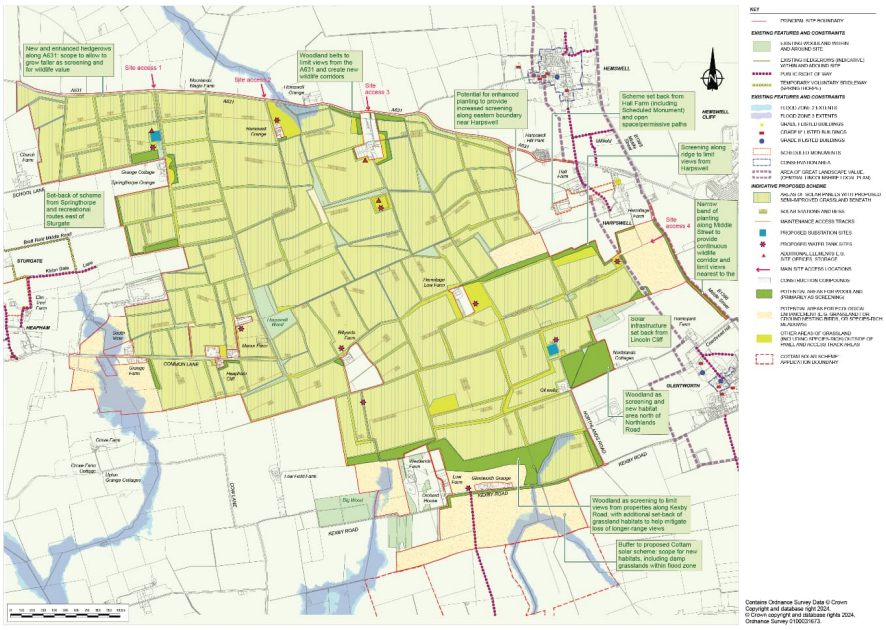

Plate 4-4 PEI Report Indicative Principal Site Layout

4.6.4 The design evolution and iteration of the Principal Site from the scoping to the statutory consultation stage and how this further developed the design objectives is set out in **Table 4-2~~Table 4-2~~** below:

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Table 4-2 PEI Report design response

Design Objective	Design Response
Objective 1: The Scheme will seek to efficiently generate a significant amount of renewable energy to the National Electricity Transmission System through its careful siting, thereby supporting the delivery of the Government's objectives and commitments for the development of a secure, affordable and low carbon energy system.	Flexibility of panels removed with the Scheme proposing east-west tracking panels only and DC-coupled BESS to increase efficiency and to maximise the electricity generation of the Scheme. Two grid connection substations were introduced to distribute the load of the medium voltage cables connecting the PV panels to the grid connection substations before connecting with the high-voltage cables connecting to the Cable Route Corridor and then on to the National Grid Cottam Substation.
Objective 2: The Scheme will be sensitively integrated into its landscape setting, to minimise adverse landscape and visual effects as far as practicable.	Enhanced planting to the north-east of the Principal Site to provide increased screening along the eastern boundary near Harpswell. Woodland belts to limit views from the A631.

Design Objective	Design Response
	New and enhanced hedgerows along A631 to provide visual screening.
Objective 3: The Scheme will respond sensitively to its proximity to residential dwellings, settlements and PRoW with regard to visual impact, noise and lighting.	Set-back of Scheme from Springthorpe and recreational routes east of Sturgate. Woodland to be provided as screening to limit views from properties along Kexby Road, with additional set-back of grassland habitats to help mitigate the loss of longer-range views.
Objective 4: The Scheme will be sensitive to the existing land quality and its resources and other land uses.	The Cable Route Corridor was reduced in width from the Scoping stage to between 350m and 1,400m in width and with the broad alignment of the Order limits complementing the shared route with the other NSIP projects. The option to cross the River Trent at Torksey viaduct was removed following concerns regarding technical and engineering feasibility and potential impacts upon the viaduct as a designated heritage asset. The northern cable route option around Willingham by Stow was also removed. These design iterations of the Cable Route Corridor moved towards the creation of a shared Cable Route Corridor with the other NSIP projects to reduce environmental effects.
Objective 5: The Scheme will ensure that fire safety is managed ensuring the inclusion of embedded design mitigation to minimise risks.	A Framework Battery Safety Management Plan (FBSMP) was produced to inform the indicative layout of the Principal Site ensuring that the Scheme includes sufficient access points in the event of a fire and initial consideration of the drainage of potential contaminated water should a fire occur as part of the drainage strategy.
Objective 6: The Scheme will seek to avoid adverse impacts upon biodiversity and seek opportunities to enhance existing biodiversity through the creation of new green infrastructure and the creation of new habitat for wildlife to achieve Biodiversity Net Gain.	Band of planting included along Middle Street to provide a continuous wildlife corridor and to limit views. Woodland belts to create new wildlife corridors. New and enhanced hedgerows along the A631 to enhance wildlife value.

Design Objective	Design Response
	Areas of ecological enhancement and additional woodland added to the Scheme to enhance biodiversity.
Objective 7: The Scheme will be sensitive to heritage assets and their setting.	The Order limits were reduced to move the extent of the Principal Site further away from Harpswell Hall Farm having regard to the setting of designated heritage assets including a Scheduled Monument and St Chad's Church.
Objective 8: The Scheme will safeguard the water environment, be resilient from flooding both now and in the future and not increase the risk of flooding elsewhere.	All critical and vulnerable infrastructure (substations, solar stations and BESS) located within areas of a low risk of flooding from any source. Only PV panels, located within a small area of Flood Zone 2/3 but with embedded mitigation to ensure that this does not result in an increase in flood risk elsewhere and is designed appropriately with respect to potential flood events.
Objective 9: The Scheme will provide a safe access and will mitigate impacts on the local highway network to avoid significant effects.	Main site access for construction and operation to the Principal Site off the A631. A fourth access was introduced utilising an existing farm access track off Middle Street (B1398) to ensure that rural roads were not a primary access for the Principal Site.
Objective 10: The Scheme will enhance, where possible, the existing network of PRoW through the provision of permissive paths to be available for public use during the operation of the authorised development to improve accessibility	There is only one PRoW located within the boundary of the Principal Site (GItw/85/1). This is located within an area proposed for landscape and ecological mitigation and not forming part of the developable area. This provides an opportunity to enhance the immediate setting of the existing PRoW, which currently runs through intensively farmed agricultural land.

4.6.5 The iteration of the Cable Route Corridor Order limit extents was informed by environmental and planning constraint mapping, consideration of technical matters including crossing points and continued collaboration with the developers of the other solar DCOs.

4.6.6 **Plate 4~~Plate 4~~-5** below shows the extent of the PEI Report Boundary:

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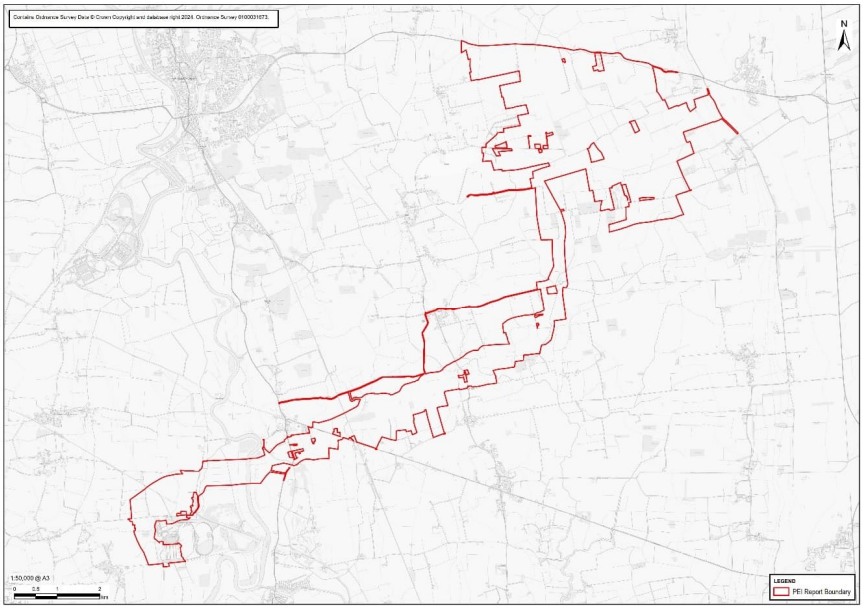

Plate 4-5 PEI Report Boundary

4.7 Order limits and Application Indicative Site Layout

4.7.1 Following statutory consultation, the Applicant's design team considered the feedback provided in response to the consultation as well as through ongoing engagement with statutory consultees and stakeholders. These responses are set out in detail in the **Consultation Report [EN010142/APP/5.1]** and the **Consultation Report Appendices [EN010142/APP/5.2].**

4.7.2 Meetings were held and emails were exchanged with officers at each of the host authorities (West Lindsey District Council, Lincolnshire County Council, Bassetlaw District Council and Nottinghamshire County Council). This included meetings and discussions with planning officers, conservation officers, highway engineers and environmental health. Collaboration also took place with the developers of the other solar NSIP projects, heritage stakeholders including Historic England and the County Archaeologist, Natural England (Soils and Licensing), Nottinghamshire and Lincolnshire Local Wildlife Trusts, Lincolnshire Fire and Rescue Service, water environment stakeholders including the Environment Agency, Lead Local Flood Authority and Internal Drainage Boards, landscape consultants representing the host authorities, the Local Highway Authorities, Public Rights of Way Officer, the Minerals and Waste Planning Authorities, Tree Officers and local residents raising concerns with respect to residential amenity.

4.7.3 The design of the Scheme was further refined and resulted in the Order limits shown in **Plate 3-1~~Plate 3-1~~.**

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4.7.4 Other small areas of the Order limits were removed to minimise the Scheme affecting land interests. The key design changes that were made to the Scheme and how these correlate with the design objectives is set out below in **Table 4-2** below:

Table 4-2 Order limits and Application Indicative Site Layout

Design Objective	Design Response
Objective 1: The Scheme will seek to efficiently generate a significant amount of renewable energy to the National Electricity Transmission System through its careful siting, thereby supporting the delivery of the Government's objectives and commitments for the development of a secure, affordable and low carbon energy system.	Through the designation of the revised Energy NPS's coming into effect on 17 January 2024, the Government has confirmed the presumption in favour of granting development consent for national scale renewable energy development, such as the Scheme. Low carbon and renewable energy infrastructure is now identified as critical national priority infrastructure and is urgently needed to help meet the Government's energy objectives. This includes ensuring the system is Net Zero consistent, providing security of supply and providing an affordable, reliable system.
Objective 2: The Scheme will be sensitively integrated into its landscape setting, to minimise adverse landscape and visual effects as far as practicable.	Removal of solar infrastructure from the field north of Kexby Road and west of Northlands Road to mitigate heritage impacts and reduce visibility for users and residents of Kexby Road and from viewpoints around Glentworth. This area is now proposed for biodiversity mitigation and enhancement. Provision of woodland screening and an area of biodiversity enhancement south of Springthorpe Grange, to reduce visual impacts on the open views from the south of the property. Amendments to the proposed woodland and biodiversity enhancement around the former orchard area north of Grange Cottages to maintain screening for the Cottages of the proposed on-site substation. Provision of woodland or shelter belt planting along the south side of the Order Limit and mitigation area south of Kexby Road; and the subsequent removal of proposed trees and hedges along the southern boundary of Kexby
Objective 3: The Scheme will respond sensitively to its proximity to residential dwellings, settlements and PRoW with regard to visual impact, noise and lighting.	

Design Objective	Design Response
	Road. This amendment reflects concerns raised by residents within properties along Kexby Road about loss of open views to the south whilst retaining screening to the Cottam solar scheme.
Objective 4: The Scheme will be sensitive to the existing land quality and its resources and other land uses.	Removal of 11.31ha of Grade 3a BMV agricultural land from the Scheme. Only PV panels will be installed on BMV land thereby ensuring minimal permanent loss throughout the Scheme. The protection of existing utility assets within the Principal Site – this involved providing a buffer where no development would exist.
Objective 5: The Scheme will ensure that fire safety is managed ensuring the inclusion of embedded design mitigation to minimise risks.	The indicative site layout introduced two emergency access points off Common Lane to ensure full access is available to the Principal Site should there be a fire.
Objective 6: The Scheme will seek to avoid adverse impacts upon biodiversity and seek opportunities to enhance existing biodiversity through the creation of new green infrastructure and the creation of new habitat for wildlife to achieve Biodiversity Net Gain.	Provision of wider buffers to solar infrastructure, including 5m from hedgerows and 15m from all trees above 4m height, based on the extent of the canopy drip line and heights indicated on the topographic survey; 10m from all ponds, with the exception of a 50m buffer around the pond north of Grange Cottages (Springthorpe) due to the presence of protected species; and 10m from watercourses. Amendments to the proposed woodland and biodiversity enhancement around the former orchard area north of Grange Cottages on School Lane, to reflect great crested newts within the pond, but also allowing a wider buffer to the relic vegetation. Extension to the biodiversity enhancement area into the field south of Hemswell Grange and Grange Cottage on the A631, to create a wider buffer with tree planting to limit residential views of panels. Enhancements to existing hedgerows running east-west through the site, to create more robust and continuous green infrastructure corridors.

Design Objective	Design Response
Objective 7: The Scheme will be sensitive to heritage assets and their setting.	Removal of panels from three fields at the northeastern corner of the Principal Site to mitigate heritage and landscape impacts relating to the Scheduled Monument at Harpswell Hall. These include designed views from the former 'prospect mound' and similar views from permissive paths along the historic moat. Removal of solar infrastructure from the two fields immediately east of the Harpswell Hall, to mitigate impacts from the Scheduled Monument and also reduce the presence of solar infrastructure close to a permissive circular walking route around the two fields to the east. Introduction of sensitive archaeological sites to retain potential archaeology in situ and to exclude development.
Objective 8: The Scheme will safeguard the water environment, be resilient from flooding both now and in the future and not increase the risk of flooding elsewhere.	All critical infrastructure located in areas at a low-risk of flooding (substations, BESS and solar stations) and the inclusion of embedded mitigation with respect to the height of Solar PV panels above the ground in areas at a higher risk of flooding.
Objective 9: The Scheme will provide a safe access and will mitigate impacts on the local highway network to avoid significant effects.	Following a review of the access strategy for the Scheme's operation, additional land was included in the Order limits for operational accesses, traffic management and movement of abnormal loads. The access strategy was further refined in terms of the inclusion of preliminary access designs for the four access points of the Principal Site. This was to ensure the provision of suitable geometry for junction designs and sufficient visibility splays to allow vehicles to safely turn in and out of the Principal Site and to inform where improvements to existing access points are required. The **Transport Assessment (Appendix 16)** of the ES **[EN010142/APP/6.2]** demonstrates that the Scheme will not result in a significant adverse effect on the local highway network.

Design Objective	Design Response
Objective 10: The Scheme will enhance, where possible, the existing network of PRoW through the provision of permissive paths to be available for public use during the operation of the authorised development to improve accessibility	Provision of two permissive paths connecting Common Lane and Kexby Road, offering recreational access in an area where PRoWs are limited and also improving north-south off-road links. The paths will be located within 25m wide corridors that will allow sufficient space for planting such as hedgerows to screen solar infrastructure and offer biodiversity and visual interest to users.

4.7.5 In addition, the Cable Route Corridor was significantly refined and reduced in width to ensure that only land required to facilitate the development is included within the Order limits, to ensure sufficient flexibility and to support the delivery of a shared Cable Route Corridor with the other solar DCOs. The key changes to the Order limits associated with the Cable Route Corridor for submission were:

a. Reduction of the Cable Route Corridor to approximately 100m in width.

b. Two alternative routes at land to the south of Marton due to concerns associated with space for all four solar DCOs and concern associated with land acquisition rights that has emerged through the Gate Burton Energy Park examination.

c. Two alternative routes to land to the east of Marton due to the need to cross a live railway line using a trenchless crossing, to protect an existing woodland, to protect a gas pipeline owned by Uniper and where the Cottam Solar Project also crosses the railway line at this point.

d. Two alternative routes to land to the east of Willingham-by-Stow where the eastern option is required to extend through the proposed Solar PV area of the Cottam Solar Project thereby retaining an alternative option to the west given this constraint.

e. Optionality retained at three locations due to constraints associated with crossing Network Rail assets, utilities, the inter-relationship of the Cable Route Corridor with Solar PV associated with other developments (Cottam Solar Project) and landownership constraints.

f. The Order limits have been increased to the south of Torksey Ferry Road to allow sufficient working room for the laying of the Cable Route Corridor to the south of the National Grid Cottam Substation, having regard to existing utility assets and to address EDF's response to statutory consultation as a landowner.

g. Amended access strategy for construction of the Cable Route Corridor at the National Grid Cottam Substation with the removal of construction vehicles coming through the village of Rampton to the west revised to all vehicles accessing the Cable Route Corridor via Cottam Road at this point in the Site.

h. Inclusion of additional land to the north of Willingham Road to allow sufficient working width for the construction of the cable.

i. Inclusion of additional highway extents to allow for public road improvements and the creation of temporary access points for the construction of the Cable Route Corridor.

j. New temporary access points along the Cable Route Corridor to ensure that access points are shared with other developers of large-scale solar schemes in the area.

k. The Order limits have increased to include the roundabout at the junction with Middle Street and A631 to accommodate Street Works associated with Abnormal Indivisible Load (AIL) movements.

5. The Design Response

5.1 Introduction

5.1.1 The Applicant has developed its design to respond to the opportunities and constraints identified in section 3 of this DAS. Once identified, along with guidance from the relevant design policies and guidance, these informed the development of design objectives. Good design will be secured by delivering the Scheme in a way that meets these design objectives.

5.1.2 This section of the DAS details how the design objectives of the Scheme have been met through the design evolution and iteration process described in Section 4 being translated into the indicative site layout plan shown in **Figure 3-1** of the ES **[EN010142/APP/6.2]** for the Principal Site and the Scheme design masterplan. Both of these illustrative plans demonstrate how the Scheme design described in this DAS will be implemented once the Scheme is operational. The Scheme design masterplan is included as part of this DAS at **Figure 5-1.**

5.1.3 The Scheme's design response includes design principles which define the design for the Scheme by setting out parameters that will be adhered too at the detailed design stage for the Scheme. These principles are set out in the **Outline Design Principles Statement [EN010142/APP/7.4].** Requirement 5 of the **draft DCO [EN010142/APP/3.1]** requires approval by the relevant planning authority of the detailed design of the authorised development. The detailed design will be in accordance with the outline design principles outlined within the **Outline Design Principles Statement [EN010142/APP/7.4]** and the authorised development will be carried out in accordance with the approved details. This will ensure that the good design principles established by the design evolution and design response described in this DAS are implemented as part of the authorised development.

5.2 Objectives and Design Response

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

Design Response

5.2.1 The Scheme, if consented, will be a significant CNP infrastructure asset that will deliver a large amount of low-cost, secure and renewable electricity, which will support the Government's targets of decarbonising electricity generation by 2035 and reaching net-zero by 2050.

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

a. Over the 60-year lifetime of the Scheme, it is expected to generate 52.1 terrawatt hours of electricity.

b. Has a direct connection into NETS at the existing National Grid Cottam Substation with no further offsite infrastructure required.

c. Incorporates single axis trackers configured in rows generally orientated north-south which will track 60 degrees east-west during the course of the day tilting to maximise the potential energy generation. The east-west trackers maximise the irradiance levels by continuously tracking the Sun's trajectory throughout the day. East west trackers can also be aligned with hedgerows and face different azimuths as well as slightly off north and south in order to fit optimally within the irregular shapes of the fields while still being able to face the sun directly through the tracking mechanism.

d. Is Direct Current (DC) coupled. This technology is described in **Chapter 4: Alternatives and Design Evolution** of the ES **[EN010142/APP/6.1].** DC-coupled schemes result in BESS being dispersed across the Scheme sitting alongside the solar stations rather than being in a centralised location like the AC-coupled system.

5.2.3 In the majority of cases for UK solar developments to date, where solar schemes include BESS as associated development these are Alternating Current (AC) coupled. This means that the BESS is sited within a single and centralised location within the site. Solar panels generate DC electricity that has to be transformed via an invertor into AC electricity before being stored in a battery invertor. AC coupling systems result in efficiency losses through inverting electricity from AC to DC or from DC to AC.

5.2.4 DC-coupled systems, work by the DC solar electricity flowing from the solar panels to a DC/DC converter that directly feeds the battery. This removes the inversion of solar electricity from DC to AC and back again before the battery stores the electricity. With a DC-coupled system, any electricity the solar panels produce will be inverted only once from DC to AC as it flows from batteries into the on-site substations and then onto the National Grid Cottam Substation. This means that a DC-coupled system is more efficient than AC-coupled.

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

Design Response

5.2.5 The Landscape and Visual Impact Assessment undertaken in **Chapter 12: Landscape and Visual Amenity** of the ES **[EN010142/APP/6.1]** has informed the iterative design process, guided by good design principles, in response to national planning policy requirements, published landscape character assessment guidance and fieldwork analysis.

5.2.6 The overall objective of the landscape design is to integrate the Scheme into its landscape setting and minimise adverse landscape and visual effects as far as possible.

5.2.7 To meet **Objective 2**, the Scheme design:

a. Avoids the siting of solar infrastructure within the AGLV designation along the prominent scarp slope of Lincoln Cliff, with only ecological or landscape mitigation located within the boundary of this local designation.

b. During the early stages of design, the boundary to the Principal Site was moved away from the areas around Ingham and Fillingham, which include sensitive features such as PRoW, Fillingham Lake and potential views from Fillingham Castle.

c. Avoids areas of open or slightly undulating topography along the base of Lincoln Cliff, including immediately west of Glentworth.

d. Identifies relevant Neighbourhood Plan 'key views' to highlight potential areas for mitigation, such as west of Harpswell. This included views from and towards the Lincoln Cliff and from the A631 looking towards the Principal Site. To address and have regard to this, Solar PV panels have been moved away from the edges of the Principal Site and where these key views are located landscape and ecological buffers are proposed to protect views as far as practicable.

e. Creates a large buffer to the east of Springthorpe, to protect open views from properties on the eastern edge of the village and have regard to the presence of a temporary voluntary permissive bridleway and recently adopted byway that provide recreational amenity in an area where PRoWs are limited.

f. Provides buffers around residential properties, with woodland mitigation where appropriate, but also cognisant of residents' appreciation of open views.

g. Creates a buffer between the Principal Site and the Cottam Solar Project to the south and uses these fields for ecological and landscape mitigation only.

h. Provides woodland or shelter belt planting along the south side of Kexby Road within areas identified for ecological mitigation, whilst also reducing cumulative views of the Cottam Solar Project.

i. Includes woodland screening along the western side of Middle Street, to limit views of the Scheme at the closest point to the Lincoln Cliff.

j. Uses areas of higher flood-risk for ecological mitigation, with scope for wetland habitats.

k. Reinstates and/or improves field boundaries, particularly in the more open parts of the site such as west of Harpswell, to limit visibility of the Scheme and increase landscape condition and habitat connectivity.

l. Uses smaller and/or peripheral fields for mitigation, such as along the south side of the A631.

m. Includes areas for woodland belts to the west of Harpswell, to mitigate impacts on views from the Scheduled Monument moated site and historic gardens that are accessible through permissive paths and open space.

n. Uses existing farm tracks and field openings as the preferred routes for construction and then permanent access, minimising loss of hedgerows.

o. Locates substations and the solar centre and storage building where existing screening will limit visibility.

p. Includes the use of new green infrastructure and corridors throughout the Scheme, to increase habitat connectivity; enhance landscape condition; and improve visual amenity within sometimes degraded agricultural landscapes. This includes the provision of semi-improved grassland beneath the solar panel areas and within the wider Principal Site to increase biodiversity relative the current arable monocultures, including biomass crops. These measures are set out in the **Framework LEMP [EN010142/APP/7.17]** and the **Indicative Landscape Masterplans [EN010142/APP/7.19]**.

q. Provides permissive paths to improve the existing network of PRoWs and to improve connectivity with the existing network.

Objective 3: The Scheme will respond sensitively to its proximity to residential dwellings, settlements and PRoW with regard to visual impact, noise and lighting.

Design Response

5.2.8 The landscape design aims to filter and screen the more prominent components of the Scheme where possible with respect to views from visual receptors and ensures that the Scheme is carefully sited within the landscape.

5.2.9 To meet **Objective 3**, the Scheme design:

a. Has been carefully developed where the Scheme components will appear in views experienced by residents so as to minimise adverse effects. This includes providing buffers around residential properties, with woodland mitigation where appropriate, but also cognisant of residents' appreciation of open views. These buffers vary from around 30m (where existing dense screening is in place) or more generally a minimum of 50m, up to around 300m.

b. Locates solar PV panels away from residential properties incorporating buffers to minimise the potential for adverse impacts on visual amenity.

c. Incorporates a distance of 250m between residential receptors and BESS, solar stations and substations, except for one specific receptor off Northlands Road, where a specific exclusion area for BESS and solar stations is provided in response to feedback.

d. Includes buffers and woodland screening around residential properties to minimise impacts.

e. Has sited the two on-site substations close to existing landscape screening such as woodland, existing infrastructure or at a sufficient distance from the more sensitive topography and landscape of the Lincoln Cliff.

f. Includes landscape and biodiversity enhancement areas adjoining residential properties located within close proximity to the Order limits to reduce visual impacts.

g. Incorporates new hedgerow planting and infilling of existing hedgerows to minimise visual impacts from residential properties and key viewpoints.

h. Proposes new woodland planting and the infilling of existing vegetation to minimise visual impacts and key viewpoints.

i. Includes significant setbacks of solar infrastructure from residential properties that experience open views with the proposed planting of a mix of grassland and trees to minimise impacts as far as possible. This particularly relates to those dwellings located along Kexby Road and dwellings located to the north of the A631, which face towards the Principal Site.

j. Principal access for the Principal Site will be from the A631 and the B1398 Middle Street and not the rural roads which dissect the Principal Site (Common Lane and Kexby Road) to reduce potential impacts upon the occupiers of residential dwellings.

k. No areas will be permanently lit. Permanent security lighting with motion detectors will be used for security purposes around the electrical infrastructure, emergency access points to facilities within the Scheme and potentially at other sites of critical infrastructure. Motion detectors and no permanently lit lights will ensure that residential amenity is protected.

Objective 4: The Scheme will be sensitive to the existing land quality and its resources and other land uses

Design Response

5.2.10 The development of the Scheme location and design has been carefully considered to minimise impacts on land quality and resources, and existing land uses within the area.

5.2.11 To meet **Objective 4,** the Scheme design:

a. Has minimised the use of Best and Most Versatile (BMV) agricultural land.

b. Includes provision of semi-improved and species-rich grassland beneath the solar panel areas and within the wider Principal Site, to increase biodiversity and soil health.

c. Locates structures such as substations, BESS and solar stations which require the removal of topsoil and creation of hardstanding away from BMV land.

d. Has set back the Principal Site in from the south to reduce its potential interface with the Cottam Solar Project to reduce cumulative effects.

e. Has ensured that there is no impact upon the operation of the existing Glentworth Oil site located off Northlands Road as a protected operating mineral site. The Scheme has also ensured that it will not prejudice the

implementation of a recently granted planning permission for a further oil site located to the west of the existing site also to be accessed off Northlands Road. Details of these consents are set out within the **Planning Statement [EN010142/APP/7.2].**

f. Avoids the placement of infrastructure within the Principal Site directly above or within the easements of statutory undertaker assets including gas pipelines.

g. Provides offsets from existing overhead lines within the Principal Site.

h. Ensures that the Cable Route Corridor is of sufficient width to accommodate other solar NSIP schemes as a shared Cable Route Corridor to minimise land take and impacts. However, this only relates to temporary works with all land reinstated to its former condition upon completion.

Objective 5: The Scheme will ensure that battery safety is managed ensuring the inclusion of embedded design mitigation to minimise risks.

5.2.12 It is recognised that it is important to demonstrate that the BESS will be safe, with the Application submission including a **Framework Battery Safety Management Plan (BFSMP) [EN010142/APP/7.13].** The FBSMP has been informed by consultation with Lincolnshire Fire Service and includes measures to minimise fire risk during all stages of the Scheme. **Figure 3-1: Indicative Site Layout [EN010142/APP/6.3]** and **Chapter 3: Scheme Description** of the ES **[EN010142/APP/6.1]** also include design measures to be secured as part of the **Outline Design Principles Statement [EN010142/APP/7.4]** and the **Works Plans [EN010142/APP/2.3].**

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

a. Provides at least two separate access points to the site to account for opposite wind conditions/direction.
b. Includes two emergency access points located off Common Lane to ensure that sufficient accessibility is provided to the Principal Site during fire.
c. Proposes a drainage Strategy that includes swales around each BESS to manage fire water through containment, monitoring and the disposal of contaminated fire water should this be required.

Objective 6: The Scheme will seek to avoid adverse impacts and to enhance existing biodiversity through the creation of new green infrastructure and create new habitat for wildlife to achieve Biodiversity Net Gain

Design Response

5.2.14 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 including embedded design mitigation measures and ecological enhancement.

5.2.15 The mitigation hierarchy approach ensures that the majority of habitats on the Principal Site are retained where possible. This then provides a framework for enhancement through the inclusion of new green infrastructure to improve connectivity and existing wildlife corridors.

5.2.16 Ecological enhancement measures have been developed as part of the Scheme design through its evolution. New habitat is proposed across the Principal Site seeking to deliver a minimum of 10% biodiversity net gain for habitat units as detailed in the **Biodiversity Net Gain Assessment Report [EN010142/APP/7.14]** and in line with the **Framework LEMP [EN010142/APP/7.17]** and the **Indicative Landscape Masterplans [EN010142/APP/7.19]**.

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5.2.17 To meet **Objective 6**, the Scheme design:

a. Includes approximately 556ha of undeveloped land including landscape and ecological mitigation and enhancement (Biodiversity Zones) and proposed woodland.
b. Will include wide margins approximately 15m wide alongside internal access tracks to be laid with grassland.
c. Incorporates grassland margins and undeveloped corners of fields, particularly along the periphery of the Principal Site, to enhance foraging for Skylark nesting both on-site and offsite and to allow for an element of displacement from the Scheme and absorption into neighbouring habitats.
d. Protects and retains important habitats and features such as existing hedgerows and trees.
e. Will create new structural planting which links with existing habitats and to take account of species that are locally appropriate and existing vegetation patterns.
f. Will use native indigenous species of local provenance wherever appropriate.
g. Includes a variety of foraging, nesting and roosting opportunities for protected and notable species, including bats, badgers, invertebrates, amphibians, reptiles and birds.
h. Will include floristically rich habitats, to support a greater assemblage of species and give rise to enhanced foraging opportunities.
i. Will improve water quality and aquatic habitats, through improvements to watercourses and ponds and reduced run-off and in conjunction with the drainage strategy.
j. Includes specific ecological mitigation and enhancement within the area of the Principal Site that extents up to the Lincoln Cliff scarp slope.
k. Uses higher flood-risk areas for ecological mitigation, with scope for wetland habitats and enhancements.
l. Will reinstate and/or improve field boundaries with additional hedgerow and tree planting.

m. Provides buffers to infrastructure, including 5m from hedgerows and 15m from all trees above 4m height, 10m from all ponds where possible and 10m from watercourses to support the avoidance of impacts upon existing habitats and providing opportunities for enhancements.

n. Retains all ancient and veteran trees with protection measures in place during construction within the Principal Site.

o. Uses existing farm tracks and field openings as the preferred routes for construction and then permanent access, minimising the loss of hedgerows.

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

Design Response

5.2.18 The alignment of the Order limits has been designed to avoid all designated heritage assets.

5.2.19 Physical impacts to below ground archaeology following the completion of trial trenching across the Principal Site has been avoided through the creation of exclusion zones whereby potential archaeology will remain in situ. The Scheme design has also sought to minimise potential changes to the setting of designated heritage assets including the setting of:

a. Harpswell Hall, a Scheduled Monument, and the Church of St Chad, Grade I listed, located approximately 200m to the north-east of the Principal Site.

b. Glentworth Hall, Grade II* listed building, located approximately 1km south-east of the Principal Site.

c. Corringham Windmill, a Grade II listed building, located 200m from the north-west edge of the Principal Site.

5.2.20 Design evolution has also considered impacts upon non-designated heritage assets and their setting and to minimise effects where possible.

5.2.21 Due to the above context, design considerations with respect to cultural heritage relate to considerations of setting with direct impacts having been avoided.

5.2.22 To meet **Objective 7**, the Scheme design:

a. Includes setbacks and buffers between the Principal Site and heritage assets (designated and non-designated) to reduce impacts upon the setting and views from these assets. Buffers including screening and planting.

b. Exclusion of fields from the Scheme to limit impacts on the setting and designed views from the Scheduled Monument of Harpswell Hall.

c. Trial trenching of the Principal Site has confirmed areas of archaeological potential within the Principal Site (Sensitive

Archaeological Sites) that are excluded from all development to protect archaeology in situ.

d. Utilises existing vegetation and topography to limit views of the Scheme and minimise effects on the setting of heritage assets.

e. Proposes new native species rich hedgerows with hedgerow trees to be planted where historic field boundaries have been lost through the amalgamation of fields.

f. Proposes mitigation which either preserves or enhances individual aspects of the historic landscape including panel free buffers of 5m from hedgerows, 15m from all trees above 4m height, and 10m from all field ponds and watercourses, including drains. In addition, extant ridge and furrow earthworks will be preserved within Sensitive Archaeological Sites.

g. Existing fieldscape will be retained and selected former hedgerows lost during the 20th century will be replanted to enhance and enforce historic boundaries and historic landscape features of important hedgerows.

Objective 8: The Scheme will safeguard the water environment, be resilient from flooding both now and in the future and not increase the risk of flooding elsewhere.

Design Response

5.2.23 The design response safeguards the water environment through ensuring there is not an increase in flood risk elsewhere from all sources 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.

5.2.24 To meet **Objective 8**, the Scheme design:

a. Has undertaken a sequential approach to its location and design. The majority of the Order limits is located within Flood Zone 1 where practicable. Vulnerable electrical components in the Principal Site (BESS, solar stations and substations) are located in Flood Zone 1 with a low probability of flooding. The majority of Solar PV panels are also located in Flood Zone 1. There are three field parcels where Solar PV Panels are located within Flood Zone 3.

b. Ensures that where Solar PV panels are located within Flood Zone 3, that the solar PV panels will not be installed lower than 20.06m AOD to ensure that the Scheme is resilient to flood risk and climate change.

c. Ensures that the drainage strategy will drain to greenfield run-off rates and accommodate allowances for climate change.

d. Includes attenuation of surface water in the form of swales. The swales will include control mechanisms to restrict flows ensuring that there will be no increase in the runoff water from the Principal Site to the receiving watercourses.

e. Offsets Solar PV panels from watercourses by 10m. This will ensure the protection of watercourses and riparian corridors.

f. Ensures that the area beneath the Solar PV panels will be planted with grassland retaining a permeable surface.

g. Uses tracking Solar PV panels, which will mean that surface water does not consistently fall in one location thereby improving infiltration.

h. Ensures that the height of the panels when at maximum tilt above the ground will be 3.5m to the top of the panel. Panels will be fitted with sensors, which during a storm/flood event will enable the panels to be tilted to their maximum height above the ground.

Objective 9: The Scheme will provide a safe access and will not have an unacceptable impact on highway safety and residual cumulative impacts on the road network will not be severe

Design Response

5.2.25 The Scheme Design includes an access strategy to ensure that there are no significant highway safety issues arising from accessing the Principal Site and that there will not be significant impacts upon the local highway network during its operation.

5.2.26 To meet **Objective 9**, the Scheme design:

Uses existing field access points and tracks for access where this is practical therefore minimising the need to create new points of access.

Reuses the four existing and improved access points serving the Principal Site during construction on a permanent basis during operation to avoid additional land take and ecological disturbance for access; and

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

Objective 10: The Scheme will enhance, where possible, the existing network of PRoW through the provision of permissive paths to be available for public use during the operation of the authorised development to improve accessibility and access to open space.

Design Response

5.2.27 The site selection process carried out to identify the Principal Site for the Scheme included the exclusion of areas which contained a large number of PRoW to ensure that impacts could be minimised. Due to this design criteria, there is only one PRoW on the definitive map (Gltw/85/1) falling within the Principal Site. In addition, there is a claimed PRoW (DMMO 1209) which runs north-south seeking to connect Harpswell and Glentworth within the eastern extent of the Order limits.

5.2.28 The Scheme will maintain access to the existing PRoW within the Principal Site with no permanent diversions or closures.

5.2.29 To meet **Objective 10**, the Scheme design:

a. Proposes two new permissive paths which will form routes available to the public during the operational life of the Scheme. One route will connect Common Lane to Kexby Road, and the second route will connect Common Lane to Northlands Road. This will offer recreational access in an area where PRoWs are limited and will also improve north-south off-road links.

b. The permissive paths will be located within 25m wide corridors that will allow sufficient space for planting such as hedgerows to screen solar infrastructure and offer biodiversity and visual interest to users.

c. The Common Lane to Kexby Road route will improve links between the existing network of quiet rural lanes and PRoW, including the bridleway located within the south of the Principal Site that forms part of a recreational circuit used by local residents.

d. The Northlands Road to Common Lane route will provide a new north-south pedestrian link running broadly parallel with the B1398 Middle Street, following the line of a historic route along the base of Lincoln Cliff. This will provide improved access and provide a missing link between the spring-line villages including Harpswell and Glentworth, given that Middle Street is characterised by fast-moving traffic and does not have footways for pedestrians.

e. The current PRoW (Gltw/85/1) is a bridleway that runs through intensively farmed arable fields with little landscape setting. The setting of this PRoW will be enhanced through landscape and ecological mitigation measures forming part of the Scheme. This will include the planting of species-rich and wet grassland, introducing scattered trees and areas of scrub; and enhancing the southern field boundaries, including through new woodland planting.

f. Whilst at the time of submission, the claimed bridleway running north-south seeking to connect Glentworth with Harpswell (DMMO 1209) is not confirmed, the Scheme design includes embedded design measures ensuring that the Scheme will not prejudice the use of the claimed route should it be confirmed.

5.3 Design Flexibility and Commitments

5.3.1 As recognised in national policy and reflected in **Chapter 3: Scheme Description** of the ES **[EN010142/APP/6.1]** flexibility will be required for some elements of the Scheme. This includes the number and arrangement of panels in each string, which consists of solar PV panels that are wired in a series to one inverter, the siting of the components within the on-site substations within the compound and the flexibility to accommodate future technological developments associated with Solar PV panels. Solar PV panels are a rapidly evolving technology and infrastructure, therefore it is important that the latest technology can be utilised at the time of construction to ensure that the Scheme can make an important contribution to achieving the Governments decarbonisation requirements and climate change targets, as well as providing a secure, reliable and affordable energy system.

5.3.2 The Environmental Impact Assessment **[EN010142/APP/6.1/6.2/6.3]** has been undertaken on the basis of the works proposed in the **Works Plans**

[EN010142/APP/2.3] and the maximum area of land anticipated to be required. This approach is known as the use of the 'Rochdale Envelope' which is described in footnote 106 to paragraph 4.3.12 of NPS EN-1 (Ref. 1) whereby the assessment is based on a *"the likely worst-case environmental, social and economic effects of the proposed development to ensure that the impacts of the project as it may be constructed have been properly assessed."*

5.3.3 The Planning Inspectorate's Advice Note Nine (Ref 22) (July 2018) explains the use of the Rochdale Envelope approach under the PA 2008 and supports its use with solar schemes to maintain flexibility and address uncertainty including market conditions or new technologies.

5.3.4 Design objectives have been developed which have informed the design of the Scheme. Maximum extents and parameters for components of the Scheme are set out in the **Outline Design Principles Statement [EN010142/APP/7.4]** submitted with the DCO Application. However, further work will be required to develop the Scheme's detailed design so that it can be constructed. This is to occur post consent with requirement 5, Schedule 2 of the **draft DCO [EN010142/APP/3.1]** requiring the submission and approval by the relevant planning authority of detailed design details prior to the commencement of Work No's 1, 2, 3 or 4. Requirement 4 of the **draft DCO [EN010142/APP/3.1**] requires that the details submitted must accord with the **Outline Design Principles Statement [EN010142/APP/7.4]** forming part of the DCO application submission and that the Scheme mut be carried out in accordance with the approved detailed design details. These control measures will ensure that the detailed design of the Scheme accords with the **Outline Design Principles Statement [EN010142/APP/7.4]**

5.3.5 Other strategies and plans submitted with the DCO Application also explain how the Applicant is committed to delivering the outline design principles and parameters identified within this DAS. These include the:

a. **Works Plan [EN010142/APP/2.3]** which sets out the location of PV arrays and associated infrastructure including the grid connection substations, habitat management and protection areas and access.

b. **Framework Landscape and Ecological Management Plan (LEMP) [EN010142/APP/7.17]** sets out the framework for delivering the landscape strategy and ecological mitigation and enhancement for the Scheme.

c. **Appendix 10-4: Outline Drainage Strategy [EN010142/APP/6.2]** which sets out the proposed measures to be implemented with respect to the detailed surface water drainage design.

d. **Framework PRoW Management Plan [EN010142/APP/7.16]** outlines how PRoW will be managed by the Applicant for the Scheme.

e. **Framework Operational Environmental Management Plan [EN010142/APP/7.9]** sets out the control measures for the operation of the Scheme including maintenance activities.

f. **Framework Battery Safety Management Plan [EN010142/APP/7.13]** sets out the design principles associated with fire access and the

drainage of contaminated water following a fire, along with other technical considerations.

~~f.~~g. **Indicative Landscape Masterplans [EN010142/APP/7.19]** set out the landscaping proposed across the Order limits.

5.3.6 The **Works Plans [EN010142/APP/2.3]** will be certified under Article 41 of the **draft DCO [EN010142/APP/3.1]** with the Order requiring that the Scheme is carried out in strict accordance with the parameters set out within the **Works Plans [EN010142/APP/2.3].** Detailed management plans relating to a) to f) above will be secured through requirements 6, 7, 10, 16, 13 of the **draft DCO [EN010142/APP/3.1].** These will need to be submitted to and approved in writing by the relevant planning authority prior to the commencement of the authorised development. The detailed plans will need to be substantially in accordance with the Framework Plans described above and the Scheme will need to be implemented in accordance with the approved details. These control measures will ensure that the good design principles set out within this Design and Access Statement are implemented as part of the Scheme and that it continues to be in accordance with policies relating to good design set out in NPS EN-1 (Ref 2) and national guidance set out in section 2.2 of this DAS.

5.4 Scheme Design Masterplan

5.4.1 The indicative site layout for the Principal Site and the illustrative landscape masterplan illustrate 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 objectives sought by the Scheme at its inception.

5.4.2 **Plate 5-1**~~**Plate 5-1**~~ shows the indicative site layout of the Principal Site and the **Indicative Landscape Masterplan [EN010142/APP/7.19]** ~~**Figure 5-2** (set out in Appendix A) shows~~ shows the Scheme's landscape masterplan. The layout of solar infrastructure shown by the indicative site layout and landscape masterplan is for illustrative purposes only.

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5.4.3 **Plate 5-1**~~**Plate 5-1**~~ and the **Indicative Landscape Masterplan [EN010142/APP/7.19]** ~~**Figure 5-2**~~ represent the culmination of the design process set out in this DAS and comprises a supporting document forming part of the DCO application.

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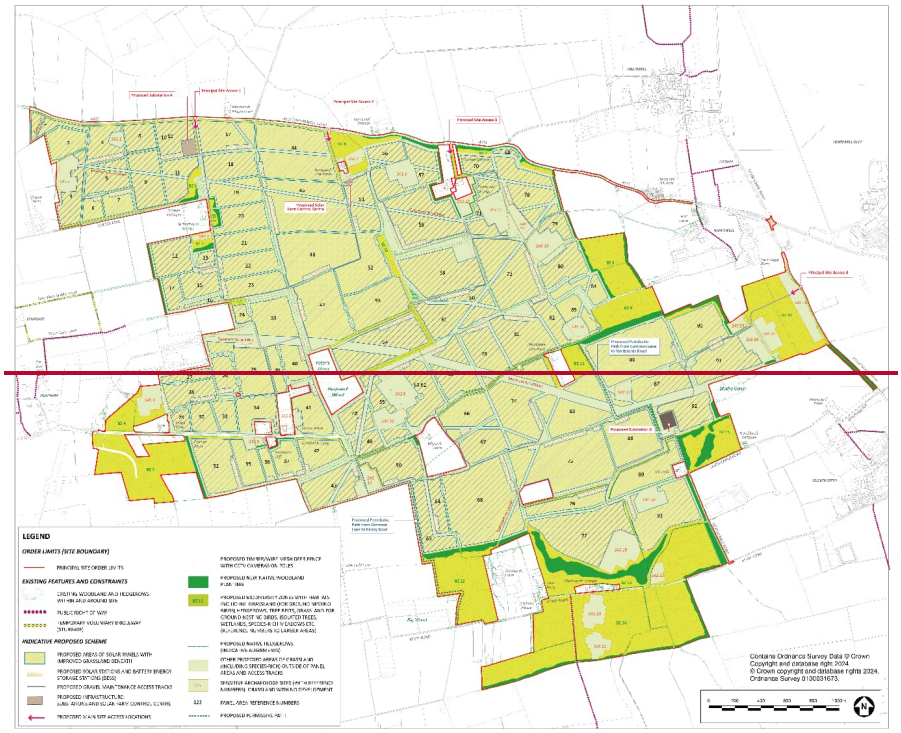
LEGEND
ORDER LIMITS (SITE BOUNDARY)
EXISTING FEATURES AND CONSTRAINTS
INDICATIVE PROPOSED SCHEME
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ISSUE PURPOSE
DCO Submission
PROJECT NUMBER
60677969
FIGURE TITLE
Indicative Principal Site Layout Plan
FIGURE NUMBER
Figure 5-1

Plate 5-1 Indicative Site Layout Plan

6. References

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7. Abbreviations

Abbreviation/Term	Definition
AIA	Arboricultural Impact Assessment
AGLV	Area of Great Landscape Value
AIL	Abnormal Indivisible Load
ALC	Agricultural Land Classification
APFP	The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009
BESS	Battery Energy Storage System
BMV	Best and Most Versatile Land
CCGT	Combined Cycle Gas Turbine
CEMP	Construction Environmental Management Plan
CNP	Critical National Priority
CSM	Conceptional Site Model
CTMP	Construction Traffic Management Plan
DAS	Design and Access Statement
DCLG	Department for Communities and Local Government
DCO	Development Consent Order
DEFRA	Department for Environment, Food and Rural Affairs
DEMP	Decommissioning Environmental Management Plan
EIA	Environmental Impact Assessment
EMF	Electromagnetic Fields
ES	Environmental Statement
GHG	Greenhouse Gas
GW	Gigawatt
Ha	Hectares
HDD	Horizontal Directional Drilling
HGV	Heavy Goods Vehicles
HSE	Health and Safety Executive
ICCI	In Combination Climate Change Impact

LEMP	Landscape Environmental Management Plan
LIR	Local Impact Report
LLCA	Local Landscape Character Area
LOAEL	Lowest Observed Adverse Effect Level
LWS	Local Wildlife Sites
MAHP	Major Accident Hazard Pipeline
MAHS	Major Accident Hazard Site
MPS	Marine Policy Statement
MW	Megawatts
NCA	National Character Area
NETS	National Energy Transmission System
NIC	National Infrastructure Commission
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project
OEMP	Operation Environmental Management Plan
PA	Planning Act
POC	Point of Connection
PPG	Planning Practice Guidance
PRoW	Public Right of Way
PV	Photovoltaic
SOAEL	Significant Observed Adverse Effect Level
SOS	Secretary of State
SPA	Special Protection Areas
SSSI	Site of Special Scientific Interest
SuDs	Sustainable Urban Drainage Systems
TA	Transport Assessment

8. Glossary of Frequently Used Terms

Term	Definition
Abnormal Indivisible Load	An abnormal load that cannot be broken down into smaller loads for transport.
Agricultural Land Classification (ALC)	The recognizable method for classifying agricultural land in England and Wales according to its versatility, productivity and workability, based upon inter-related parameters including climate, relief, soil characteristics and drainage, i.e., ALC assesses land quality based upon the type and level of agricultural production the land can potentially support. These factors form the basis for classifying agricultural land into one of five grades (with Grade 3 land divided into Subgrades 3a and 3b), ranked from excellent (Grade 1) to very poor (Grade 5).
Applicant	Tillbridge Solar Limited
Baseline Conditions	The conditions against which potential effects arising from the Scheme are identified and evaluated.
Battery Energy Storage Systems (BESS)	Batteries with associated infrastructure to store, import and export electricity to the National Grid. The batteries are lithium iron phosphate batteries with a liquid cooling or HVAC system housed within a container. Associated infrastructure includes the DC / DC converter and Transformers, Inverter and Switchgear, which are shared with Solar Stations. The DC/DC converter will be installed alongside every BESS battery container to keep cabling as short as possible and losses low.
Cable Route Corridor	The portion of the Order limits where the grid connection infrastructure (400kV cables) is routed from the Solar PV Site (excluding the On-Site 400kV cabling that interconnects the two substations) to the national electricity transmission network. The proposed Cable Route Corridor is within the Order limits, connecting the onsite substations within the north and south of the Scheme to the National Grid Cottam Substation. Other works associated with cable laying will be located within this area.
Conservation Area	An area of special environmental or historic interest or importance, of which the character or appearance is protected (Section 69 of the Planning (Listed Buildings and Conservation Areas) Act 1990).

Consultation Report	A report forming part of the DCO application, outlining the consultation undertaken on the Scheme
Cumulative Effects	The collective term for inter and intra project effects. The inter project effects are the combined effects of several development schemes which may, on an individual basis be insignificant but, cumulatively with the Scheme, have a new or different likely significant effect. The intra project effects are defined in this table under 'Effect interactions'.
Designated Landscape	Areas of landscape identified as being of importance at international, national or local levels, either defined by statute or identified in development plans or other documents.
DC/DC Converter	Manages the charge and discharge of the battery following the demand profile of the plant operator.
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.
Effect Interactions	The intra project effects. These are the combined effects of individual impacts from the Scheme, for example noise and air pollutants impacting on a single receptor.
Environmental Effect	The consequence of an action (impact) upon the environment such as the decline of a breeding bird population as a result of the removal of hedgerows and trees.
Environmental Impact	The change in the environment as a result of a development.
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. The EIA for the Scheme has been undertaken in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended).
EIA Regulations	The EIA Regulations relevant to the Scheme are the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended). These transpose the requirement of an EIA for NSIP developments. The EIA Regulations specify which

	developments are required to undergo EIA and schemes relevant to the NSIP planning process are listed under either of 'Schedule 1' or 'Schedule 2'.
Environmental Statement	A document produced in accordance with the EIA Directive as transposed into UK law by the EIA Regulations to report the results of an EIA.
Equipment Storage	Storage facility for spare parts comprising either a new building or the re-use of an existing, vacant building within a suitable location within the Principal Site.
Examining Authority	The person(s) appointed by the Secretary of State (SoS) to assess the Application and make a recommendation on the decision to the SoS.
Flood Zone 1	This is land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1% Annual Exceedance Probability (AEP)).
Flood Zone 2	This zone comprises land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% – 0.1%) in any year.
Flood Zone 3	This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.
Framework Construction Environmental Management Plan (FCEMP)	This plan provides a framework for environmental management during the construction phase of the Scheme, with the aim to provide a clear and consistent approach to environmental mitigation during construction.
Framework Construction Traffic Management Plan (FCTMP)	This plan provides a framework for traffic management practices for construction traffic and staff vehicles during the construction of the Scheme.
Framework Decommissioning Environmental Management Plan (FDEMP)	This plan provides a framework for how the mitigation measures included within the ES will be implemented during the decommissioning stage. It also sets out the monitoring and auditing activities designed to ensure that such mitigation measures are carried out, and that they are effective.
Framework Landscape and Ecology Management Plan (FLEMP)	This plan provides a framework for achieving the outline design, including the successful establishment

	and future management of biodiversity and landscaping works.
Framework Operational Environmental Management Plan (FOEMP)	This plan provides a framework for how the operational mitigation measures included within the ES will be implemented and sets out the monitoring and auditing activities designed to ensure that such mitigation measures are carried out, and that they are effective.
Geophysical Survey	Geophysical survey is a non-intrusive pre-construction archaeological evaluation technique that exploits a variety of physical or chemical characteristics of rocks and soils etc, in an attempt to locate underground features of archaeological interest. Types of geophysical survey include magnetometer survey, magnetic susceptibility survey and resistivity survey.
Heavy Goods Vehicles (HGV)	Vehicles with 3 axles (articulated) or 4 or more axles (rigid and articulated).
Inverter	Inverters are required to convert the DC electricity collected by the PV panels into alternating current (AC), which allows the electricity generated to be exported to the National Grid.
Landscape	An area, as perceived by people, the character of which is the result of the action and interaction of natural and/or human factors.
Landscape and Visual Impact (LVIA)	A tool used to identify and assess the likely significance of the effects of change resulting from development both on the landscape as an environmental resource in its own right and on people's views and visual amenity.
Landscape Character	A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.
Landscape Character Area	These are single unique areas which are the discrete geographical areas of a particular landscape type.
Landscape Character Assessment	The process of identifying and describing variation in the character of the landscape and using this information to assist in managing change in the landscape. It seeks to identify and explain the unique combination of elements and features that make landscapes distinctive.
Landscape Character Types	These are distinct types of landscape that are relatively homogeneous in character. They are generic in nature in that they may occur in different areas in different parts of the country, but wherever they occur they share

	broadly similar combinations of geology, topography, drainage patterns, vegetation and historical land use and settlement pattern, and perceptual and aesthetic attributes.
Landscape Effects	Effects on the landscape as a resource in its own right.
Landscape Receptors	Defined aspects of the landscape resource that have the potential to be affected by a proposal.
Landscape Value	The relative value that is attached to different landscapes by society. A landscape may be valued by different stakeholders for a whole variety of reasons.
Magnitude (of effect)	A term that combines judgements about the size and scale of the effect, the extent of the area over which it occurs, whether it is reversible or irreversible and whether it is short or long term in duration.
Mitigation	Measures including any process, activity, or design to avoid, prevent, reduce, or, if possible, offset any identified significant adverse effects on the environment.
National Electricity Transmission Network	The definition of the National Grid Network.
National Grid Cottam Substation	The substation at Cottam Power Station located south of Cottam village, Nottinghamshire, owned and operated by National Grid and to which the Grid Connection Cable will connect.
National Policy Statement	National Policy Statements are produced by government. They comprise the government's central policy documents for the development of nationally significant infrastructure.
Nationally Significant Infrastructure Project	NSIPs are large scale developments such as certain new harbours, power generating stations (including solar farms), highways developments and electricity transmission lines, which require a development consent under procedures governed by the Planning Act 2008 (and amended by the Localism Act 2011).
On-site Substation	There will be two substations on the Principal Site, including in the north-west of the Site near Harpswell Lane and in the south-east near Northlands Road. These increase (transform) the voltage from 33kV to 400kV. The Cable Route Corridor runs from the on-site substations to the National Grid Cottam Substation.

Order limits	Land shown on the Works Plans within which the Scheme can be constructed and operated.
PA 2008	The Planning Act 2008 (as amended).
Permissive Paths	New recreational informal paths established as part of the Scheme signed as permissive that the landowner allows the public to use for the life of the Scheme.
Photomontage	A visualisation which superimposes an image of a proposed development upon a photograph or series of photographs.
Principal Site	The Principal Site comprises the Solar PV infrastructure, electrical substations, cabling and areas for landscaping and ecological enhancement.
Public Rights of Way	Rights across land exercisable by the public at all times.
Receptor	A component of the natural or man-made environment that is affected by an impact, including people.
Scheduled Monument	A 'nationally important' archaeological site or historic building, given protection against unauthorised change and included in the Schedule of Monuments kept by the Secretary of State for Culture, Media and Sport. The protection given to scheduled monuments is given under the Ancient Monuments and Archaeological Areas Act 1979.
Scheme	The Scheme is the collective term for the Principal Site and the Cable Route Corridor. The boundary of the Scheme is defined as the Order limits.
Scoping	The process of identifying the issues to be addressed by an EIA. It is a method of ensuring that an EIA focuses on the important issues and avoids those that are considered to be less significant.
Setting	The surroundings within which a heritage asset is experienced and any element, which contributes to the understanding of its significance.
Significance	A measure of the importance or gravity of the environmental effect, defined by significance criteria specific to the environmental topic.
Scoping Boundary	Solar Farm Control Centre

Solar PV Site	Describes the total area covered by all the Solar PV Areas
Solar Station (DC/AC Inverter, transformer, and switchgear) and DC/DC converter	Solar Stations will comprise inverters, a transformer, and switchgear. These will be distributed throughout the Solar PV Site. They will be located within the Solar PV Areas and will adjoin the BESS and DC/DC Converter.
Study Area	The spatial area within which environmental effects are assessed (i.e., extending a distance from the project footprint in which significant environmental effects are anticipated to occur). This will vary between technical disciplines and is defined early in each chapter under the appropriate heading.
Sustainable Drainage Systems (SuDS)	Surface water drainage systems developed in line with the ideals of sustainable development (e.g. swales, ponds, basins, filtration flow control, etc).
Tillbridge Solar Limited	Tillbridge Solar Limited is the Applicant. This is a joint venture between Tribus Clean Energy and Recurrent Energy, a subsidiary of Canadian Solar.
Transformers	Transformers control the voltage of the electricity generated across the site before it reaches the on-site substations.
Visual Effects	Effects on specific views and on the general visual amenity experienced by people.
Visual Receptors	People with views of the development or associated activities. These are located within the visual envelope and are typically residents, motorists, pedestrians, recreational users in residential areas on publicly accessible roads, footpaths and open spaces.
Water Framework Directive	The Water Framework Directive ("WFD") introduced a new system for monitoring and classifying the quality of surface and ground waters. The Directive requires that Environmental Objectives be set for all surface waters and groundwater to enable them to achieve Good Ecological Potential/Status by a defined date.
Water Framework Directive Assessment	As part of its role, the Environment Agency must consider whether proposals for new developments have the potential to a) Cause a deterioration of a water body from its current status or potential; and/or b) Prevent future attainment of Good status (or potential where not already achieved). A WFD Assessment

	determines whether a scheme is compliant with these criteria.
Written Scheme of Investigation	A Written Scheme of Investigation outlines known and potential archaeological features and deposits or built heritage elements on a site and suggests a structure for exploring them using the latest, most appropriate and cost-effective archaeological techniques.
Zone of Influence	The limit determined for each specialist study in which the construction or operation of the Scheme component has the potential to cause an adverse or beneficial effect on a receptor. This will inform the definition of the discipline-specific Study Area defined for their assessment.

Appendix A Figures

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LEGEND

Order limits

NOTES

ISSUE PURPOSE

DCO Submission

PROJECT NUMBER

60677969

FIGURE TITLE

The Order Limits

FIGURE NUMBER

Figure 3-1

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LEGEND

- Order limits
- Cable Route Corridor
- Land not Included in the Order limits
- Indicative Solar Panel Boundary
- Location of Solar Centre and Storage Area
- Indicative Solar Stations/BESS
- Substation
- Biodiversity Zone / Proposed Woodland / Sensitive Archaeological Site
- Other Areas of Grassland

Access Location

- Principal Site Access
- Internal Site Access
- Emergency Access

NOTES

ISSUE PURPOSE

DCO Submission

PROJECT NUMBER

60677969

FIGURE TITLE

Elements of the Scheme

FIGURE NUMBER

Figure 3-2

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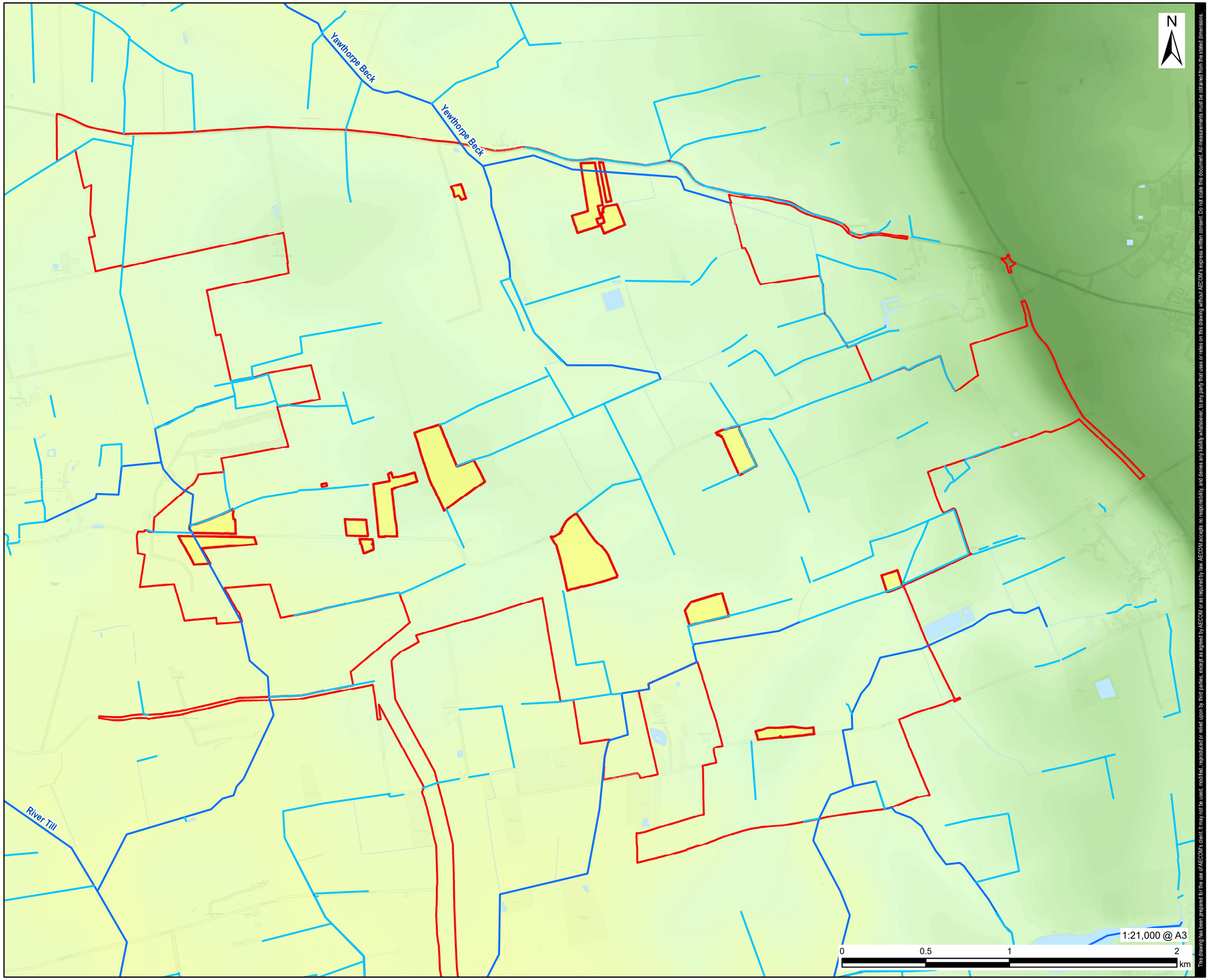

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LEGEND

- Order limits
- Land not Included in the Order limits
- Ordinary Watercourse
- Main River
- Waterbody

Elevation (m)

- High: 73
- Low: 0

NOTES

ISSUE PURPOSE

DCO Submission

PROJECT NUMBER

60677969

FIGURE TITLE

Topography of the Order Limits

FIGURE NUMBER

Figure 3-3

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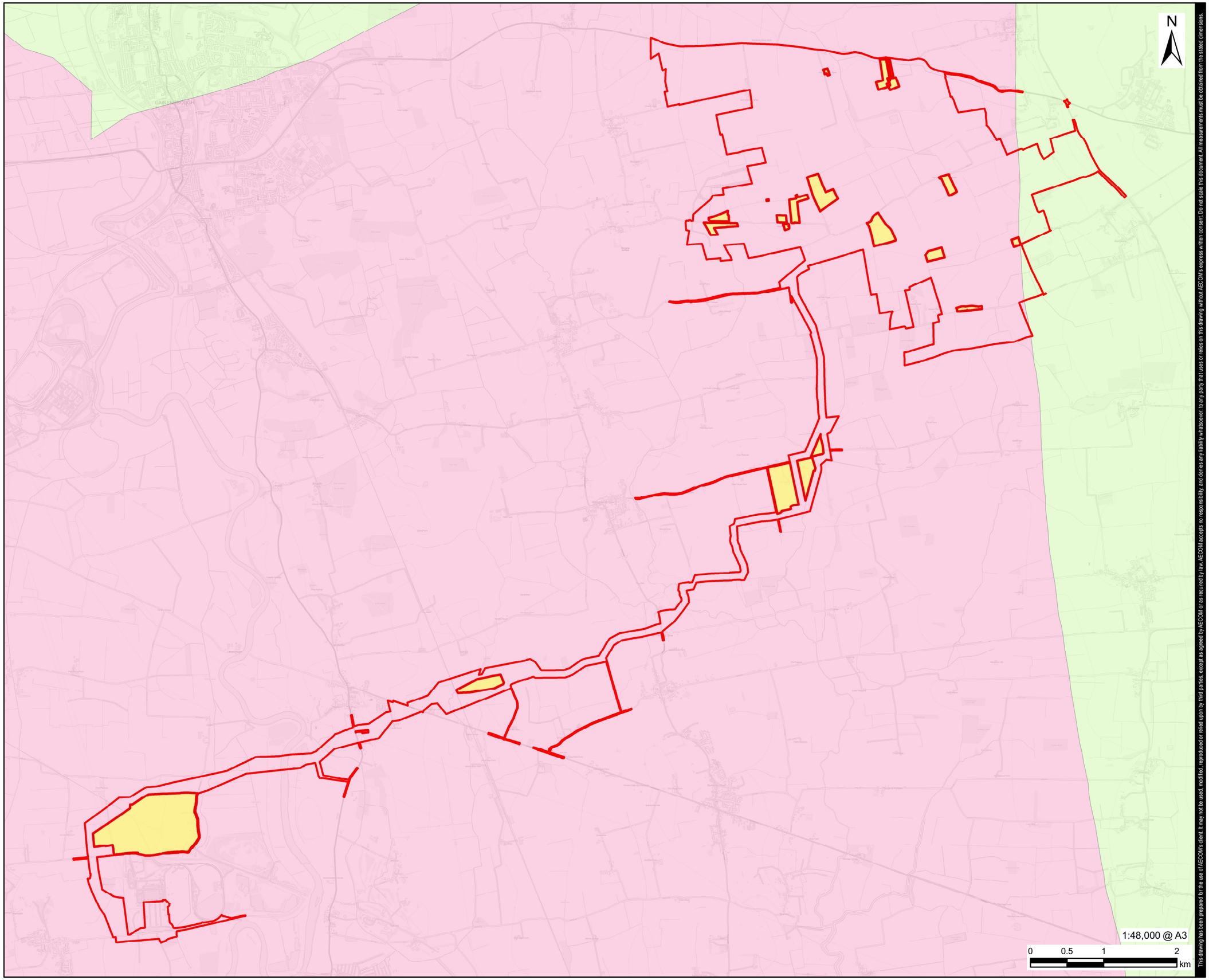

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PROJECT

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CLIENT

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CONSULTANT

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LEGEND

- Order limits
- Land not Included in the Order limits

National Landscape Character

- NLCA 45 Northern Lincolnshire Edge with Coversands
- NLCA 48 Trent and Belvoir Vales

NOTES

ISSUE PURPOSE

DCO Submission

PROJECT NUMBER

60677969

FIGURE TITLE

National Landscape Character Areas

FIGURE NUMBER

Figure 3-8

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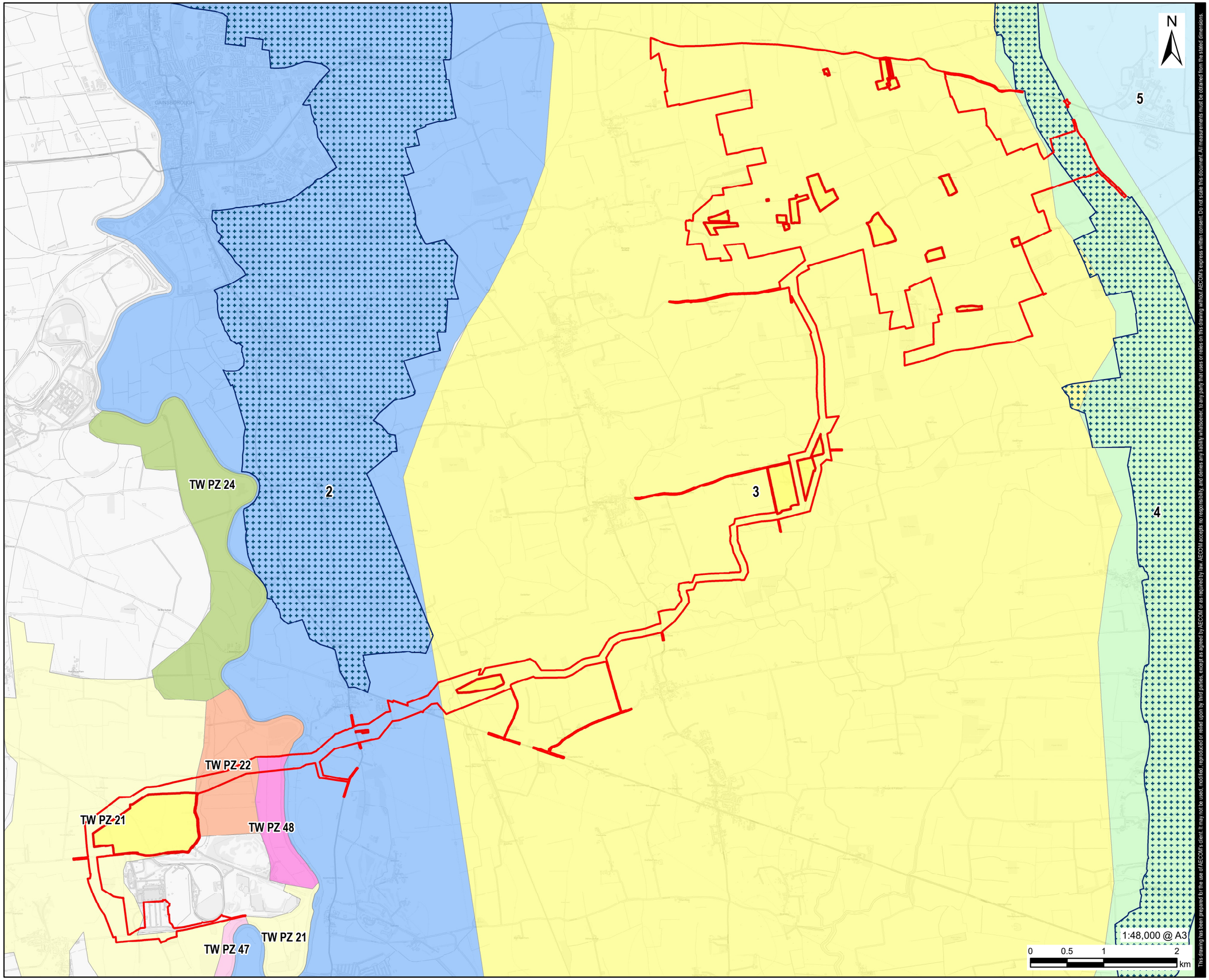

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LEGEND

- Order limits
- Land not Included in the Order limits
- Area of Great Landscape Value

Indicative West Lindsey Landscape Character Assessment Boundary

- 2: Trent Valley
- 3: The Till Vale
- 4: The Cliff
- 5: Limestone Dip Slope

Indicative Bassetlaw Policy Zone

- TW PZ 21 Cottam, Rampton and Church Laneham Farmlands
- TW PZ 22 Cottam River Meadowlands
- TW PZ 24 Littleborough River Meadowlands
- TW PZ 47 Laneham Cottam River Meadowlands
- TW PZ 48 Littleborough Village Meadowlands

NOTES

Contains Ordnance Survey Data © Crown Copyright and database right 2024.
Ordnance Survey 0100031673.
Landscape Character Assessment Areas determined from West Lindsey Council, 2024.
Bassetlaw Policy Zones determined from Nottinghamshire County Council, 2009.

ISSUE PURPOSE

DCO Submission

PROJECT NUMBER

60677969

FIGURE TITLE

Local Landscape Character Areas

FIGURE NUMBER

Figure 3-9

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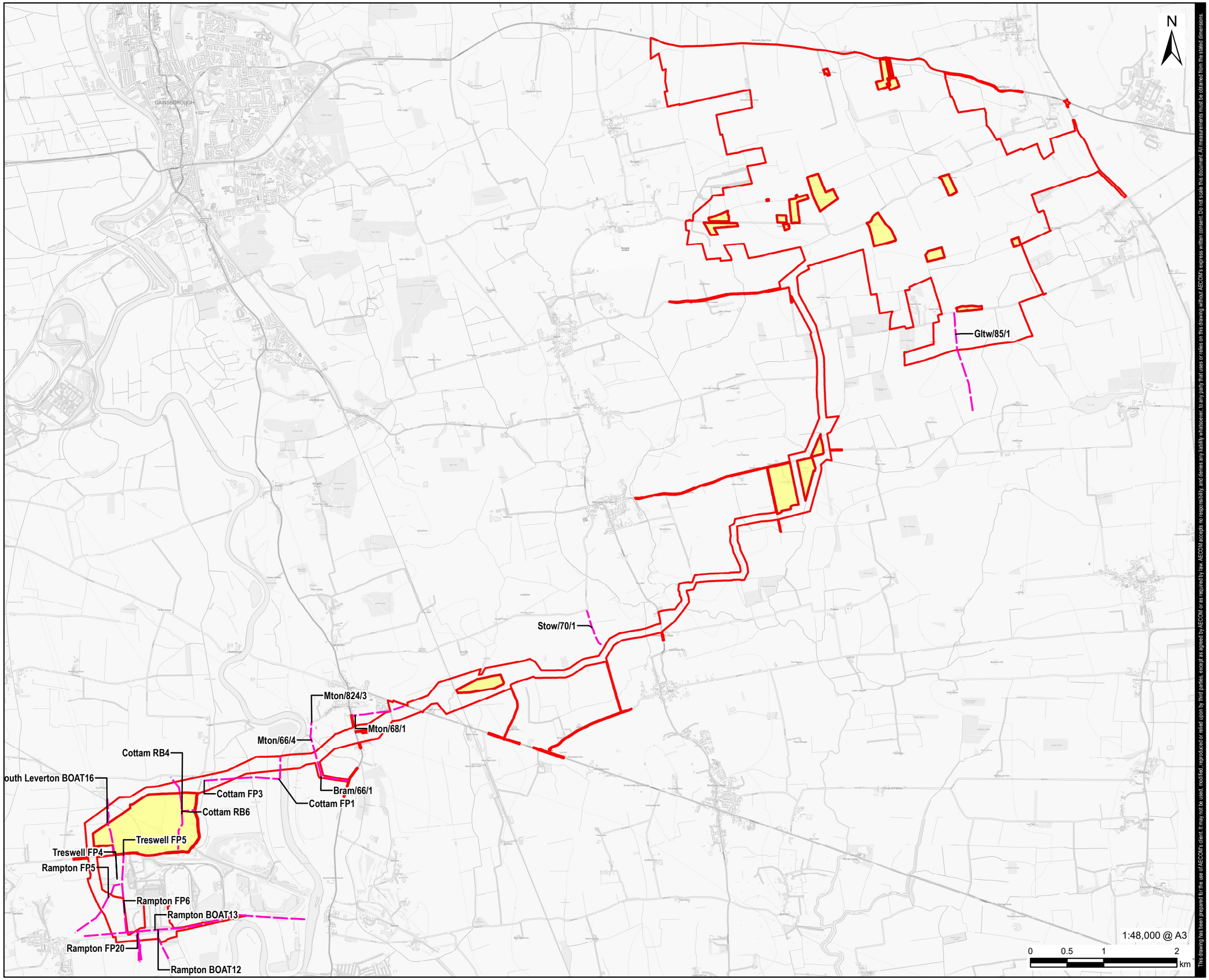

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LEGEND

- Order limits
- Land not Included in the Order limits
- Public Rights of Way Intersecting the Order limits

NOTES

ISSUE PURPOSE

DCO Submission

PROJECT NUMBER

60677969

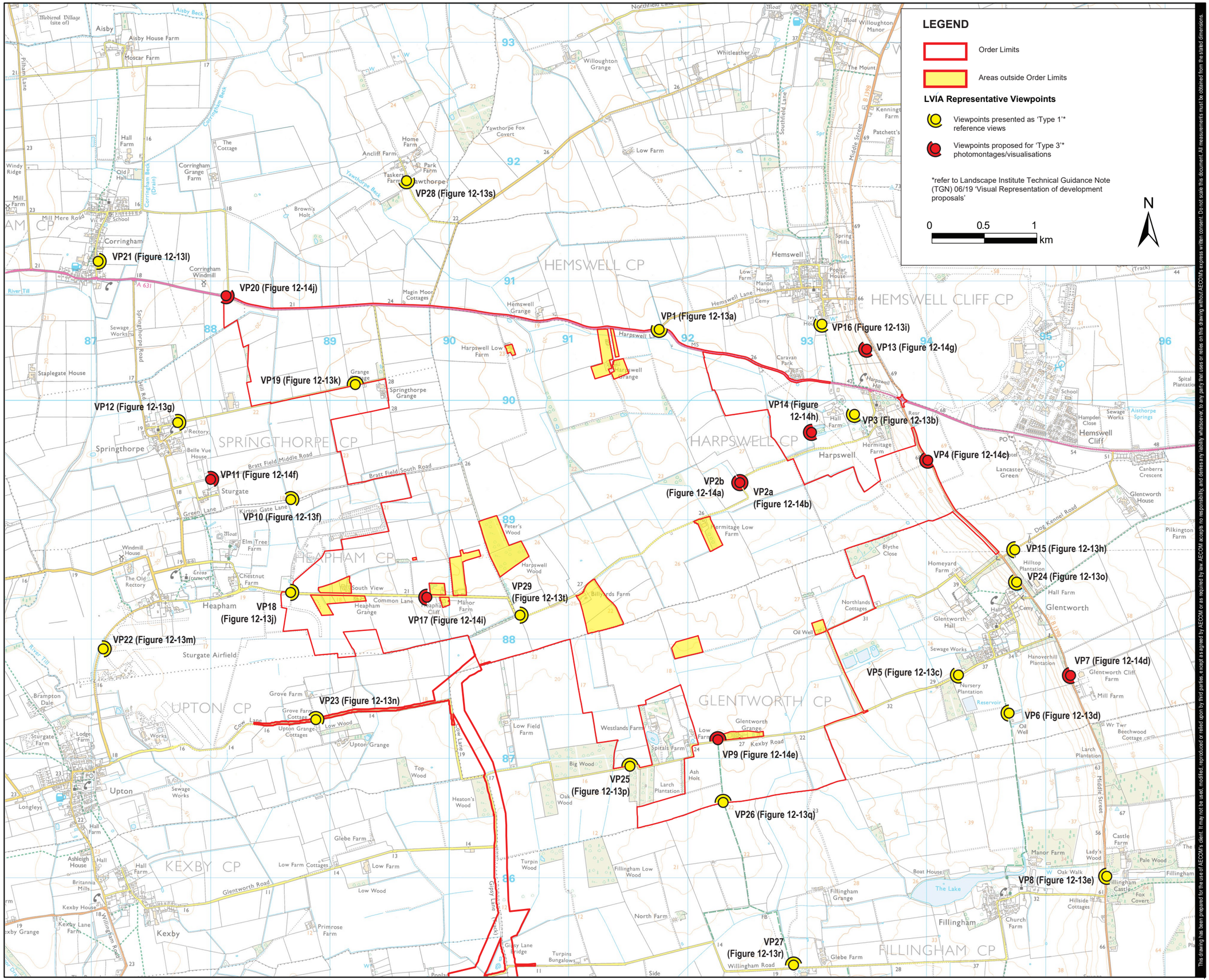
FIGURE TITLE

Public Rights of Way

FIGURE NUMBER

Figure 3-10

Revision: 0 Drawn: NA Checked: CR Approved: CW Date: 2024-03-27



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LEGEND

NOTES

ISSUE PURPOSE

DCO Submission

PROJECT NUMBER

60677969

FIGURE TITLE

Key Viewpoints of the Principal Site

FIGURE NUMBER

Figure 3-11

Revision: 0 Drawn: LL Checked: CR Approved: CW Date: 2024-03-27

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1:21,000 @ A3

0 0.5 1 2 km

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LEGEND

- Order limits
- Land not Included in the Order limits
- Cadent Gas
- Northern Powergrid
- Gas Pipeline
- Open Infrastructure Map - 33kV OHL
- Open Infrastructure Map - Gas Pipeline
- Open Infrastructure Map - Water Pipeline
- Uniper UK Limited

NOTES

ISSUE PURPOSE

DCO Submission

PROJECT NUMBER

60677969

FIGURE TITLE

Utilities within the Principal Site

FIGURE NUMBER

Figure 3-12

Revision: 0 Drawn: LL Checked: CR Approved: CW Date: 2024-03-27

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LEGEND

- Order limits
- Land not Included in the Order limits

Surveyed Agricultural Land Classification

- Grade 2
- Grade 3
- Grade 3a
- Grade 3b

NOTES

ISSUE PURPOSE

DCO Submission

PROJECT NUMBER

60677969

FIGURE TITLE

Location of BMV land within the Principal Site

FIGURE NUMBER

Figure 3-13

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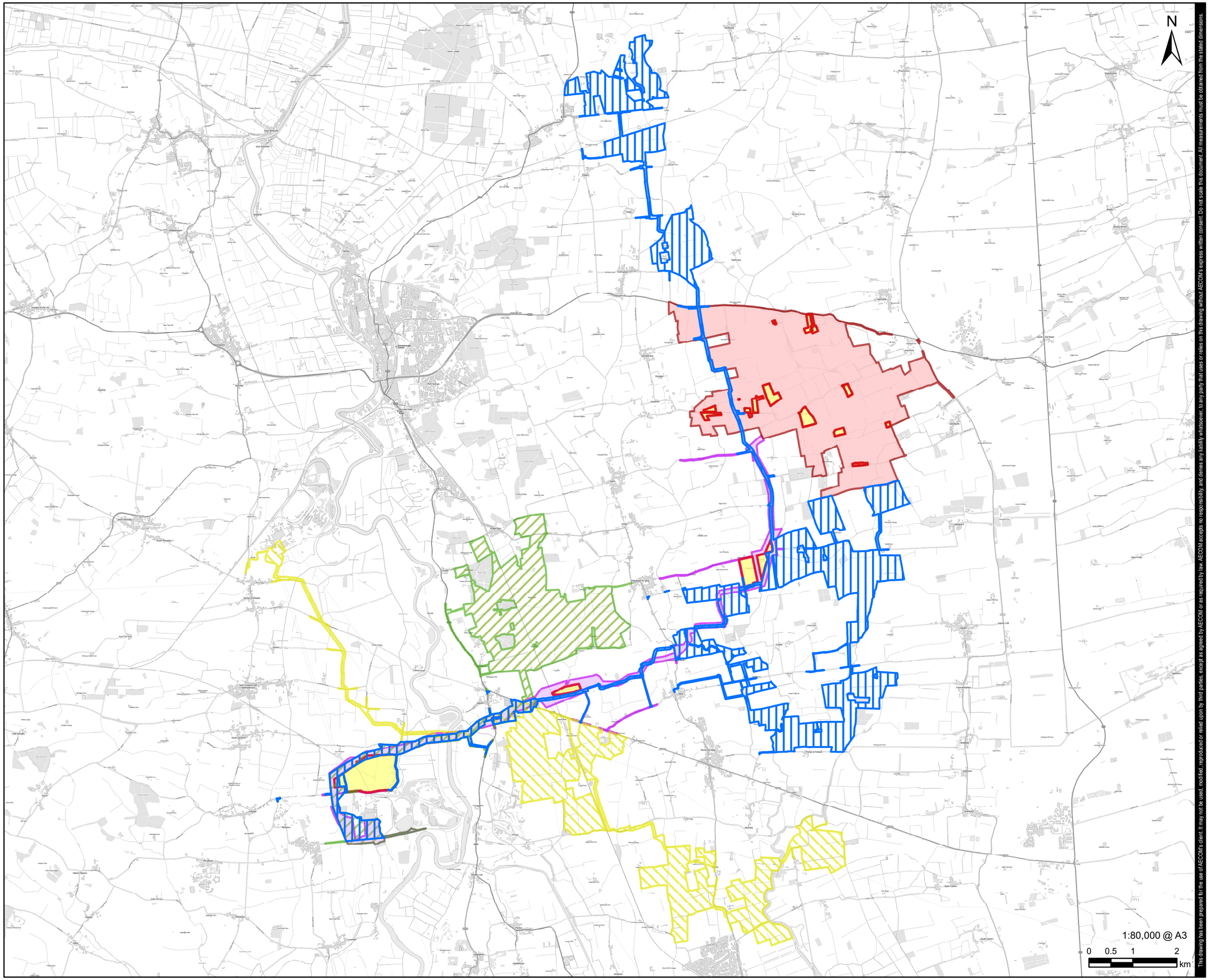

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LEGEND

- Principal Site Boundary
- Land not Included in the Order limits
- Tillbridge Solar Project Cable Route Corridor
- Cottam Solar Project Boundary
- Gate Burton Boundary
- West Burton Energy Park Boundary

NOTES

ISSUE PURPOSE

DCO Submission

PROJECT NUMBER

60677969

FIGURE TITLE

The location of the Principal Site in relation to other NSIP solar projects

FIGURE NUMBER

Figure 3-14

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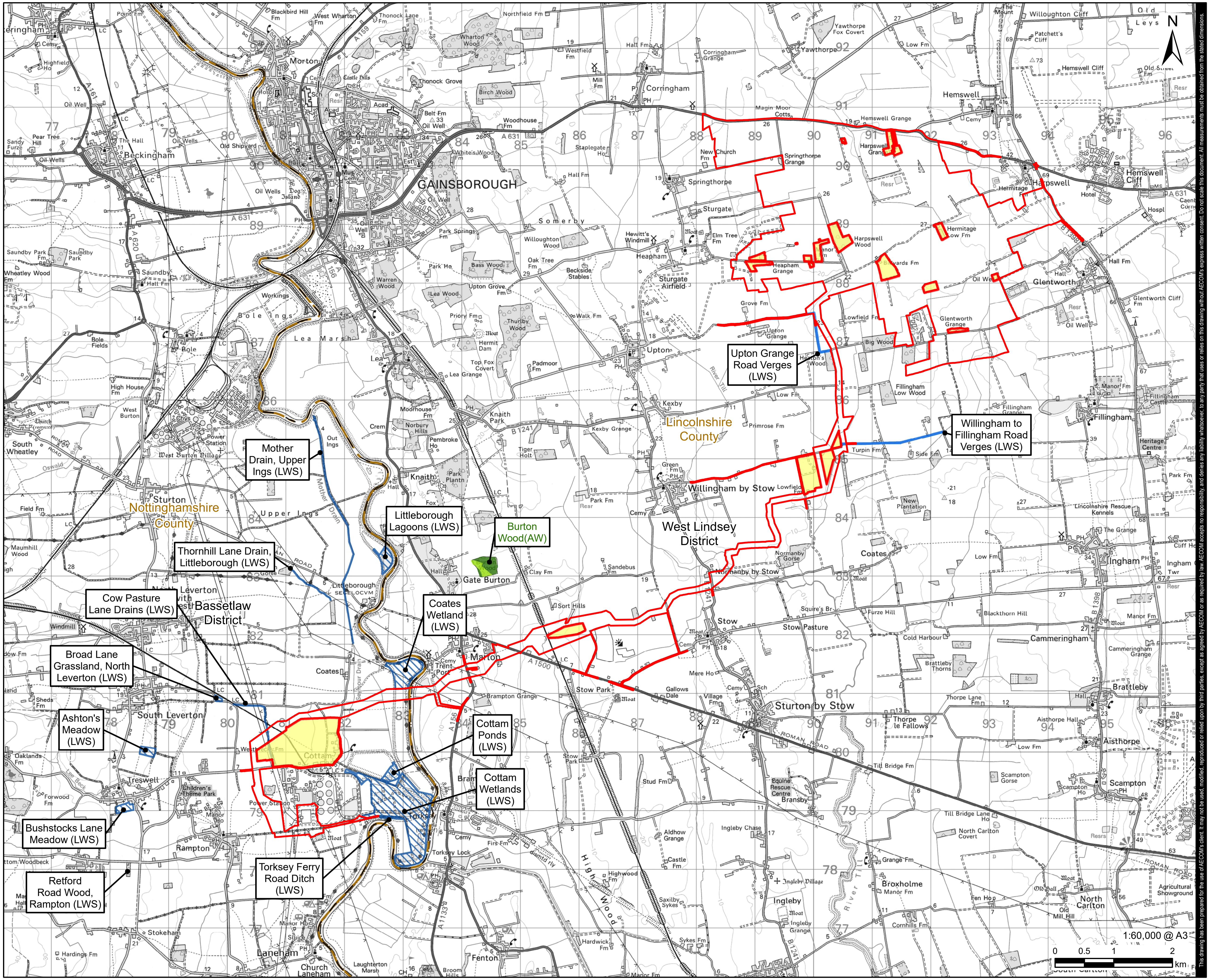

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LEGEND

- Order Limits
- Land not Included in the Order limits
- District Boundary
- County Boundary
- Lincolnshire Local Wildlife Site
- Nottinghamshire Local Wildlife Site
- Ancient & Semi-Natural Woodland
- Ancient Replanted Woodland

NOTES

ISSUE PURPOSE

DCO Submission

PROJECT NUMBER

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FIGURE TITLE

Location of Local Wildlife Sites within the Order limits

FIGURE NUMBER

Figure 3-15

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GAINSBOROUGH

H1 H2 H3 H4 H5 H6 H7 H8 H9 H10 H11 H12 H13 H14 H15 H16 H17 H18 H19 H20 H21 H22 H23 H24 H25 H26 H27 H28 H29 H30 H31

N

1:48,000 @ A3

0 0.5 1 2 km

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LEGEND

- Order limits
- Land not Included in the Order limits

Hedgerows with Potential Historic Importance

- Important Hedgerow
- Probable Important Hedgerow

NOTES

Hedgerows Indicatively Drawn.

ISSUE PURPOSE

DCO Submission

PROJECT NUMBER

60677969

FIGURE TITLE

Location of important hedgerows within the Order limits

FIGURE NUMBER

Figure 3-16

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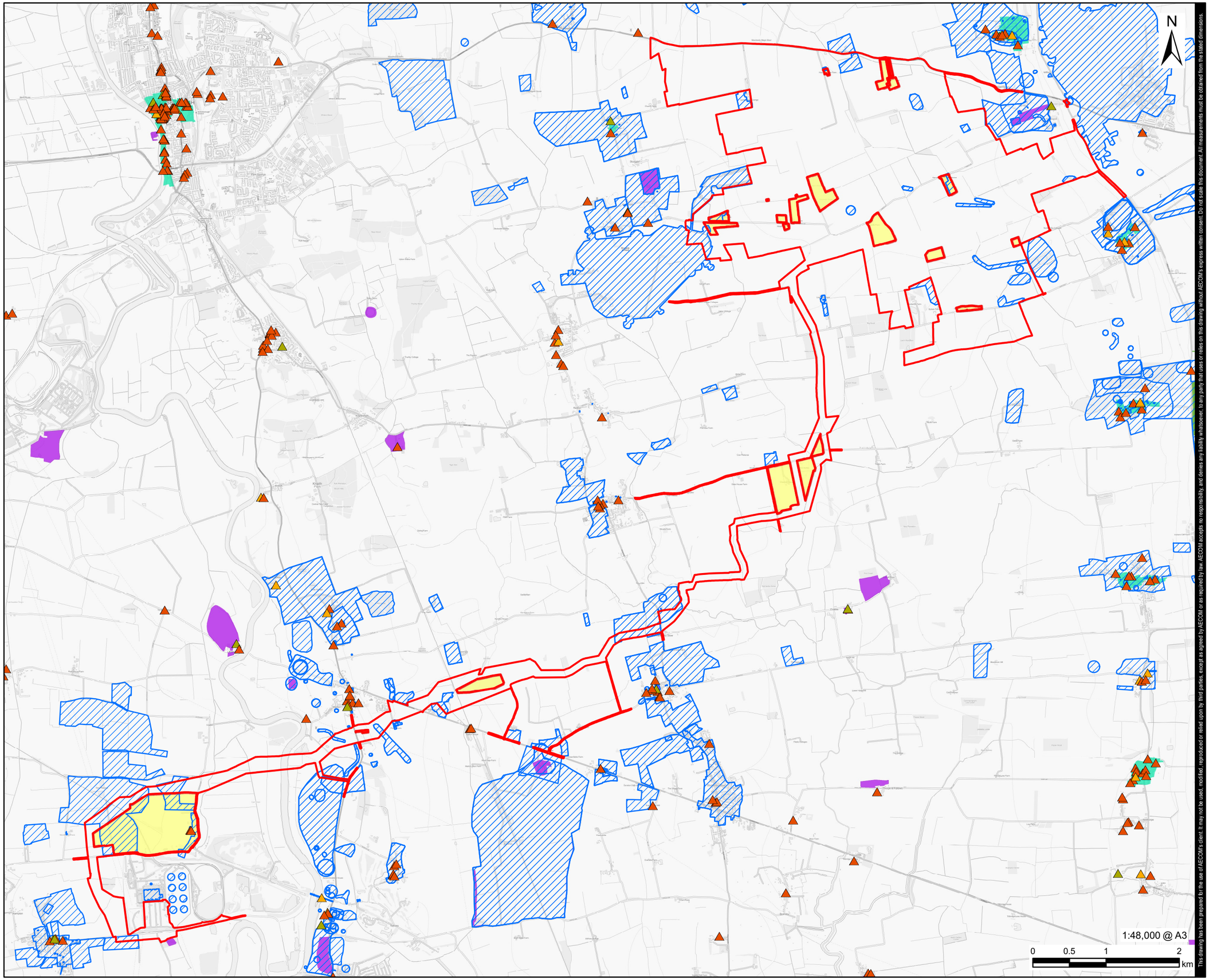

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LEGEND

- Order limits
- Land not Included in the Order limits
- HER Monument - Polygon
- Conservation Area
- Scheduled Monument
- Registered Park and Garden

Listed Building (Grade)

- I
- II*
- II

NOTES

ISSUE PURPOSE

DCO Submission

PROJECT NUMBER

60677969

FIGURE TITLE

Location of designated heritage assets and non-designated heritage assets of archaeological remains in relation to the Principal Site

FIGURE NUMBER

Figure 3-17

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N

1:21,000 @ A3

0 0.5 1 2 km

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LEGEND

- Order limits
- Cable Route Corridor
- Land not Included in the Order limits
- Indicative Solar Panel Boundary
- Location of Solar Centre and Storage Area
- Indicative Solar Stations/BESS
- Substation
- Biodiversity Zone/Proposed Woodland
- Sensitive Archaeological Site
- Other Areas of Grassland

Access Location

- Principal Site Access
- Internal Site Access
- Emergency Access

NOTES

ISSUE PURPOSE

DCO Submission

PROJECT NUMBER

60677969

FIGURE TITLE

Location of non-designated Sensitive Archaeological Sites within the Principal Site

FIGURE NUMBER

Figure 3-18

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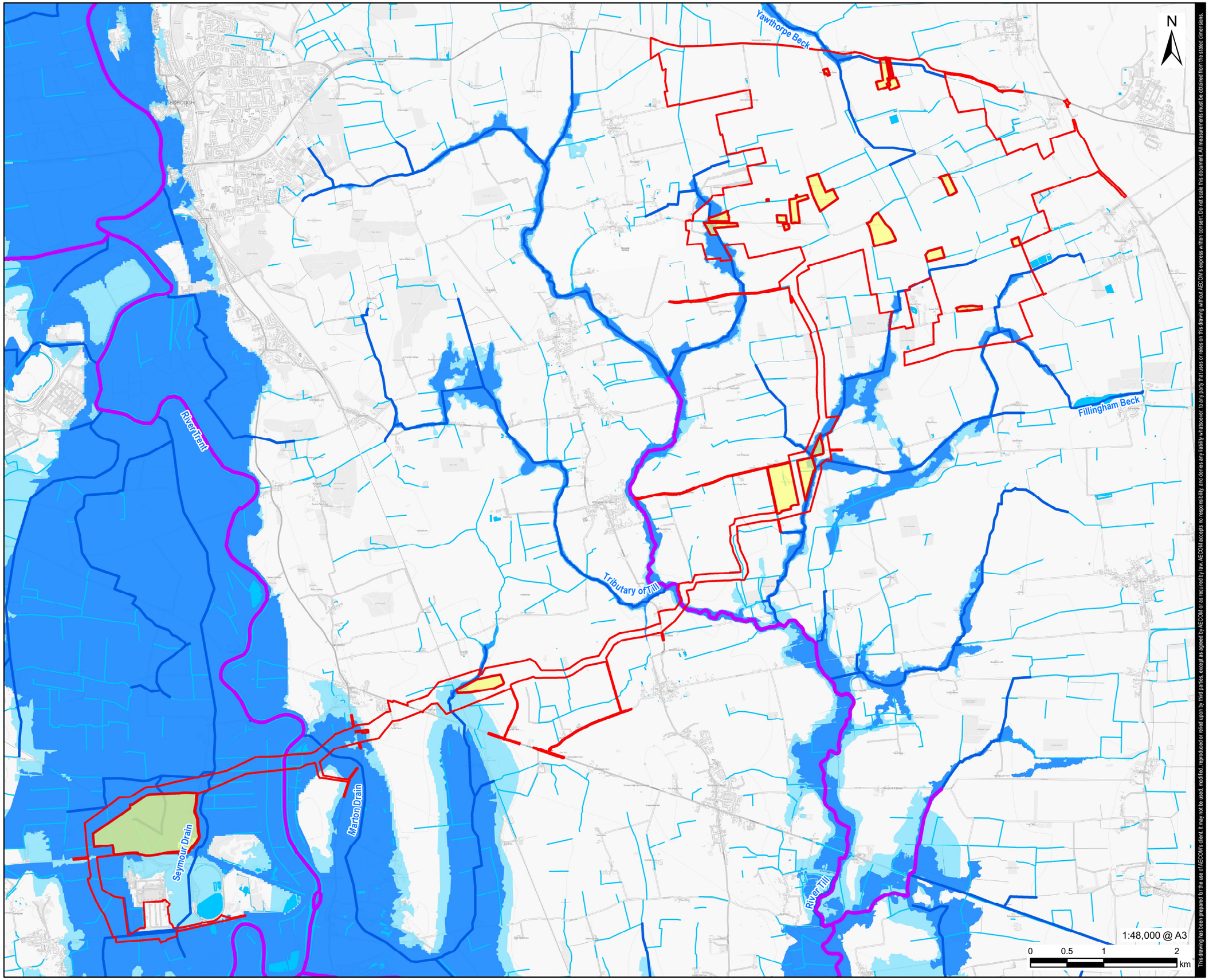

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LEGEND

- Order limits
- Land not Included in the Order limits
- Main River
- Ordinary Watercourse
- Surface Water
- Waterbody
- Flood Zone 2
- Flood Zone 3

NOTES

ISSUE PURPOSE

DCO Submission

PROJECT NUMBER

60677969

FIGURE TITLE

Flood Risk

FIGURE NUMBER

Figure 3-19

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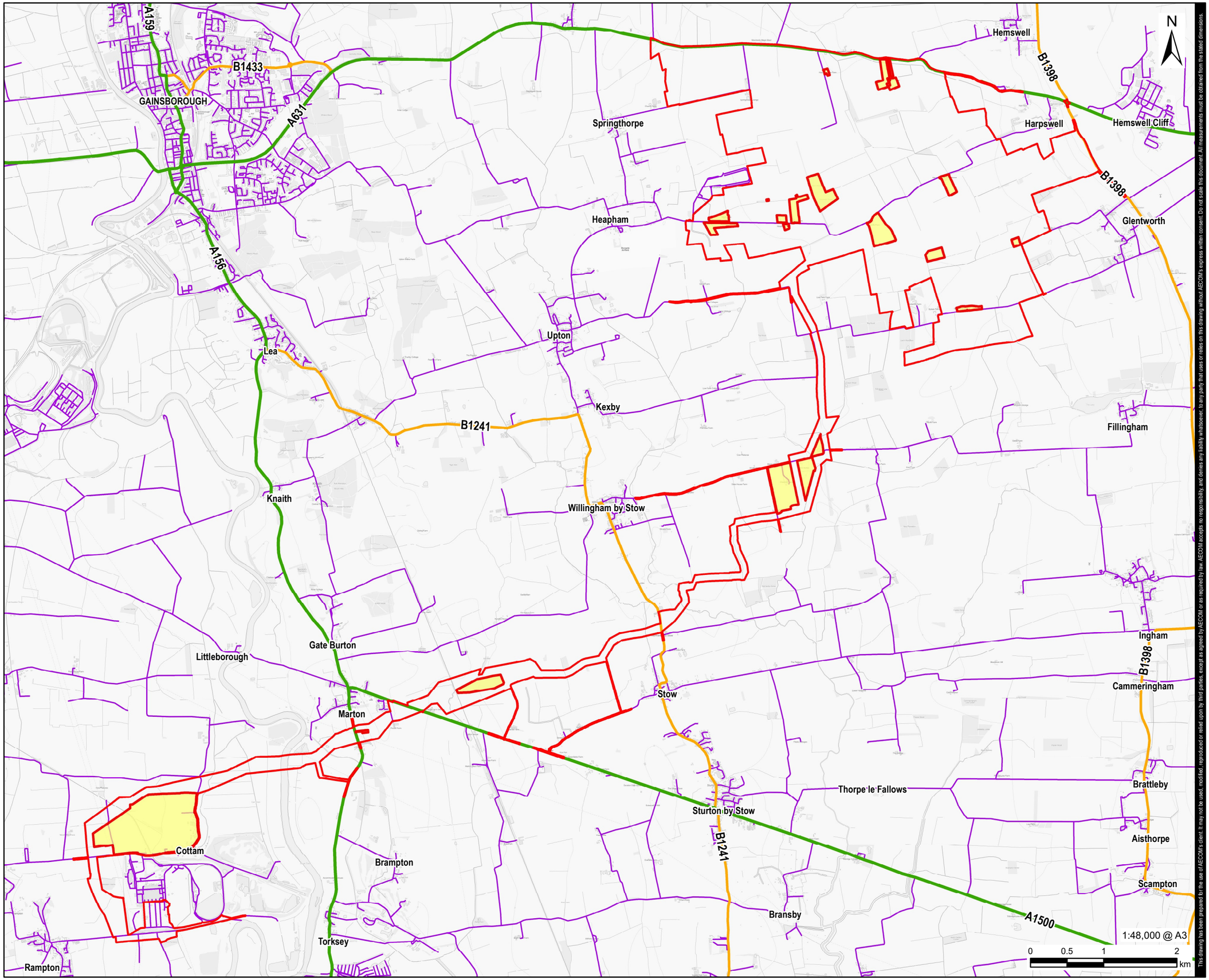

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LEGEND

- Order limits
- Land not Included in the Order limits
- Primary Road
- Secondary Road
- Minor Road

NOTES

ISSUE PURPOSE

DCO Submission

PROJECT NUMBER

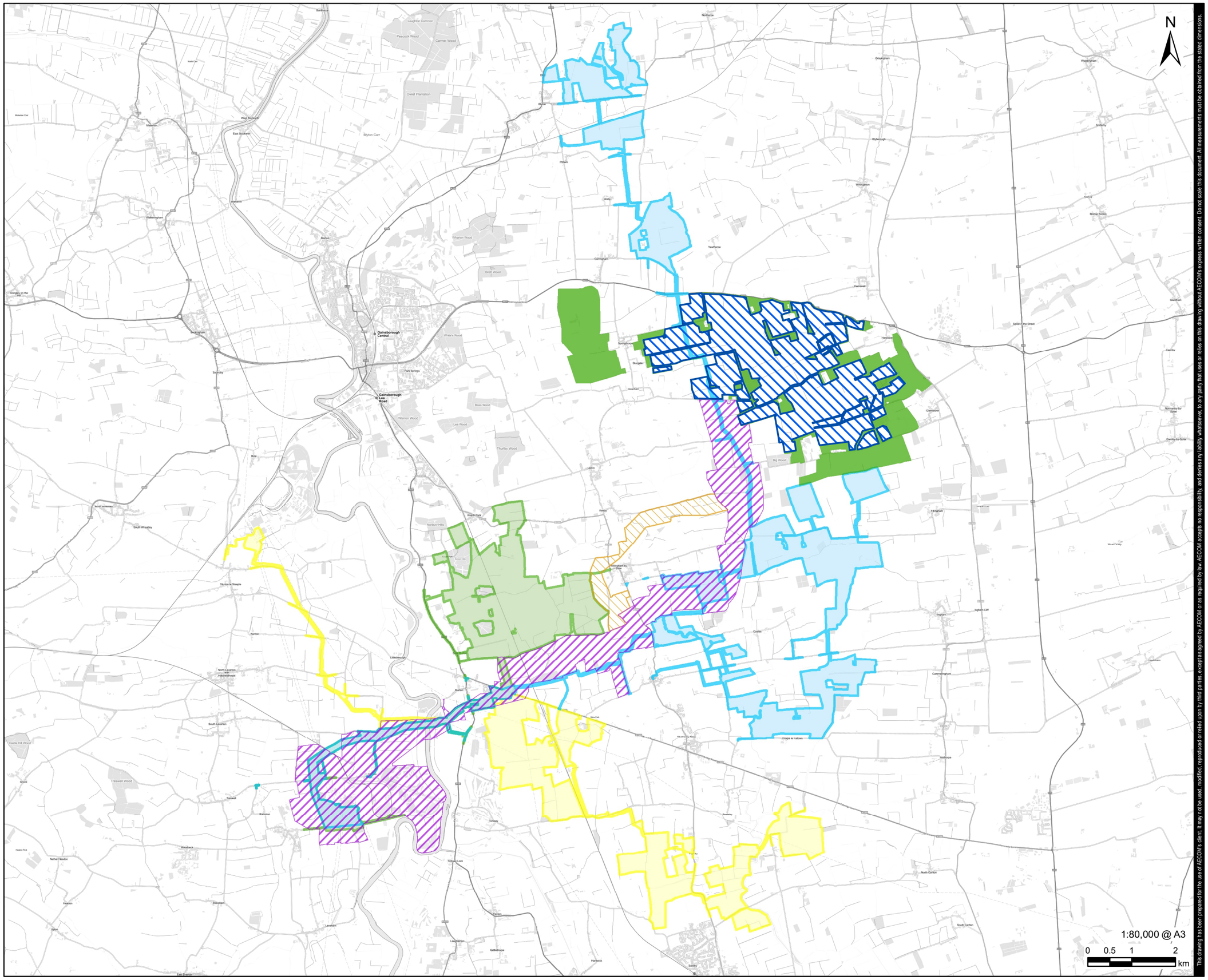
60677969

FIGURE TITLE

Local Highway Network

FIGURE NUMBER

Figure 3-20



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LEGEND

- Tillbridge Solar Indicative Developable Area
- Tillbridge Solar Project Alternative Cable Route
- Tillbridge Solar Project Cable Route Corridor
- Tillbridge Solar Indicative Non-Developable Area / Areas to be Considered for Mitigation
- Cottam Solar Project Boundary
- Gate Burton Boundary
- West Burton Energy Park Boundary

NOTES

ISSUE PURPOSE

DCO Submission

PROJECT NUMBER

60677969

FIGURE TITLE

Non-Statutory Consultation Design of the Principal Site

FIGURE NUMBER

Figure 4-1

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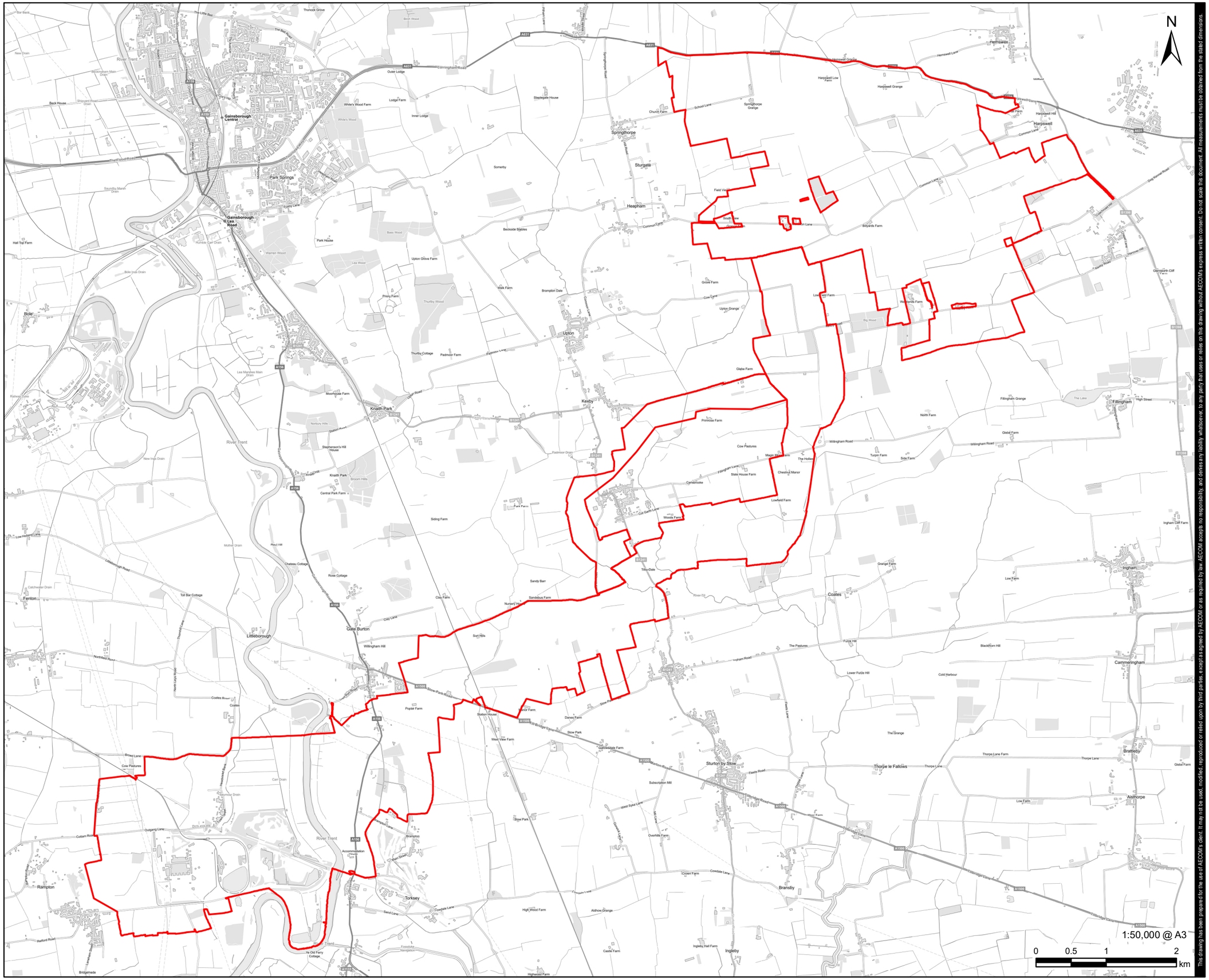

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LEGEND

Scoping Boundary

NOTES

ISSUE PURPOSE

DCO Submission

PROJECT NUMBER

60677969

FIGURE TITLE

Scoping Boundary

FIGURE NUMBER

Figure 4-2

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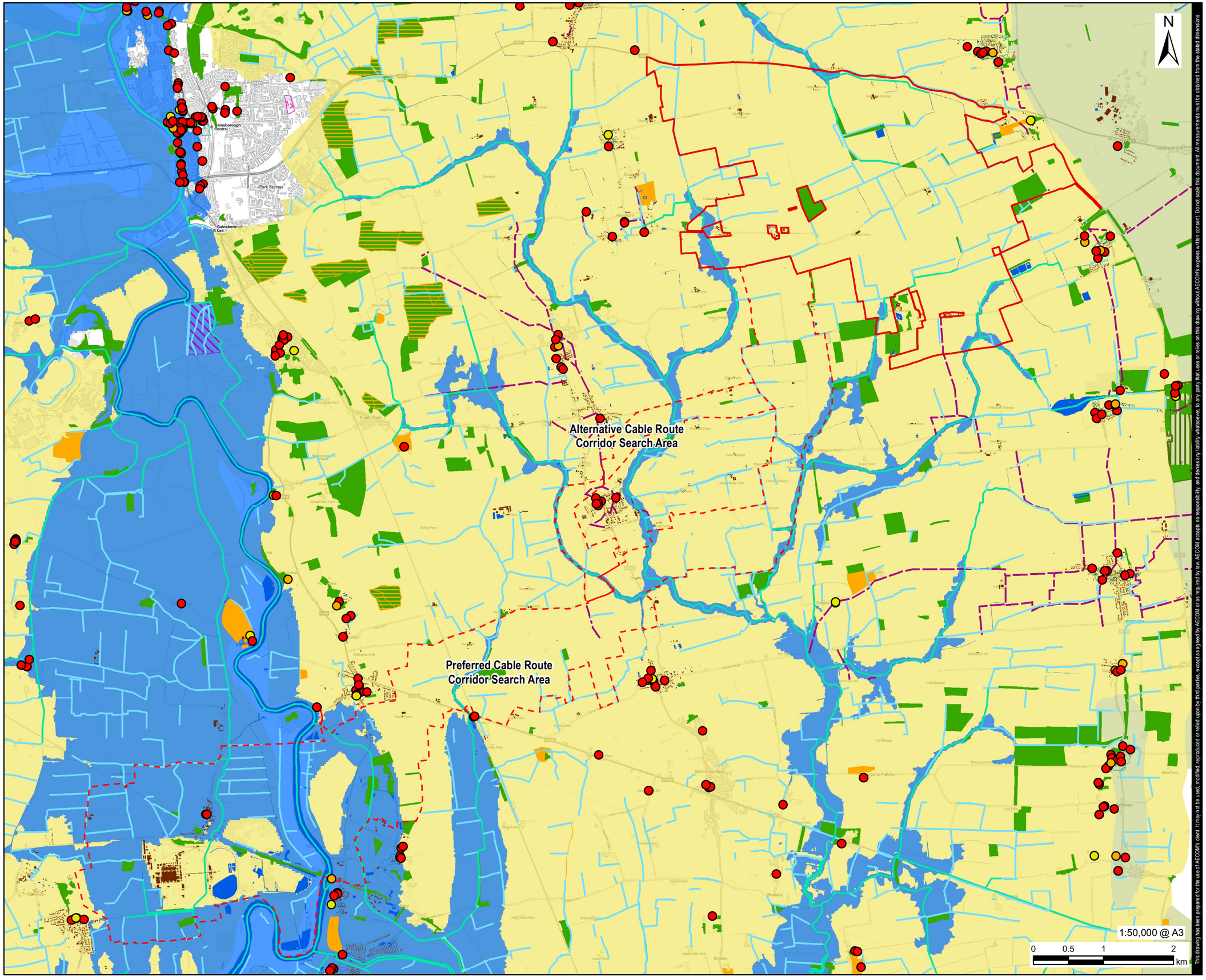

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LEGEND

- Principal Site
- Cable Corridor Boundary
- Alternative Route Boundary
- Indicative PROW Boundary
- River
- Stream
- Ancient Woodland
- Conservation Area
- Local Nature Reserve (LNR)
- Registered Park and Garden
- SSSI
- Buildings
- Flood Zone 3
- National Forest Inventory
- Scheduled Monument
- Waterbody

Listed Building (Grade)

- I
- II*
- II

Agricultural Land Classification (Grade)

- Grade 2
- Grade 3

NOTES

ISSUE PURPOSE

DCO Submission

PROJECT NUMBER

60677969

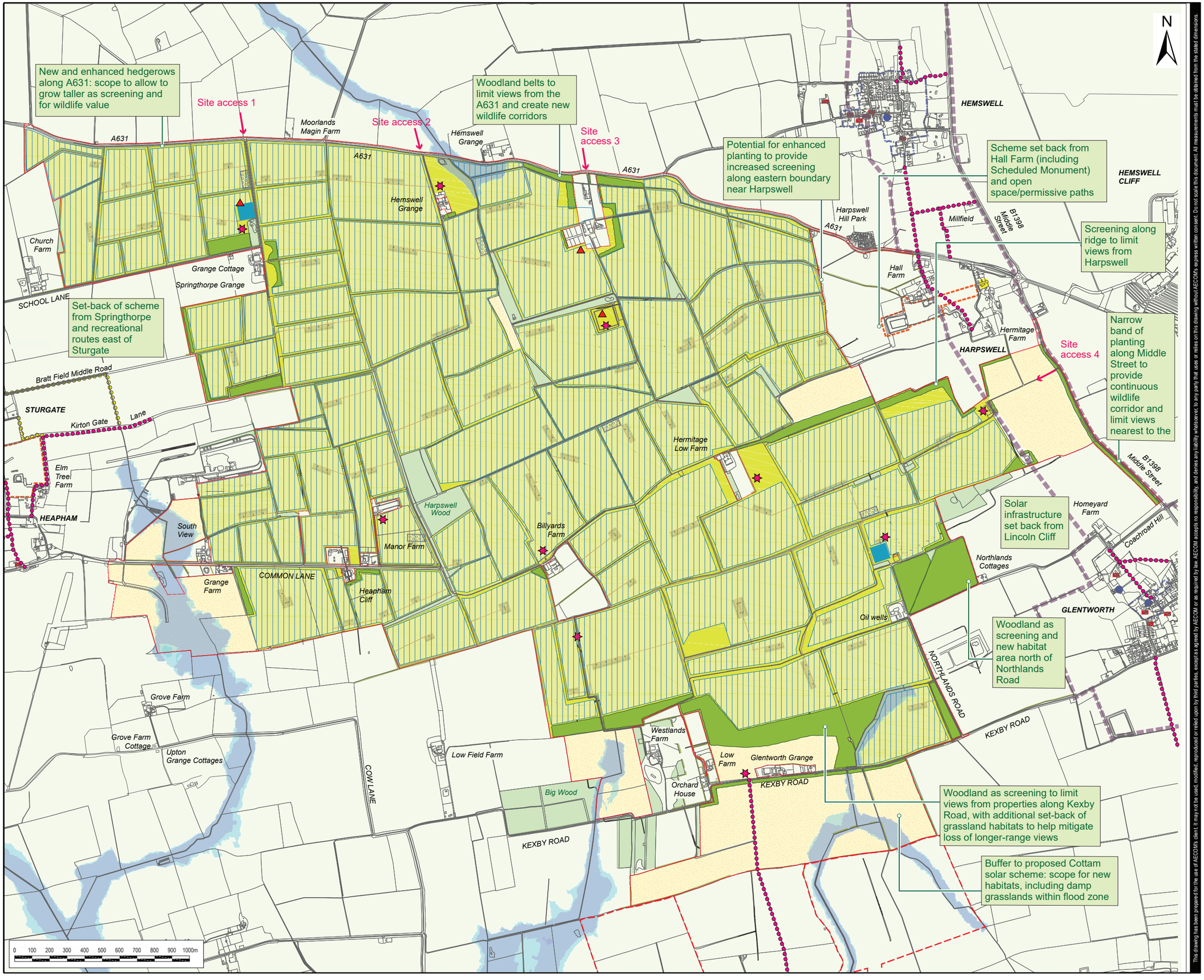
FIGURE TITLE

Environmental Constraints

FIGURE NUMBER

Figure 4-3

Revision: 0 Drawn: NA Checked: CR Approved: CW Date: 2024-03-27



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LEGEND

- PRINCIPAL SITE BOUNDARY

EXISTING FEATURES AND CONSTRAINTS

- EXISTING WOODLAND WITHIN AND AROUND SITE
- EXISTING HEDGEROWS (INDICATIVE) WITHIN AND AROUND SITE
- PUBLIC RIGHT OF WAY
- TEMPORARY VOLUNTARY BRIDLEWAY (SPRINGTHORPE)

EXISTING FEATURES AND CONSTRAINTS

- FLOOD ZONE 2 EXTENTS
- FLOOD ZONE 3 EXTENTS
- GRADE I LISTED BUILDINGS
- GRADE II* LISTED BUILDINGS
- GRADE II LISTED BUILDINGS
- SCHEDULED MONUMENTS
- CONSERVATION AREA
- AREA OF GREAT LANDSCAPE VALUE: (CENTRAL LINCOLNSHIRE LOCAL PLAN)

INDICATIVE PROPOSED SCHEME

- AREAS OF SOLAR PANELS WITH PROPOSED SEMI-IMPROVED GRASSLAND BENEATH
- SOLAR STATIONS AND BESS
- MAINTENANCE ACCESS TRACKS
- PROPOSED SUBSTATION SITES
- PROPOSED WATER TANK SITES
- ADDITIONAL ELEMENTS E.G. SITE OFFICES, STORAGE
- MAIN SITE ACCESS LOCATIONS
- CONSTRUCTION COMPOUNDS
- POTENTIAL AREAS FOR WOODLAND (PRIMARILY AS SCREENING)
- POTENTIAL AREAS FOR ECOLOGICAL ENHANCEMENT (E.G. GRASSLAND FOR GROUND NESTING BIRDS, OR SPECIES-RICH MEADOWS)
- OTHER AREAS OF GRASSLAND (INCLUDING SPECIES-RICH) OUTSIDE OF PANEL AND ACCESS TRACK AREAS
- COTTAM SOLAR SCHEME: APPLICATION BOUNDARY

NOTES

ISSUE PURPOSE

DCO Submission

PROJECT NUMBER

60677969

FIGURE TITLE

PEI Report
Indicative Principal Site Layout

FIGURE NUMBER

Figure 4-4

Revision: 0 Drawn: HW Checked: CR Approved: CW Date: 2024-03-27

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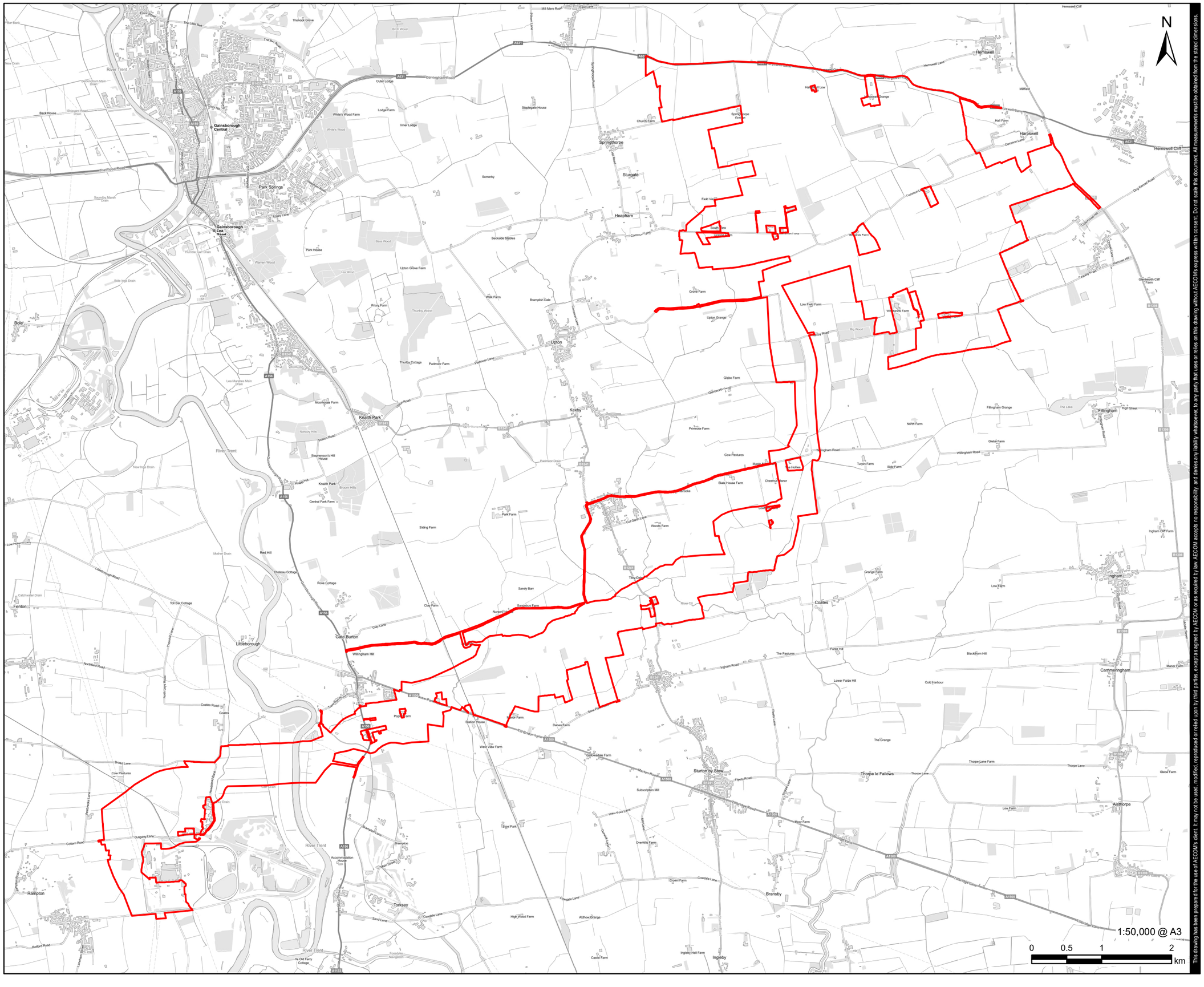

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LEGEND

PEI Report Boundary

NOTES

ISSUE PURPOSE

DCO Submission

PROJECT NUMBER

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FIGURE TITLE

PEI Report Boundary

FIGURE NUMBER

Figure 4-5

Date: 2024-03-20
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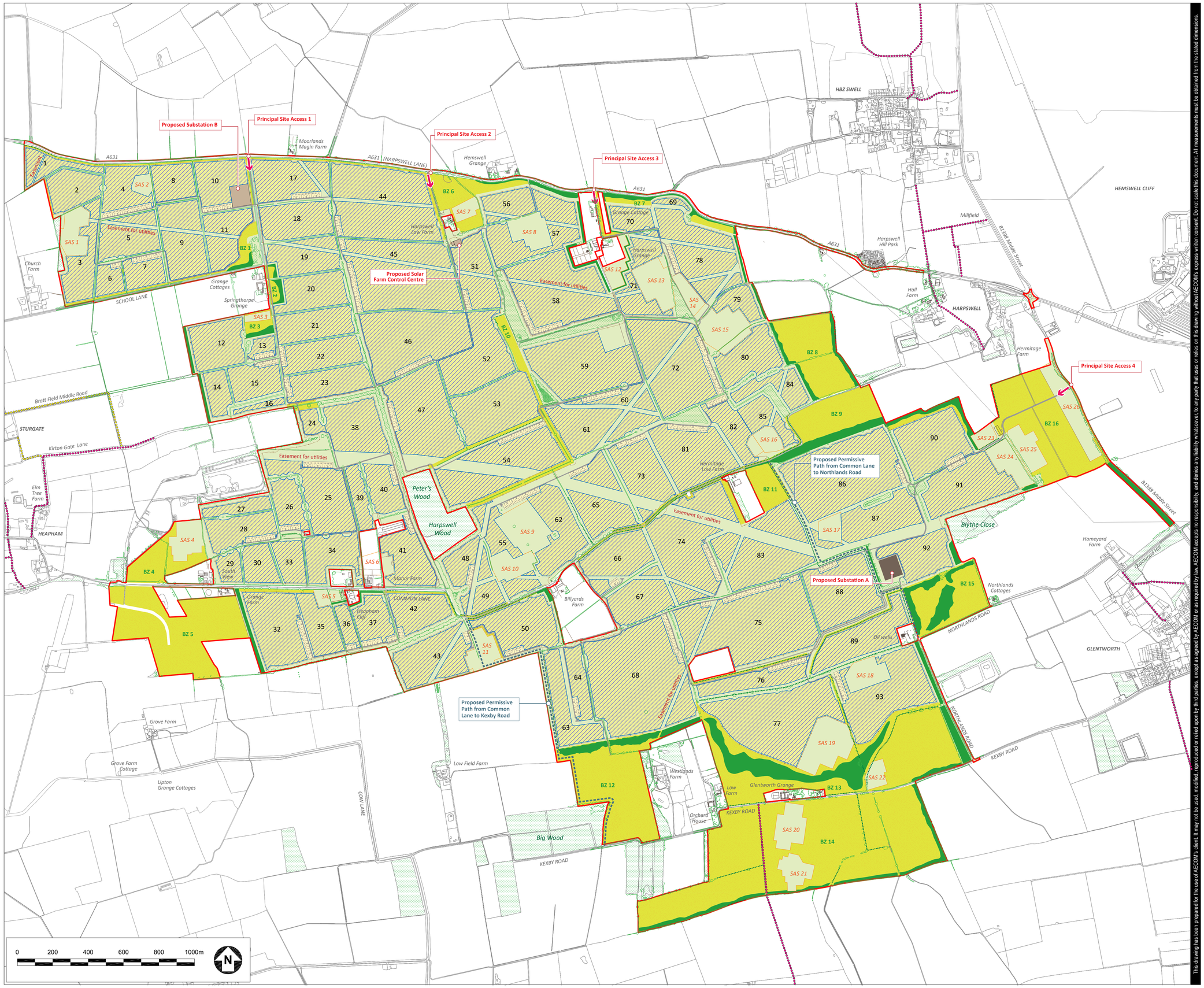

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LEGEND

ORDER LIMITS (SITE BOUNDARY)

- PRINCIPAL SITE ORDER LIMITS

EXISTING FEATURES AND CONSTRAINTS

- EXISTING WOODLAND AND HEDGEROWS WITHIN AND AROUND SITE
- PUBLIC RIGHT OF WAY
- TEMPORARY VOLUNTARY BRIDLEWAY (STURGATE)

INDICATIVE PROPOSED SCHEME

- PROPOSED AREAS OF SOLAR PANELS WITH IMPROVED GRASSLAND BENEATH
- PROPOSED SOLAR STATIONS AND BATTERY ENERGY STORAGE STATIONS (BESS)
- PROPOSED GRAVEL MAINTENANCE ACCESS TRACKS
- PROPOSED INFRASTRUCTURE: SUBSTATIONS AND SOLAR FARM CONTROL CENTRE
- PROPOSED MAIN SITE ACCESS LOCATIONS
- PROPOSED TIMBER/WIRE MESH DEER FENCE WITH CCTV CAMERAS ON POLES
- PROPOSED NEW NATIVE WOODLAND PLANTING
- BZ 12 — PROPOSED BIODIVERSITY ZONES WITH HABITATS INCLUDING GRASSLAND (FOR GROUND NESTING BIRDS) HEDGEROWS, TREE BELTS, GRASSLAND FOR GROUND NESTING BIRDS, ISOLATED TREES, WETLANDS, SPECIES-RICH MEADOWS ETC. (REFERENCE NUMBERS TO LARGER AREAS)
- PROPOSED NATIVE HEDGEROWS (INDICATIVE ALIGNMENTS)
- PROPOSED AREAS OF GRASSLAND (INCLUDING SPECIES-RICH) OUTSIDE OF PANEL AREAS AND ACCESS TRACKS
- SAS — SENSITIVE ARCHAEOLOGY SITES (WITH REFERENCE NUMBERS): NO DEVELOPMENT
- 123 — PANEL AREA REFERENCE NUMBERS
- PROPOSED PERMISSIVE PATH

NOTES

ISSUE PURPOSE

DCO Submission

PROJECT NUMBER

60677969

FIGURE TITLE

Indicative Principal Site Layout Plan

FIGURE NUMBER

Figure 5-1