

# **Gate Burton Energy Park Planning, Design and Access Statement**

Document Reference: EN010131/APP/2.2  
January 2023

Regulation 5(2)(q)  
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Prepared for:

Gate Burton Energy Park Limited

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# Executive Summary

This Planning, Design and Access Statement (PDAS) has been prepared on behalf of Gate Burton Energy Park Limited (the Applicant) to accompany an application for a Development Consent Order (DCO) for the Gate Burton Energy Park (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 Business, Energy and Industrial Strategy (the SoS) pursuant to the Planning Act 2008 (PA 2008).

The Application is for the construction, operation, maintenance and decommissioning of a solar photovoltaic (PV) electricity generating facility, energy storage facility and export connection to the National Grid. The Scheme would generate a large amount of low-cost renewable energy to the UK national grid to meet the urgent national need for decarbonisation and security of supply.

The land within the Order limits is located in the areas administered by Lincolnshire County Council (LCC) and Nottinghamshire County Council (NCC), within the lower tier council areas of West Lindsey District Council (WLDC) and Bassetlaw District Council (BDC).

The land within the Order Limits is contained within one site but split into two areas for descriptive purposes:

- **The Solar and Energy Storage Park:** is most of the land within the order limits, including the area where the solar panels, battery storage and on-site Substation are located;
- **The Grid Connection Corridor:** this comprises of land between the Solar and Energy Storage Park and Cottam Substation for the grid connection.

**Section 1** of this PDAS provide details of the Scheme and an overview of the relevant policy and legislation.

**Section 2** sets out the Need and Benefits of the Scheme. The principal solar elements of the Scheme would have a capacity of approximately 531. Over a 60-year lifetime is estimated that the Scheme would generate approximately 26.99TWh, generating sufficient electricity to power approximately 155,000 homes. The approximately 500 MWh of battery storage would also assist in maximising the benefits of the Scheme by storing excess electricity generated by the Scheme and releasing it into the National Grid when required. The battery storage can also import electricity from the National Grid for the same purpose further assisting in developing a low carbon, secure grid for the future.

The Scheme would generate very low carbon electricity, resulting in an overall lifetime carbon reduction relative to a gas-fired facility of over 8 million tonnes CO<sub>2e</sub>. The Scheme will also deliver significant enhancements for biodiversity including natural regeneration of areas surrounding woodland, new hedgerow planting, and native and species rich planting to enhance biodiversity and habitats.

The Scheme will deliver significant biodiversity net gain, with the Biodiversity Net Gain Assessment [EN010131/APP/7.9] predicting that a net gain of 70.95% for area-based

habitats, 37.24% for hedgerows and a net gain of 14.22% for rivers could be achieved. The Scheme would also have a positive impact on employment during construction, operation and decommissioning.

**Section 3** of this PDAS details the location of the Order limits, any relevant designations, allocations and existing or proposed applications that are within or near to the Order limits.

The Scheme is not in or adjacent to any areas that are nationally designated for landscape or ecological purposes; nor are there any designated heritage assets within the Order limits. There are a number of designated heritage assets in the vicinity of the Scheme, including the assets around the Grade II\* listed Gate Burton Hall to the west of the Scheme and Heynings Priory Scheduled Monument to the north. At the local level, the part of the Solar and Energy Storage Park to the west of the railway is located in a locally designated Area of Great Landscape Value and the Grid Connection Corridor passes under the Cow Pasture Lane Local Wildlife Site. The Scheme has been carefully designed with all these designations in mind and no significant effects are predicted on designated heritage assets, the local landscape designation or local wildlife site as a result of the Scheme.

**Section 4** provides a summary of the operation, construction and decommissioning phases of the scheme, as well as an overview of how the design and layout of the Scheme has evolved over time and alternatives considered. When considered alongside the Consultation Report **[EN010131/APP/4.1]**, this section demonstrates that the design has evolved to reduce environmental effects, comply with planning policy and with regard to consultation responses received.

**Section 5** considers the access provisions for the Scheme. It demonstrates that significant attention has been given to the development and assessment of accesses to provide accesses that are safe and low impact. The accesses have all been designed to accommodate the amount and size of vehicles required, with the main access being taken from the A156 to minimise the impacts on more minor roads. The internal access to the Battery Energy Storage System and Substation has also been routed to minimise visual effects on the area around Gate Burton.

**Section 6** outlines the legislative framework and the planning policy context for the Scheme, including consideration of all documents considered important and relevant to the Application.

**Section 7** provides a detailed assessment of the Scheme against the policies which the Applicant considers are likely to be important and relevant to the SoS's decision. This assessment is informed by the relevant chapters of the Environmental Statement (ES) **[EN010131/APP/3.1]**.

The Scheme Order limits, cable route corridor, layout, design and mitigation have all been developed to maximise the benefits of the Scheme and minimise local impacts. As a result of this work, the ES submitted with the Application concludes that once embedded and additional (where applicable) mitigation measures are implemented there will be no adverse significant effects arising from the Scheme on designated and non-designated historic assets, protected species or important ecological features, the water environment, noise and vibration, transport and access, human health, air quality, glint and glare, ground conditions, major accidents and disasters,

telecommunications, best and most versatile agricultural land, television reception and utilities, and materials, waste and recycling.

The Scheme will result in residual significant adverse effects upon landscape and visual receptors both individually and when the Scheme is considered alongside the other three solar NSIPs proposed in the area. These effects will occur while the Scheme is under construction, operation or being decommissioned and would be reversible following decommissioning of the Scheme.

The assessment in the ES concludes that the Scheme would have a range of temporary significant adverse effects on the landscape as a result of construction and decommissioning. Effects would be minimised where possible through measures set out in the Framework Construction Environmental Management Plan **[EN010131/APP/7.3]**, and the Decommissioning Environmental Management Plan **[EN010131/APP/7.5]**. A scheme of mitigation planting will reduce landscape and visual impacts as far as possible, however some significant impacts will remain during the operational phase of the Scheme. These impacts will occur to Local Landscape Character Areas, nearby residents, road users (including public transport), and users of one section of Public Right of Way LL|Knai|44/2.

The Applicant has carefully designed the Scheme to ensure landscape and visual impacts are minimised through sensitive siting of the largest Scheme components in the most well screened areas of the Solar and Energy Storage Park and a green infrastructure led landscape and ecological design. This limits the landscape and visual effects during the operational period to a small number of areas and receptors. In terms of the planning balance, the fact that these effects are localised and will be reversed following decommissioning at the end of the Scheme's operational life means that they significantly outweighed by the national benefits of the Scheme. The Overarching National Policy Statement for Energy EN-1 and the Revised (Draft) Overarching National Policy Statement for Energy EN-1 acknowledge that adverse landscape and visual effects are likely, given the scale of energy NSIPs. When considering whether to grant consent for the Scheme, the question is not whether adverse effects exist but *'whether any adverse impact on the landscape would be so damaging that it is not offset by the benefits (including need) of the project'* (NPS EN-1 paragraph 5.10.17).

The majority of land (approximately 88%) within the Solar and Energy Storage Park is not Best and Most Versatile (BMV) agricultural land. The Applicant has sought to minimise the impact on BMV land through avoiding siting permanent infrastructure in these areas as far as possible, minimising the impact on soils during construction, operation and decommissioning and enabling some agricultural use (e.g. sheep grazing) during Scheme operation. The areas of BMV land retained in the Solar and Energy Storage Park are small and awkwardly shaped so omitting them would reduce the output of the Scheme without necessarily leaving an area that is commercially viable to farm. There are also some areas of land that is likely to be BMV within the Grid Connection Corridor, but as agricultural use can re-commence on this land following construction, the impact on agricultural land is minimal.

The inclusion of agricultural land in the Order limits is justified by other sustainability considerations, including the need to maximise the amount of low carbon electricity generated by the Scheme and the particular opportunities and constraints offered by some of the areas of BMV land. The impacts on BMV land have been minimised by

the nature of the Scheme and its design, and the impacts on the vast majority of BMV land are temporary and reversible. The benefits of the Scheme outweigh the reversible loss of the agricultural use of the BMV land, particularly noting that Draft NPS EN-3 states that land type should not be the predominating factor in determining the suitability of a site for solar development. The ES concludes that approximately 2ha of BMV land would be permanently lost and the Scheme would not have significant impact on BMV land.

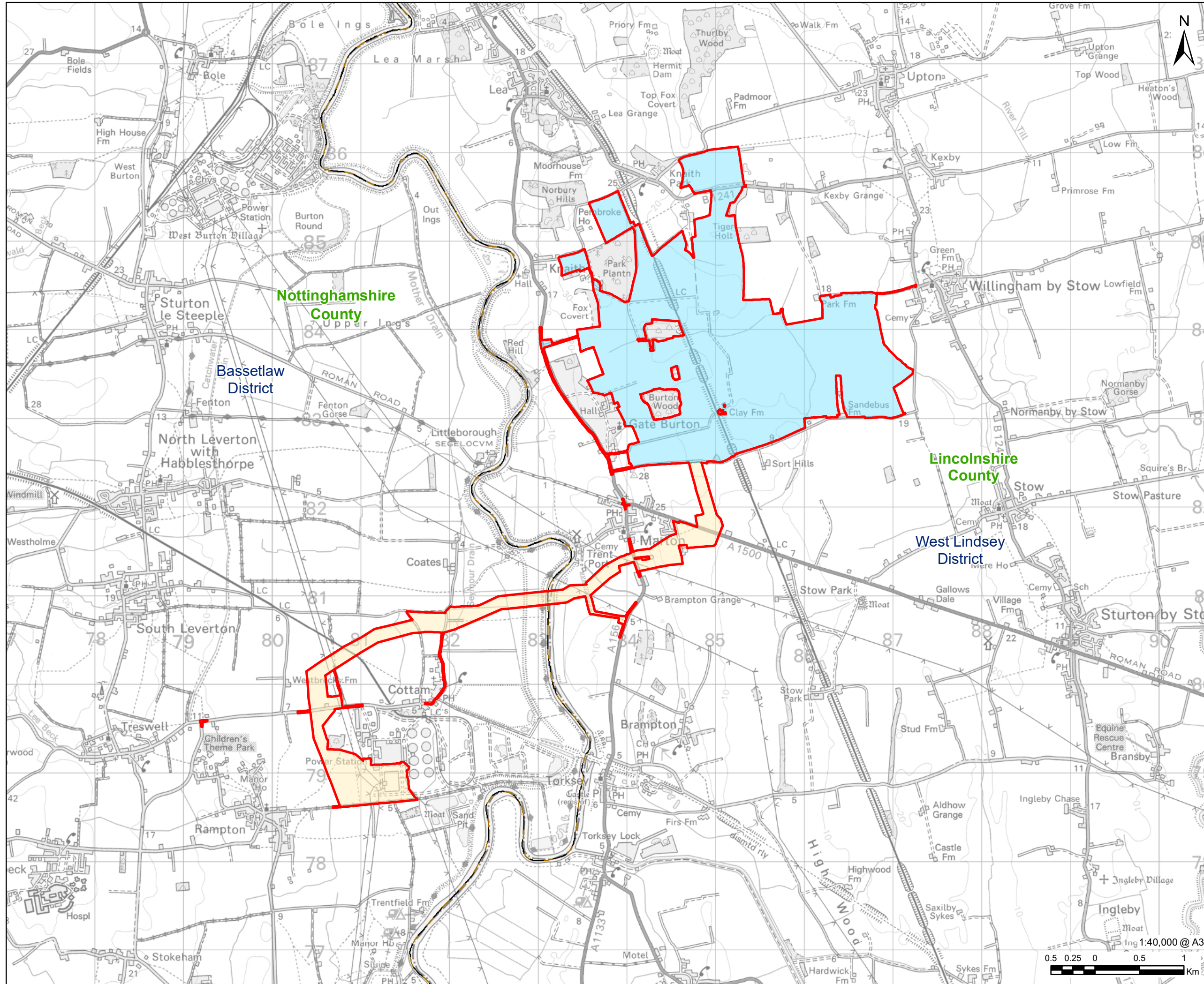
**Section 8** of this PDAS concludes that whilst it has not been possible to avoid all impacts, these have been minimised where possible, through careful and sensitive design and detailed mitigation strategies. When considered against the Draft and designated Energy National Policy Statements, the Scheme accords with relevant policies, and with regard to specific policy tests, the national and local benefits of the Scheme are considered on balance to outweigh its adverse impacts. Accordance with the National Policy Statements is explored in detail in Appendix A. The Scheme is also considered to be consistent with relevant local planning policy and accords with local policies DM10 of the BCS, Policy LP19 of the Central Lincolnshire Local Plan 2012-2036, Policy S14 of CLLP Review and Policy ST15 Draft BLP which concern renewable and low carbon energy schemes. Compliance with local planning policy is considered in detail in Appendix B.

# 1. Introduction

## 1.1 Overview of the Scheme

- 1.1.1 This Planning, Design and Access Statement (PDAS) has been prepared on behalf of Gate Burton Energy Park Limited (the Applicant) to accompany an application for a Development Consent Order (DCO) for the Gate Burton Energy Park (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 Business, Energy and Industrial Strategy (the SoS) pursuant to the Planning Act 2008 (PA 2008) (Ref 1-1).
- 1.1.2 The Application is for the construction, operation, maintenance and decommissioning of a solar photovoltaic (PV) electricity generating facility, energy storage facility and export connection to the National Grid. The Scheme would generate a substantial amount of low-cost renewable energy to the UK national grid to meet the urgent national need for decarbonisation and security of supply.
- 1.1.3 The land within the Order limits is located in the areas governed by Lincolnshire County Council (LCC) and Nottinghamshire County Council (NCC), within the lower tier council areas of West Lindsey District Council (WLDC) and Bassetlaw District Council (BDC). These four local authorities are the Host Authorities for the Scheme. Figure 1-1 shows the Order limits for the Scheme alongside the Host Authority boundaries.
- 1.1.4 The land within the Order Limits is wholly contained within one site and will comprise two distinct areas:
- The **Solar and Energy Storage Park** is most of the land within the Order limits including all areas comprising solar panels, battery storage and the on-site Substation. It is wholly located in the area of WLDC; and
  - The **Grid Connection Corridor** comprises land used for the grid connection between the Solar and Energy Storage Park and Cottam Substation. The part located to the east of the River Trent is within the WLDC area and the area to the west of the River Trent is within the BDC area.
- 1.1.5 These two areas have been split only for the purpose of describing the Scheme and its environmental impacts. The split of the two areas is shown in Figure 1-1.
- 1.1.6 The Scheme will be connected to the National Grid at the Cottam Substation located at the former coal fired Cottam Power Station. The closure of the coal fired plant means that there is available capacity at the site for a significant amount of electricity generation to enter the National Grid. Gate Burton Energy Park would utilise this available capacity to export electricity to the national grid and potentially to import electricity for storage at the site. The cable route between the Solar and Energy Storage Park and Cottam Substation will be placed underground to minimise landscape and visual impacts.










**PROJECT**  
Gate Burton Energy Park

**CLIENT**  
  
Gate Burton  
ENERGY PARK

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- LEGEND**
-  Order Limits
  -  Solar and Energy Storage Park
  -  Grid Connection Corridor
  -  District Boundary
  -  County Boundary

**NOTES**  
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**ISSUE PURPOSE**  
For Information

**PROJECT NUMBER**  
60664324

**FIGURE TITLE**  
Order Limits and LPA Boundaries

**FIGURE NUMBER**  
Figure 1-1

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- 1.1.7 Cottam Power Station is located within the floodplain, with the Gate Burton site presenting one of the closest areas of land to the grid connection outside areas of high flood risk. Selecting a location closer to the grid connection point reduces the potential for adverse environmental impacts associated with the grid connection and costs associated with new infrastructure. This makes the Gate Burton site attractive as a site for the construction of a new electricity generating station.
- 1.1.8 The electricity generated by the Scheme will depend on the final layout of the Scheme and technology choice. However, the installed capacity is likely to be approximately 531 MW to maximise the grid connection export capacity of 500MW. This would provide a large amount of renewable electricity to the National Grid, contributing to the decarbonisation of the electricity grid. Electricity generated by solar panels is low cost, predictable and can be generated locally rather than being reliant on fossil fuels that may be imported from outside the UK. The Scheme will also incorporate a Battery Energy Storage System (BESS), which can store electricity generated by the Scheme or excess electricity generated elsewhere and release it at peak times. Electricity storage of this nature enables further decarbonisation of the National Grid and increases the security of supply as more renewable energy facilities are connected to the grid. Further information on the benefits of the Scheme is provided in Chapter 2 of this PDAS.
- 1.1.9 At all stages of the project the Scheme has evolved in response to consultation responses and the iterative Environmental Impact Assessment process. The result is a Scheme with few adverse environmental impacts for the scale of benefits to be delivered. The potential adverse effects of the Scheme, how these have been mitigated and compliance of the Scheme with planning policy is explored in Section 7.
- 1.1.10 The Scheme has been granted a generation licence by Ofgem under the Electricity Act 1989. The Applicant therefore has the status of a statutory undertaker for the purposes of the Planning Act 2008 and the Town and Country Planning Act 1990. The Applicant has a secure grid connection enabling the Scheme to provide electricity to the National Grid should the DCO be made.

## 1.2 The Applicant

- 1.2.1 The Application is submitted by Gate Burton Energy Park Ltd (the Applicant) which is a subsidiary of Low Carbon Ltd ('Low Carbon'). Low Carbon is a privately-owned UK investment and asset management company specialising in renewable energy. Further information on the structure of the company is provided in the **Funding Statement [EN010131/APP/6.7]**.
- 1.2.2 Founded in 2011, Low Carbon is committed to making a significant positive impact on climate change by investing in large-scale renewable energy projects across a range of energy technologies including solar PV, onshore wind, offshore wind, waste-to-energy, battery storage and other proven renewable energy technologies. Deploying capital at scale into renewable energy schemes, Low Carbon invests across the full life cycle of projects from concept through to development, construction, and operation.

- 1.2.3 To date, the Low Carbon investment model has developed more than 1GW of electricity generation schemes. Its proprietary renewable energy pipeline currently stands at more than 5GW, ideally positioning it to capitalise on investment opportunities as the need for green power and energy security increases. Low Carbon's investments are already generating sufficient clean energy to power more than 390,000 homes, avoiding in excess of 750,000 tonnes of CO<sub>2</sub> each year.
- 1.2.4 Low Carbon has been active in large-scale solar energy since its formation in 2011. With an established track record in the UK, it also has operations in Europe including the Netherlands and the Republic of Ireland. Low Carbon is a certified B Corporation. B Corporation companies are those with certification for their social sustainability and environmental performance, with the certification demonstrating Low Carbon's commitment to being a positive, sustainable company.

## 1.3 Legislative and Policy Context

### Definition of the Scheme as an NSIP

- 1.3.1 The Scheme is defined as a Nationally Significant Infrastructure Project (NSIP) under Sections 14(1)(a) and 15(2) of the PA 2008. The Scheme is defined as an NSIP because it comprises the construction of an onshore generating station in England that does not generate electricity from wind and has a capacity exceeding 50MW. The PA 2008 requires a DCO to be obtained for the development of NSIPs.
- 1.3.2 The PA 2008 prescribes that the relevant SoS is responsible for determining applications for development consent, with the power to appoint an Examining Authority to manage and examine the Application. In this role, the Examining Authority, appointed through the Planning Inspectorate, will make procedural decisions, examine the application and make a recommendation to the SoS, who will then decide whether to grant a DCO.

### Matters the Secretary of State Must Consider when Determining NSIPs

- 1.3.3 National Policy Statements (NPSs) have been designated to guide decision making on DCO applications. For the energy sector, six NPSs have been designated, of which the following are considered relevant to this application:
- EN-1: Overarching NPS For Energy (NPS EN-1) (Ref 1-2);
  - EN-3 Renewable Energy Infrastructure (NPS EN-3) (Ref 1-3); and
  - EN-5: Electricity Networks Infrastructure (NPS EN-5) (Ref 1-4).
- 1.3.4 The above documents were all designated in 2011. The Government's stated aim was for NPSs to be updated every five years but this has not happened in the energy sector and at the time of writing in January 2023, the 2011 documents remain current.
- 1.3.5 Part 6 of the PA 2008 sets out how applications for DCOs should be determined. Sections 103 to 107 provide the framework for decision-making, setting out what the SoS should consider when making a decision on a DCO

application. Section 104 applies when a NPS has effect for a specific NSIP; whereas Section 105 applies where no NPS has effect.

## Determining an Application under Section 105

1.3.6 At present Section 105 applies because the existing Energy NPSs do not specifically consider solar development. Where an application is determined under Section 105, the SoS must have regard to:

- any local impact report;
- any matters prescribed in relation to development of the description to which the application relates; and
- any other matters the Secretary of State considers to be important and relevant.

1.3.7 Revised Draft Energy NPSs were published by the Department for Business, Energy and Industrial Strategy (BEIS) following consultation in 2021. The final NPSs were expected to be published in 2022 but at the time of writing in January 2023 these are still awaited. Given the advanced stage of the Draft Energy NPSs, three draft documents are considered important and relevant to decision making on this Application. These three Draft NPSs are:

- Revised (Draft) EN-1: Overarching NPS For Energy (Draft NPS EN-1) (Ref 1-5);
- Revised (Draft) EN-3: Renewable Energy Infrastructure (Draft NPS EN-3) (Ref 1-6); and
- Revised (Draft) EN-5: Electricity Networks Infrastructure (Draft NPS EN-5) (Ref 1-7).

1.3.8 When granting consent for previous solar DCO schemes such as the Little Crow Solar Park Order 2022, the Secretary of State confirmed that the Draft NPSs are important and relevant in decision-making under Section 105.

## Determining an Application under Section 104

1.3.9 Draft EN-1 now specifies that solar PV comes within its remit and Draft EN-3 contains a chapter dedicated to solar technology. Therefore, when the Draft NPSs are designated DCO applications for solar developments will be determined under Section 104 on the PA 2008, subject to any transitional provisions<sup>1</sup>. Given that the Draft NPSs are unlikely to be designated before the Application is accepted for Examination, the Gate Burton Energy Park Application is highly unlikely to be determined under Section 104.

1.3.10 Under Section 104(3) the SoS would need to determine the application in accordance with any relevant NPS except where deciding the application in line with the NPS would:

- Lead to the United Kingdom being in breach of any of its international obligations
- Lead to the SoS being in breach of any duty imposed on the SoS by or under any enactment;

<sup>1</sup> Transitional provisions are set out in Section 1.6 of Draft NPS EN-1 and states that the 2011 NPSs should continue to have effect for applications for development consent accepted for examination before the drafts are designated, although the revised documents are capable of being important and relevant matters.

- Be unlawful by virtue of any enactment;
- Mean that the adverse impacts would outweigh its benefits; or
- Any condition prescribed for deciding an application otherwise than in accordance with an NPS is met.

1.3.11 When determining applications under Section 104, Section 104(2) states that the SoS must have regard to:

- Any relevant NPS;
- The appropriate marine policy documents (if any);
- Any local impact report;
- Any matters prescribed in relation to the development and
- Any other matters which the SoS thinks are both important and relevant.

## Factors Common to Determining Applications under both Sections

1.3.12 Documents that the Applicant considers could be important and relevant to decision making are listed in Table 1.1.

**Table 1.1: Documents that could be important and relevant in decision making.**

Document	Comments	Acronym	Ref. <sup>2</sup>
<b>National Planning Policy Framework</b>	Recent and adopted national policy but written to guide decision making on Town and Country Planning Act 1990 applications rather than NSIPs.	NPPF	1-9
<b>Marine Policy Statement (2011)</b>	Sets out the policy objectives for the key activities that take place in the marine environment and provides for Marine Plans. The Scheme crosses the tidal point of the River Trent along the Cable Route Corridor.	MPS	1-10
<b>Climate Change Act 2008 (and amendments)</b>	Sets out emission reduction targets and provides a system of carbon budgeting.	N/A	1-11
<b>A Green Future: Our 25 Year Plan to Improve the Environment (2018)</b>	Sets out the UK government's approach to maintaining and enhancing the natural environment.	N/A	1-12
<b>Net Zero: Opportunities for the Power Sector (2020)</b>	Published by the National Infrastructure Commission. Sets out updated evidence and analysis of the electricity system in the context of the 2050 net zero greenhouse gas emissions target.	N/A	1-13
<b>Environment Act 2021</b>	The Environment Act 2021 sets clear statutory targets for the recovery of the natural world in four priority areas: air quality, biodiversity, water and waste, and includes a new target to reverse the decline in species abundance by the end of 2030.	N/A	1-14

<sup>2</sup> Full references are provided in Chapter 10 of this PDAS

Document	Comments	Acronym	Ref. <sup>2</sup>
<b>Energy White Paper: Powering our Net Zero Future (2020)</b>	Sets out the government's long-term vision for tackling climate change and achieving carbon net zero by 2050.	N/A	1-15
<b>National Infrastructure Strategy (2020)</b>	Sets out the government's framework for infrastructure delivery and improvements.	N/A	1-16
<b>Net Zero Strategy: Build Back Greener (2021)</b>	This strategy sets out the policies and proposals for decarbonising all sectors of the UK economy to meet the 2050 net zero target.	N/A	1-17
<b>British Energy Security Strategy (2022)</b>	Sets out the government's 10 point plan to enhance the UK energy security and independence over the long term.	N/A	1-18
<b>Central Lincolnshire Local Plan 2012-2036 (April 2017)</b>	The Central Lincolnshire Local Plan 2012-2036 was adopted by the Central Lincolnshire Joint Strategic Planning Committee (CLJSPC) on 24 April 2017 and it replaced West Lindsey's Local Plan.	CLLP	1-19
<b>Draft Central Lincolnshire Local Plan Review (March 2022)</b>	The Local Plan Review is proposed to replace the Central Lincolnshire Local Plan adopted in 2017.	CLLP Review	1-20
<b>Lincolnshire Minerals and Waste Local Plan including the Core Strategy and Development Management Policies Plan (June 2016) and Site Locations Plan (December 2017)</b>	The adopted plan provides the criteria for considering minerals and waste development applications.	N/A	1-21
<b>Treswell and Cottam Neighbourhood Plan (February 2019)</b>	The Neighbourhood Plan forms part of the statutory Local Development Plan for Bassetlaw and is used when determining planning applications within the Neighbourhood Plan Area.	N/A	1-22
<b>Rampton and Woodbeck Neighbourhood Plan (May 2021)</b>	The Neighbourhood Plan forms part of the statutory Local Development Plan for Bassetlaw and is used when determining planning applications within the Neighbourhood Plan Area.	N/A	1-23
<b>Lea Neighbourhood Plan (January 2018)</b>	The Neighbourhood Plan forms part of the statutory Local Development Plan for West Lindsey and is used when determining planning applications within the Neighbourhood Plan Area.	N/A	1-24
<b>Sturton by Stow and Stow Neighbourhood Plan (July 2022)</b>	The Neighbourhood Plan forms part of the statutory Local Development Plan for West Lindsey and is used when determining planning applications within the Neighbourhood Plan Area.	N/A	1-25
<b>Bassetlaw District Council Core Strategy and Development Management Policies (December 2011)</b>	The Core Strategy and Development Management Policies is the adopted Local Development Plan for Bassetlaw.	BLCS	1-26

Document	Comments	Acronym	Ref. <sup>2</sup>
<b>Draft Bassetlaw Local Plan 2020-2038</b>	The Draft Bassetlaw Local Plan is proposed to replace the adopted Core Strategy and Development Management Policies Plan (2011) for West Lindsey.	Draft BLP	1-27
<b>Nottinghamshire Minerals Local Plan (March 2021)</b>	The adopted plan provides the criteria for considering minerals development applications.	N/A	1-28
<b>Nottinghamshire Waste Local Plan (2002)</b>	The adopted plan provides the criteria for considering waste development applications.	N/A	1-29
<b>Nottinghamshire Waste Core Strategy (2013)</b>	The Waste Core Strategy partly replaces saved policies in the existing Waste Local Plan (2002).	N/A	1-30

1.3.13 The above documents are considered likely to be important and relevant regardless of whether the Application is determined under Section 104 or Section 105. The weight applied to the above documents in either case depends on the status of the document, how up to date the document is and its relevance to the development of a solar NSIP.

1.3.14 Local Impact Reports to be prepared by the Host Authorities are anticipated to be submitted by WLDC, LCC, BDC and NCC. With reference to Section 60 of the PA 2008 and Advice Note One: Local Impact Reports, we anticipate that local impact reports will particularly address compliance with local planning policies listed as important and relevant matters above.

1.3.15 The Infrastructure Planning (Decisions) Regulations 2010 are a prescribed relevant matter under Section 104(2)(c) and 105(2)(b) of the PA 2008. Regulation 3 on listed buildings, conservation areas and Scheduled Monuments and Regulation 7 on Biological Diversity are considered relevant to the Scheme.

## 1.4 Environmental Impact Assessment

1.4.1 The Scheme is 'EIA development' as defined by the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) (Ref 1-8) requiring an Environmental Impact Assessment (EIA). An **Environmental Statement (ES) [EN010131/APP/3.1]** has therefore been prepared and is submitted with the Application.

## 1.5 Consents within and outside the DCO

1.5.1 A **draft DCO** is provided with the Application **[EN010131/APP/6.1]** and would, if granted, have the effect of providing consent for development, in addition to a range of other consents and authorisations. Details of the consents and authorisations included in the DCO are explained in the **Explanatory Memorandum** to the draft DCO **[EN010131/APP/6.2]**. The DCO includes powers to compulsory acquire land and rights necessary to implement the Scheme.



- 1.5.2 The draft DCO also incorporates provisions deeming a marine licence to have been issued under Part 4 of the Marine and Coastal Access Act 2009. A marine licence is considered to be required due to the works to install a grid connection beneath the River Trent, which is tidal in the area crossed by the Order limits. The National Tidal Limit is approximately 28km upstream of the Order limits for the Scheme.
- 1.5.3 A **Consents and Agreements Position Statement [EN010131/APP/6.3]** explains those other consents and licenses that are or may be required under other legislation which will be sought separately from the DCO for the construction and operation of the Scheme. The Applicant is not aware of any impediment to obtaining these consents.
- 1.5.4 Section 115 of the PA 2008 also states that a DCO can include consent for 'associated development', which is development that is not an NSIP in its own right but is associated with the NSIP. The NSIP and associated development works are defined in Schedule 1 of the **draft DCO [EN010131/APP/6.1]** and explained in the **Explanatory Memorandum** to the draft DCO **[EN010131/APP/6.2]**. The elements of the Scheme that constitute the NSIP and the elements that constitute associated development are also summarised in Section 6.2 of this PDAS.

## 1.6 Pre-application consultation

- 1.6.1 The PA 2008 requires applicants for DCOs to carry out statutory pre-application consultation on their proposals and to have regard to the responses received. There are several requirements on how this consultation must be undertaken, which are set out in the PA 2008 and related regulations and guidance.
- 1.6.2 The Applicant adopted a two-stage approach to pre-application consultation, going beyond the requirements of the PA 2008. The Applicant undertook an initial non-statutory stage of consultation between 11 January 2022 and 18 February 2022 and a second, statutory consultation period between 22 June 2022 and 5 August 2022. A third stage of targeted consultation was held between 3 November 2022 and 13 December 2022 to consult specifically on a number of minor additional areas added to the Order limits to include areas required for access, a new water main and to reflect correct land parcel boundaries.
- 1.6.3 Full details of what these consultation periods entailed, how the requirements of the PA 2008 are met, responses received and how regard has been had to responses are provided in the **Consultation Report [EN010131/APP/4.1]**.
- 1.6.4 Further to the consultation periods above, the Applicant has also consulted on an ongoing basis on the Scheme. This has included:
- Engagement with Host Authorities from October 2021 to the present, including the fire service;
  - Environmental Impact Assessment Scoping consultation in November 2021;

- Consultation with environmental bodies, particularly, but not solely Historic England, Natural England and the Environment Agency;
- Briefings with Parish Councils;
- Consultation with developers of other solar schemes proposed nearby;
- Cottam Solar Project;
- West Burton Solar Project; and
- Tillbridge Solar Project.
- Engagement with other prescribed consultees such as Network Rail, the Marine Management Organisation and EDF.
- Meetings with the Planning Inspectorate to discuss the Scheme, Application, programme and cumulative impacts.
- Ongoing consultation with landowners to inform design development and land acquisition agreements from February 2022 to present. This also includes consultation with the applicant of the Town and Country Planning Act application for two barns near Marton discussed in Section 3.4 of this PDAS.

1.6.5 The Applicant has had regard to all feedback it has received in response to its consultations when developing the Scheme.

1.6.6 The ongoing consultation with Host Authorities has comprised regular meetings where updates have been provided on the Scheme, including the development of the design, and technical meetings with the Host Authorities' relevant technical specialists, including on the topics of landscape and visual impact, heritage, noise, minerals safeguarding, agricultural land, water and drainage, ecology, transport, fire safety and public rights of way.

## 1.7 Purpose and Structure of this Planning Statement

1.7.1 The purpose of this PDAS is to provide an overview of the Scheme, its impacts, and the Application as a whole in a way that is easy to understand. It describes the design and access proposals for the Scheme, including how the design evolved in responses to consultation and the EIA. This PDAS considers and assesses the Scheme against relevant planning policy, and other matters the Applicant considers are likely to be important and relevant to the SoS's decision.

1.7.2 This remainder for the PDAS is structured as follows:

- **Section 2: The Need and Benefits of the Scheme** – summarises the need and benefits of the Scheme
- **Section 3: Site and Context** – describes the existing land uses and characteristics of the Scheme location and Order limits including planning history and national and local designations.
- **Section 4: The Scheme Design** describes the design of the Scheme and how it has evolved over time and in response to consultation responses.



- **Section 5: Access** describes the access proposals during the construction and operational period, in addition to the interaction with public rights of way.
  - **Section 6: Legislative and Policy Context** – outlines the decision-making framework, planning policy context for the Scheme and other legislation and policy considered to be important and relevant.
  - **Section 7: Planning Appraisal** – explains the impacts of the Scheme by topic and explored the Scheme’s compliance with planning policy considered to be important and relevant
  - **Section 8: Conclusion and Planning Balance** – presents the overall planning balance and conclusions of this Planning, Design and Access Statement.
- 1.7.3 Appendices A and B provided detailed analysis of the compliance of the Scheme with designated and draft NPSs and local policy respectively.

## 2. The Need and Benefits of the Scheme

### 2.1 Introduction

- 2.1.1 There is an urgent need to generate electricity using renewable and low carbon sources to provide sufficient reliable, affordable sources of electricity whilst meeting our carbon reduction targets. Solar technology is one of the quickest and cheapest technologies to deploy. A detailed review of why the Scheme is urgently required at the scale proposed is set out in the **Statement of Need [EN010131/APP/2.1]**. Section 2.2 below provides an overview of the need for solar development and Section 2.3 goes on to discuss the specific need and benefits of the Scheme.

### 2.2 The Need for Solar Electricity Generation

- 2.2.1 The Government expects large scale solar generation to make an important contribution to achieving its objectives for the UK's power system; namely to ensure the supply of energy always remains secure, reliable, affordable, and enables the UK to meet its carbon emission reduction commitments.

- 2.2.2 NPS EN-1 states at paragraph 3.3.15 that new low carbon energy NSIPs are required urgently in the next 10-15 years (from its publication date in July 2011):

*'In order to secure energy supplies that enable us to meet our obligations for 2050, there is an urgent need for new (and particularly low carbon) energy NSIPs to be brought forward as soon as possible, and certainly in the next 10 to 15 years, given the crucial role of electricity as the UK decarbonises its energy sector.'*

- 2.2.3 Draft NPS EN-1 sets out at paragraph 3.3.21 that solar, along with wind, is expected to be the main form of electricity generation in an energy system that meets the government's objectives for delivering secure, affordable energy and meets its climate change commitments:

*'Wind and solar are the lowest cost ways of generating electricity, helping reduce costs and providing a clean and secure source of electricity supply (as they are not reliant on fuel for generation). Our analysis shows that a secure, reliable, affordable, net zero consistent system in 2050 is likely to be composed predominantly of wind and solar.'*

- 2.2.4 The total amount of electricity generated in the UK will need to increase to cater for the projected significant increase in electricity demand over the next 30 years. This introduces a requirement for a total increase in capacity through development of new generating stations.

- 2.2.5 Solar electricity generation will also make an important contribution to three national UK energy policy aims, namely:

- **Decarbonisation:** achieving Net Zero carbon emissions by 2050 and the importance of deploying zero-carbon generation assets at scale.
- **Security of supply:** securing geographically and technologically diverse supplies. This includes aims to incorporate technologies that generate electricity in the UK without the need to import electricity or raw fuels.
- **Affordability:** providing value for money for end-user and a more affordable electricity supply.

2.2.6 Further detail on why demand for electricity is projected to increase and the three national UK energy policy aims above is provided below. Further information is also provided on the role of battery storage in the National Grid.

### Demand for Electricity

2.2.7 As set out in the **Statement of Need [EN010131/APP/2.1]** demand for electricity is expected to grow for the following reasons:

- The switching of sources of power for heating and transport to electricity will increase the total demand for electricity through use of technologies such as heat pumps, electric heating and electric cars;
- The least-cost energy efficiency measures, such as introduction of low-voltage LEDs for lighting, have now been implemented across business and domestic sectors so there is less scope for reduction in electricity consumption through these means; and
- Economic restructuring away from manufacturing to a service-based economy has largely occurred, however the growth of new high-technology and highlight skilled manufacturing, both contributing to national economic growth and prosperity, is likely to place additional pressures on the electricity sector.

2.2.8 The predicted increase in electricity use above is consistent with the observations provided by National Grid Electricity System Operator (NGESO) in their Future Energy Scenarios 2020, 2021 and 2022 (Ref 2-1). The Government's Energy White Paper: Powering our Net Zero Future published in 2020 (2020 Energy White Paper) (Ref 1-15) also identifies that meeting a possible doubling of electricity demand by 2050 '*would require a four-fold increase in clean electricity generation with the decarbonisation of electricity increasingly underpinning the delivery of our net zero target*'. The electricity generation sector must therefore urgently increase capacity to meet demand.

2.2.9 The Scheme, as a leading large-scale solar scheme in GB, represents c. 2% of the additional solar generation capacity projected to 2030 in National Grid's Future Energy Scenarios mentioned above (scenarios compatible with Net-Zero only). In this context, the Scheme is therefore an essential stepping stone towards the future of efficient decarbonisation through the deployment of large-scale, technologically and geographically diverse low-carbon generation assets.

## Decarbonisation

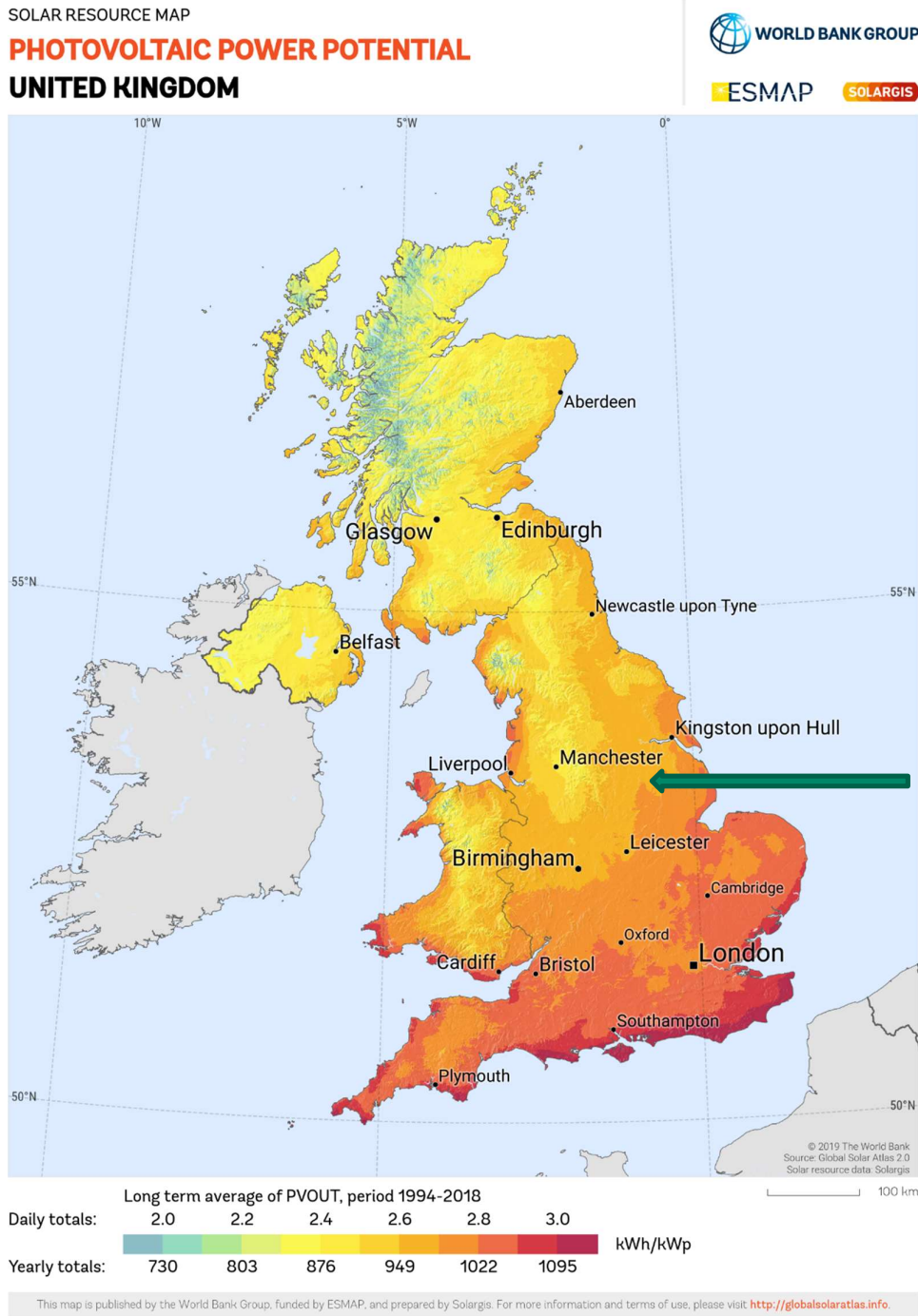
- 2.2.10 The UK is legally bound through the Climate Change Act 2008 (Ref 1-11) to reduce carbon emissions. The Climate Change Act 2008 is supported by further legislation and policy measures that have developed in the last 13 years, including an increased urgency for decarbonisation to meet the UK's obligations under the Paris Agreement (2015) (Ref 2-2).
- 2.2.11 In October 2018, following the adoption by the UN Framework Convention on Climate Change of the Paris Agreement, the Intergovernmental Panel on Climate Change (IPCC) published a Special Report (Ref 2-3) on the impacts of global warming of 1.5°C above pre-industrial levels. This report concluded that human-induced warming had already reached approximately 1°C above preindustrial levels, and that without a significant and rapid decline in emissions across all sectors, global warming would not be likely to be contained and more urgent international action was required.
- 2.2.12 The targets for carbon emissions reduction have tightened since the IPCC report, including a legally binding commitment for the UK to reach net zero carbon emissions by 2050. This introduces a need for low carbon and renewable electricity generation to replace fossil fuel power stations that are or will be decommissioned. There is potential for some emission reductions through carbon capture and storage but its continued reliance on fossil fuels (with associated energy security implications), higher price and new technology means it is unlikely to make a significant contribution in the short-term.
- 2.2.13 Some nuclear power stations are also reaching the end of their life and new ones cannot be rapidly delivered, limiting the contribution that can be made by nuclear power in the short to medium term. The nuclear renaissance in the 2000s only resulted in the construction of one nuclear power station and those being commissioned now will only start generating from the mid-2030s.
- 2.2.14 Therefore, decarbonisation in the short and medium term to meet targets requires a significant roll-out of renewable energy technologies that are much faster to deploy. The 2020 Energy White Paper recognises this and aims to deliver a fully decarbonised, reliable and low-cost power system by 2050 and states that the future energy generation mix for this system is '*likely to be composed predominantly of wind and solar*'.

## Security of Supply

- 2.2.15 An increasing demand for electricity and an increasing reliance on generation from renewable sources brings with it new challenges in terms of security of supply, i.e. 'keeping the lights on'. The **Statement of Need [EN010131/APP/2.1]** explains that although individual renewable assets are variable generators, the generation dependability of a portfolio that consists of different renewable technologies is more stable. In addition, the generation profiles of a diverse range of low carbon generators would combine to meet seasonal average demand levels without requiring significant and unproductive capital investment or seasonal excess generation.

2.2.16 The UK benefits from substantial renewable energy resources, including 40% of Europe's wind resource and areas of developable land which receive high levels of solar irradiation (see Figure 2-1). Wind and solar are also mutually compatible technologies as the weather and climatic conditions in which they generate most of their electricity generally occur at different times. Solar farms generate more electricity in the summer months when it is lighter and days are longer. Wind farms generate more electricity when it is windy, which is more frequent in the winter months.

**Figure 2-1: Solar Irradiation in the UK (C) World Bank: Global Solar Atlas 2.0, Solar Resource Data: Solargis**



Gate Burton Energy Park

- 2.2.17 Paragraph 3.3.22 of Draft NPS EN-1 states that the Government require sustained growth in solar generation over the next decade. Whilst other generation technologies are needed to compliment solar and wind, paragraph 3.3.21 of Draft NPS EN-1 states that a “*secure, reliable, affordable, net zero consistent system in 2050 is likely to be composed predominantly of wind and solar*”.
- 2.2.18 To increase the supply of renewable energy whilst maintaining a secure supply, there is a need to find ways to match supply and demand with a more intermittent system. One way to do this is by developing forms of electricity storage, such as battery storage, that can charge when there is more wind/sun than electricity demand and release electricity back into the grid to meet peaks in demand. Battery storage provides one such method of storage and therefore supports development of a lower carbon and more secure electricity supply system.

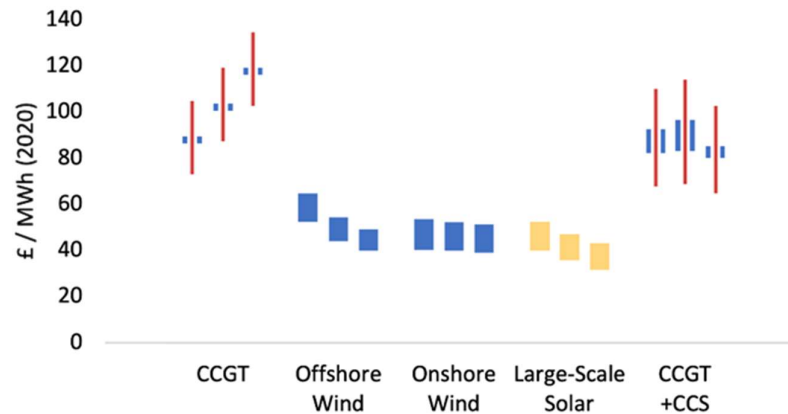
### Affordability

- 2.2.19 The first quarter of 2022 demonstrated how the UK is exposed to volatile energy prices through international energy markets in coal, gas and oil. Price rises in 2022 have and will continue to filter through to consumer bills. While the UK once was energy independent, it now is dependent on imports of coal and gas in winter months, which increases exposure to volatile international prices. Exposure is especially high when either demand is high in other markets (e.g. a deep cold period in South East Asia in late 2020) or supply is risked through the weaponization of energy supplies, as was threatened in early 2022.
- 2.2.20 Draft NPS EN-3 (para 9) states that: ‘*Analysis [commissioned by the National Infrastructure Commission] suggests that there is no material cost impact, either over the short or long term, of deploying renewables faster. Renewables are now the cheapest form of electricity generation due to dramatic cost reductions in recent years*’.
- 2.2.21 The cost of solar generation is already very competitive against the cost of other forms of conventional and low-carbon generation, both in Great Britain and abroad. BEIS Electricity Generation Costs 2020 report (Ref 2-5) published in 2020 compares the levelised costs of different new generating plants, concluding that the cost of generating electricity from wind and solar is now significantly cheaper than generating electricity from combined cycle gas turbines. Figure 2-2 below extracted from the Statement of Need **[EN010131/APP/2.1]** illustrates that shows that renewable generation technologies hold a significant levelised cost benefit when compared to technologies which are reliant on fossil fuels.



**Figure 2-2: Levelised cost of energy comparison**

2.2.22



2.2.23 The **Statement of Need [EN010131/APP/2.1]** explains that large-scale solar schemes can deliver more quickly and at a lower unit cost than multiple independent schemes that make up the same total capacity. Large schemes can therefore bring forward carbon reduction and economic benefits in line with government policy more rapidly.

2.2.24 In terms of affordability, internationally and nationally, there is an ongoing trend of solar generation assets becoming bigger and cheaper. Increased scale and size provides increased decarbonisation benefits and commercial benefits to consumers.

### Battery Storage

2.2.25 Battery storage has a role to play in achieving all of the aims above. Draft NPS EN-1 sums this up well in paragraphs 3.3.24-3.3.26:

2.2.26 *‘Storage has a key role to play in achieving net zero and providing flexibility to the energy system, so that high volumes of low carbon power, heat and transport can be integrated. There is currently around 4GW of electricity storage operational in GB, around 3GW of which is pumped hydro storage and around 1GW is battery storage.*

2.2.27 *Storage is needed to reduce the costs of the electricity system and increase reliability by storing surplus electricity in times of low demand to provide electricity when demand is higher. Storage can provide various services, locally and at the national level. These include maximising the usable output from intermittent low carbon generation (e.g. solar and wind), reducing the total amount of generation capacity needed on the system; providing a range of balancing services to the NETSO and Distribution Network Operators (DNOs) to help operate the system; and reducing constraints on the networks, helping to defer or avoid the need for costly network upgrades as demand increases.*

2.2.28 *Many of the storage facilities currently being deployed provide storage over a period of hours but cannot cost effectively cover prolonged periods of low output from wind and solar. There are a range of storage technologies that may be able to provide storage over longer periods of low wind and solar*



*output (e.g. days, weeks or months) but many of these technologies are not yet available at scale or have an upper limit on deployment due to geographical constraints’.*

- 2.2.29 The battery storage element of the Scheme and its benefits to the National Grid are therefore recognised and supported by Draft NPS EN-1.

## 2.3 The Benefits of the Scheme

- 2.3.1 The below presents a summary of the benefits of the Scheme to provide an understanding of the need for the Scheme. The impacts of the Scheme are also fully explored in this document, with the impacts and benefits explored in full in Section 7.

### Electricity Generation

- 2.3.2 The electricity generated by the Scheme will depend on the final layout of the Scheme and technology choice. However, based on the indicative layout for the Scheme presented in Figure 2-4 of the ES **[EN010131/APP/3.2]** the Scheme would have an installed capacity of approximately 531 MW. Over a 60-year lifetime, it is estimated that the Scheme would generate approximately 26.99TWh, with an average generation of 396,700MWh per annum (see ES Chapter 6 for more detail **[EN010131/APP/3.1]**). Ofgem estimates that the typical household in Britain uses 2,900 kWh of electricity per annum<sup>3</sup>. Therefore, the Scheme would generate enough electricity to power approximately 155,000 homes.
- 2.3.3 This is a significant increase in electricity generation with recognition that more electricity generation is needed to meet demand. The approximately 500MWh of battery storage could also potentially store electricity that otherwise would not be used.

### Decarbonisation

- 2.3.4 Chapter 6: Climate Change of the ES **[EN010131/APP/3.1]** estimates that the carbon intensity of the Scheme is approximately 35.03 gCO<sub>2</sub>e/kWh. The carbon intensity is the amount of carbon generated per kW/h taking into account the lifetime emissions of the Scheme associated with its construction, operation and decommissioning.
- 2.3.5 The current UK grid carbon intensity is 212 gCO<sub>2</sub>e/kWh, however these figures cannot be directly compared as the published UK grid carbon intensity figure only takes into account operational emissions from the generation of electricity, overwhelmingly from the fossil fuels used to power gas-fired and occasionally coal-fired power stations (Ref 2-6). For a meaningful comparison to be made between the Scheme and the UK grid, the operational carbon intensity of the Scheme must only include emissions from the ongoing operations of the Scheme and exclude emissions from construction and decommissioning. Combining lifetime generation figures and operational

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<sup>3</sup> See Ofgem website accessed 19/12/2022 [Average gas and electricity use explained | Ofgem](#)

emissions figures gives an operational carbon intensity value of 17.98 gCO<sub>2e</sub>/kWh for the Scheme.

- 2.3.6 Comparing the Scheme against a Combined Cycle Gas Turbine (CCGT) generating facility, currently the most carbon-efficient fossil-fuelled technology available, a representative figure for the carbon intensity is 354g CO<sub>2e</sub>/kWh (Ref 2-7). The operational carbon intensity of the Scheme is therefore 95% lower than that of the gas-fired generating facility. Each kilowatt hour of electricity generated by the Scheme will emit 336g CO<sub>2e</sub> less than if it was generated by a gas fired CCGT generating facility.
- 2.3.7 Combining this figure with the estimated lifetime output from the Scheme indicates an overall lifetime carbon reduction, relative to the gas-fired facility of over 8 million tonnes CO<sub>2e</sub>. The overall greenhouse gas impact of the Scheme is therefore beneficial and significant, as it will play a part in achieving the rate of transition required by nationally set policy commitments and supporting the trajectory towards net zero.
- 2.3.8 Use of the Battery Energy Storage System (BESS) provides additional carbon saving opportunities. Relatively fast response power sources such as battery storage have an important role to play in helping to balance supply and demand within the electricity grid. This grid balancing function is often performed using high-carbon intensity power sources such as open cycle gas turbines, so the use of a battery charged from solar PV generation can deliver a direct carbon saving relative to open cycle gas turbines.
- 2.3.9 Chapter 6: Climate Change of the ES [EN010131/APP/3.1] estimates that if the BESS is charged from the Scheme and discharged back into the grid once each day, it will be able to supply 7,446,000 MWh to the electricity grid over its 60-year operational lifetime. In this scenario, use of the BESS for grid balancing purposes would deliver a saving of 2.2 million tonnes CO<sub>2e</sub> over its operational lifetime. These carbon savings are not included in the overall assessment in Chapter 6 of the ES so would be in addition to the carbon savings discussed above.

## Security of Supply

- 2.3.10 The Scheme will provide reliable source of electricity generation in Lincolnshire. The Scheme does not require fuel so the cost of electricity generated once the Scheme is operational will not fluctuate with the availability of fossil fuels or the price of those fuels as affected by local or international contexts. Electricity generated by solar plants is predictable, varying over the seasons in a way that is easy to predict and therefore can be managed in the context of the National Grid. The BESS will store electricity to be released at peak times, further contributing to security of supply.

## Biodiversity Net Gain

- 2.3.11 The Scheme has been designed at all stages to reduce the impact on biodiversity and identify where enhancements can be made. As a result of the measures put in place the Scheme would have significant beneficial effects on broad-leaved woodland habitats, hedgerows and breeding birds. The Scheme will deliver biodiversity net gain of above 10%, with the Biodiversity

Net Gain report predicting that a net gain of 70.95% for area-based habitats, 37.24% for hedgerows and a net gain of 14.22% for rivers could be achieved. The precise figure for biodiversity net gain achieved would be determined through detailed design but the habitats to be created are secured through the **Outline Landscape and Ecological Management Plan [EN010131/APP/7.10]**, secured through requirements 7 and 8 on the draft DCO **[EN010131/APP/6.1]**.

### Other benefits

- 2.3.12 There are also minor beneficial effects associated with the Scheme, including employment generation during construction and decommissioning of 363 net jobs per annum. Operational jobs created by the solar Scheme would be more than currently generated from the land but not significantly so.

## 3. Site and Context

### 3.1 Overview

3.1.1 The Scheme is located in the East Midlands, approximately 46km to the east of the City of Sheffield, 18km to the north of Lincoln and 4 km south of Gainsborough. The Order Limits (see Figure 1-1) comprises approximately 824 hectares (ha) of land, including 652 hectares for the Solar and Energy Storage Park and 172 hectares for the Grid Connection Corridor. The majority of the Order limits comprises agricultural land.

### 3.2 Solar and Energy Park Context

3.2.1 The land within the Solar and Energy Storage Park mainly consists of agricultural fields interspersed with individual trees, woodlands, hedgerows, linear tree belts, farm access tracks, and local transport roads.

3.2.2 The land is predominantly Grade 3b (moderate quality agricultural land) with some 3a (good quality agricultural land). The hedgerows within the Order Limits are predominantly low and intermittent. The arable fields are large and generally of regular shape. Woodland is more prevalent in the north of the Solar and Energy Storage Park.

3.2.3 Villages in proximity to the Solar and Energy Storage Park comprise:

- Gate Burton approximately 50m to the west;
- Knaith approximately 200m to the west;
- Marton approximately 500m to the south west;
- Willingham by Stow 700m to the east; and
- Kexby 1.8km to the east.

3.2.4 There are limited industrial or commercial land uses within the immediate vicinity of the Order Limits. The A1500 (Stow Park Road/Till Bridge Lane) runs east to west, to the south of the Solar and Energy Storage Park and intersects the Grid Connection Corridor. The A156 (Gainsborough Road) runs north south, directly to the west of the Solar and Energy Storage Park, and also intersects the Grid Connection Corridor. The River Trent, which runs from the Humber Estuary, borders the Solar and Energy Storage Park just west of the A156, and is also crossed by the Grid Connection Corridor in the south.

3.2.5 The railway line connecting Lincoln and Doncaster runs through the Solar and Energy Storage Park. The B1241 and Willingham Road at Willingham by Stow runs north south to the east of the Solar and Energy Storage Park, while Marton Road and Willingham Road border the southern extent of the Solar and Energy Storage Park.

3.2.6 There is one Public Right of Way (PRoW) crossing the Solar and Energy Storage Park, and three further PRoW which run in close proximity to its boundary. Around the Grid Connection Corridor, footways are limited to the northern side of Cottam Road and the western side of Town Street both near and through the village of Cottam, as well as both sides of Torksey Ferry Road

within the village of Rampton. Further details of PRow within and surrounding the Order limits are set out in Section 5 of this PDAS, Chapter 13: Transport and Access of the ES [EN010131/APP/3.1] and are shown on the Streets, Rights of Way and Access Plans [EN010131/APP/5.3].

### 3.3 Grid Connection Corridor Context

- 3.3.1 The Scheme will connect to the National Grid at Cottam Power Station. Cottam Power Station was a coal fired power station on a site extending over 250 hectares to the west of the River Trent at Cottam, near Retford. The coal fired power station closed in 2019 and demolition began in 2021. At the site there remains a CCGT plant with a generating capacity of 440MW, a substation and remaining electricity infrastructure.
- 3.3.2 The Grid Connection Corridor passes from the Solar and Energy Storage Park to Cottam Power Station through largely agricultural land, to the immediate south and east of Marton, 400m to the north of Brampton in Lincolnshire, then 50m to the north of Cottam and 300m east of Rampton to connect with Cottam Power Station in Nottinghamshire. The Corridor crosses the River Trent which runs along the boundary between West Lindsey District Council to the east and Bassetlaw District Council to the west.
- 3.3.3 The A1500 (Stow Park Road/Till Bridge Lane) and the A156 (Gainsborough Road) intersect the Grid Connection Corridor. Other infrastructure within the surrounding area includes 400kV overhead powerlines carried by pylons. These extend from Cottam Sub Station within the Grid Connection Corridor.

### 3.4 Relevant Planning History

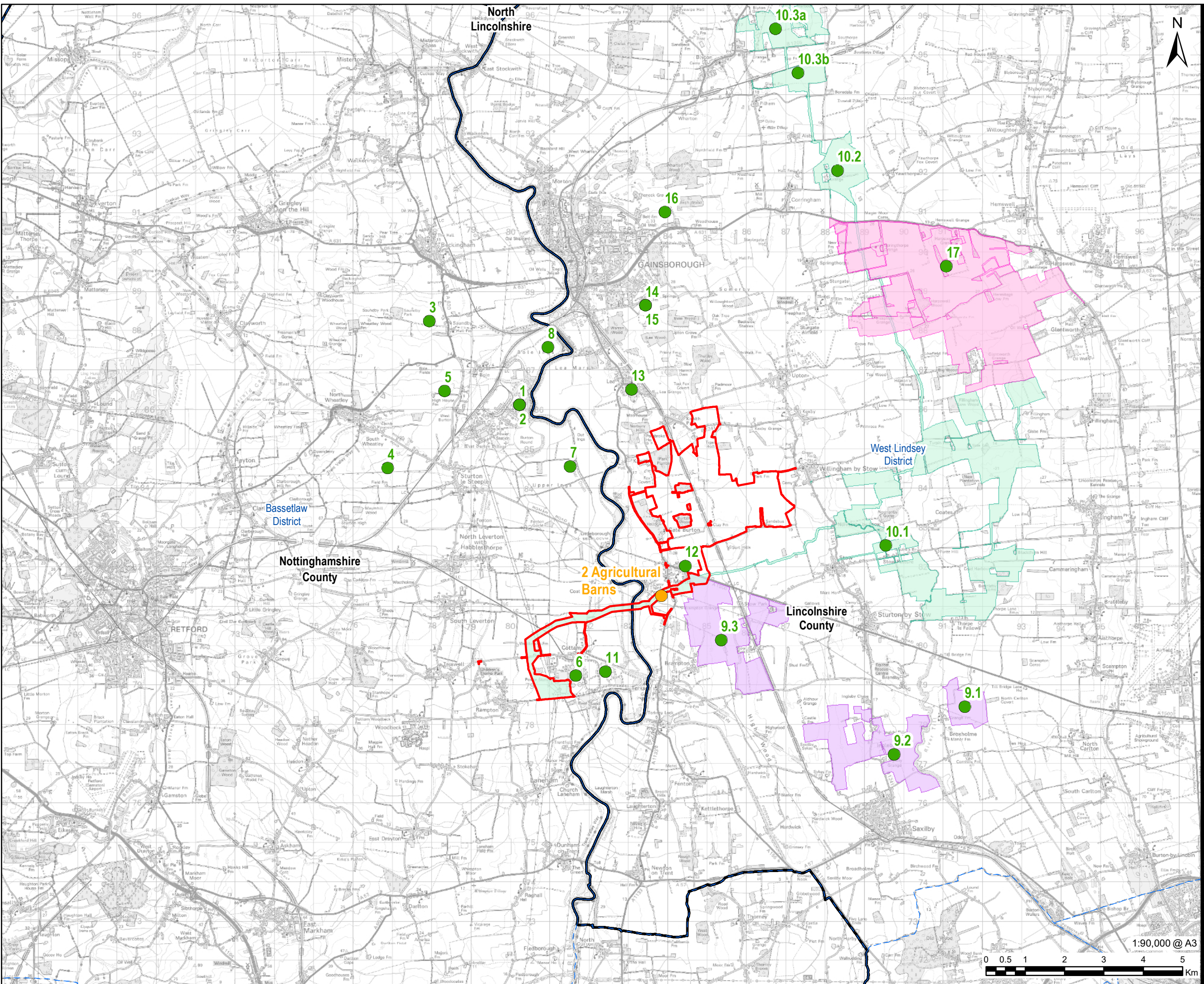
- 3.4.1 A planning history search has been undertaken within a 10km radius of the Order limits. Chapter 16: Cumulative Effects and Interactions of the ES [EN010131/APP/3.1] considers the cumulative impacts of the Scheme alongside those developments where cumulative impacts may be present. Figure 3-1a shows the below applications in the context of the Order limits.

#### Development Consent Order Applications

##### West Burton, Cottam and Tillbridge Solar Applications

- 3.4.2 Three other NSIP sized solar schemes are proposed in the area around the Gate Burton site, namely West Burton Solar Project, Cottam Solar Project and Tillbridge Solar.
- 3.4.3 West Burton Solar Project is a proposal for a solar PV farm across three areas of land connected by underground cable, with a capacity of approximately 480MW and a battery electricity storage system. The nearest area of the West Burton project is located in close proximity to the Gate Burton Scheme, located to the south of the A1500. The other two areas are located either side of the River Till to the south east of the Gate Burton Scheme. Until Winter 2022 there was a fourth area of the West Burton Solar project located in the BDC area but this area has now been removed from the project. The electricity generated will be transferred to the grid connection point at West Burton Power Station.





**AECOM**  
 PROJECT  
**Gate Burton Energy Park**

CLIENT  
  
**Gate Burton**  
 ENERGY PARK

CONSULTANT  
 AECOM Limited  
 Sunley House  
 4 Bedford Park  
 Surrey, CR0 2AP, UK  
 (REDACTED)

LEGEND

- Order Limits
- County Boundary
- District Boundary
- Cottam IGP Scheme
- TillBridge Solar Indicative PV Area
- West Burton IGP Scheme
- Scoped in Assessment
- Recent Application Boundary

1. 60572265 – West Burton C Power Station
2. 22/00831/SCR – Demolition of West Burton Power Station
3. 21/01550/SCR – Solar Farm Bumble Bee Farm
4. 20/00117/FUL – Solar Farm Field Farm Wood Lane
5. 21/00737/SCR – Solar Farm Sturton Road
6. 19/00167/SCR – Cottam Power Station Demolition
7. 1/22/00047/CDN – Land at Sturton le Steeple
8. 1/19/01556/CDN – Bole Ings Ash Disposal Site
- 9.1 EN01132 – West Burton Solar Farm - West Burton 1
- 9.2. West Burton 2
- 9.3. West Burton 3
- 10.1. EN010133 – Cottam Solar Project - Cottam 1
- 10.2. Cottam 2
- 10.3a. Cottam 3a
- 10.3b. Cottam 3b
11. Policy ST6 – Cottam Power Station Local Plan
12. 141141 – 39 Dwellings Land off Stow Park Road
13. 139840 – 60 Dwellings Land off Willingham Road
14. 144350 – Gainsborough Southern development
15. 140081 – 454 Dwellings Land at Foby Lane
16. 136937 – 750 Dwellings Highfields roundabout
17. TillBridge Solar Indicative PV Area

NOTES

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PROJECT NUMBER

60664324

FIGURE TITLE

Planning History

FIGURE NUMBER

Figure 3-1a



At the time of writing this PDAS the DCO application had not yet been submitted, but it is anticipated that the application will be submitted in Q1 2023.

- 3.4.4 Cottam Solar Project is a proposed solar project across three areas of land connected by underground cable, with a capacity of approximately 600MW and a component of battery storage. The Scheme is located across areas to the east and north east of the Gate Burton Scheme. The closest areas of the Cottam project are located to the east of Willingham by Stow, but the project includes areas as far south as Sturton by Stow and Blyton to the north. The electricity generated would be transferred to the grid at Cottam Power Station. The application for Cottam Solar Project was submitted on 12 January 2023.
- 3.4.5 Tillbridge Solar is a proposed solar farm with a capacity of approximately 500 MW located to the north east of the Gate Burton Scheme between Springthorpe and Glentworth. The electricity generated will be transferred to the grid at Cottam Power Station. At the time of writing statutory consultation had not started on the project but it is understood to be planned for early 2023, with . submission of the application planned for Q3 (July-September) 2023.
- 3.4.6 The Gate Burton, West Burton and Cottam projects are all on similar timelines and significant work has been undertaken to minimise cumulative impacts associated with the projects, share grid connection routes, adopt similar methodologies for assessment and manage consultation periods in a way that reduces confusion for communities and stakeholders.
- 3.4.7 Adopting best practice, the developers of the three projects have worked together to design the cable routes such that they converge and share a section of the route. This approach means that the infrastructure required can be constructed cost effectively, whilst minimising disruption, adverse environmental effects and reducing the amount of land required for the projects. The developers have also worked together to reduce the impact on communities in close proximity to the grid connection routes and on known ecological and archaeologically sensitive areas adjacent to the River Trent, including the Viking Great Army Winter Camp on the eastern side of the River Trent.
- 3.4.8 The West Burton and Cottam projects had Preliminary Environmental Information Reports (PEIR) available to aid assessment of cumulative impacts when the Gate Burton Energy Park application was in preparation. The Tillbridge project is over six months behind the other three projects and no PEIR was available to aid assessment of cumulative effects. Cumulative impacts have therefore been considered using information available, including in the Tillbridge Scoping Report. The Applicant has also worked with Tillbridge Solar to understand the nature of the project and explore potential for sharing grid connection routes.
- 3.4.9 The projects together would provide very significant electricity generation and carbon reductions, with potential reductions in impacts due to sharing grid corridors compared to projects more distant from one another.

## West Burton C Development Consent Order Application

- 3.4.10 West Burton C Power Station (PINS reference: EN010088) is a 299MW gas turbine power project, located approximately 3.5km to the south-west of the town of Gainsborough, immediately to the north of the existing West Burton B (WBB) Power Station. Development consent was granted for the project in October 2020, and the ES submitted with the DCO application states that construction activities are expected to be completed within three or four years. The site is located approximately 3km north west of the Order limits. As this development should be complete before the future baseline of the Scheme of 2026, no cumulative effects are anticipated. If construction times overlap construction impacts could be managed through measures such as the Construction Traffic Management Plans.

## Town and Country Planning Act Applications

- 3.4.11 A long list of cumulative developments was prepared and sent to LCC and NCC on the 01 November 2021. Follow up requests were sent on 30 June 2022 and 12 and 19 October 2022. A response from NCC was received on the 5 April 2022 which noted a number of additional schemes which are part of the 'County Matters' sites/developments, including Sturton Quarry for example. Responses were also received from LCC on several occasions, the most up to date being 17 October 2022.
- 3.4.12 The long list of cumulative developments was also sent to WLDC on 12 October 2022 and BDC on 19 October 2022. No further schemes were requested to be included within the cumulative assessment by either Host Authority.
- 3.4.13 As a largely agricultural site, the relevant planning history of the land within the Order limits, especially within the Solar and Energy Storage Park, is limited. However, relevant determined and submitted applications have been considered below, alongside developments and planning applications within the 10km search area that could be of relevance to the Scheme.
- 3.4.14 The cumulative impacts of the Scheme alongside relevant applications have been considered in full and are set out in Section 7.16 of this PDAS. The key applications considered are listed below; please see **Chapter 16 of the ES [EN010131/APP/3.1]** for the full list of applications considered and assessment of cumulative effects.



## West Lindsey District Council

### Two Agricultural Barns at Marton

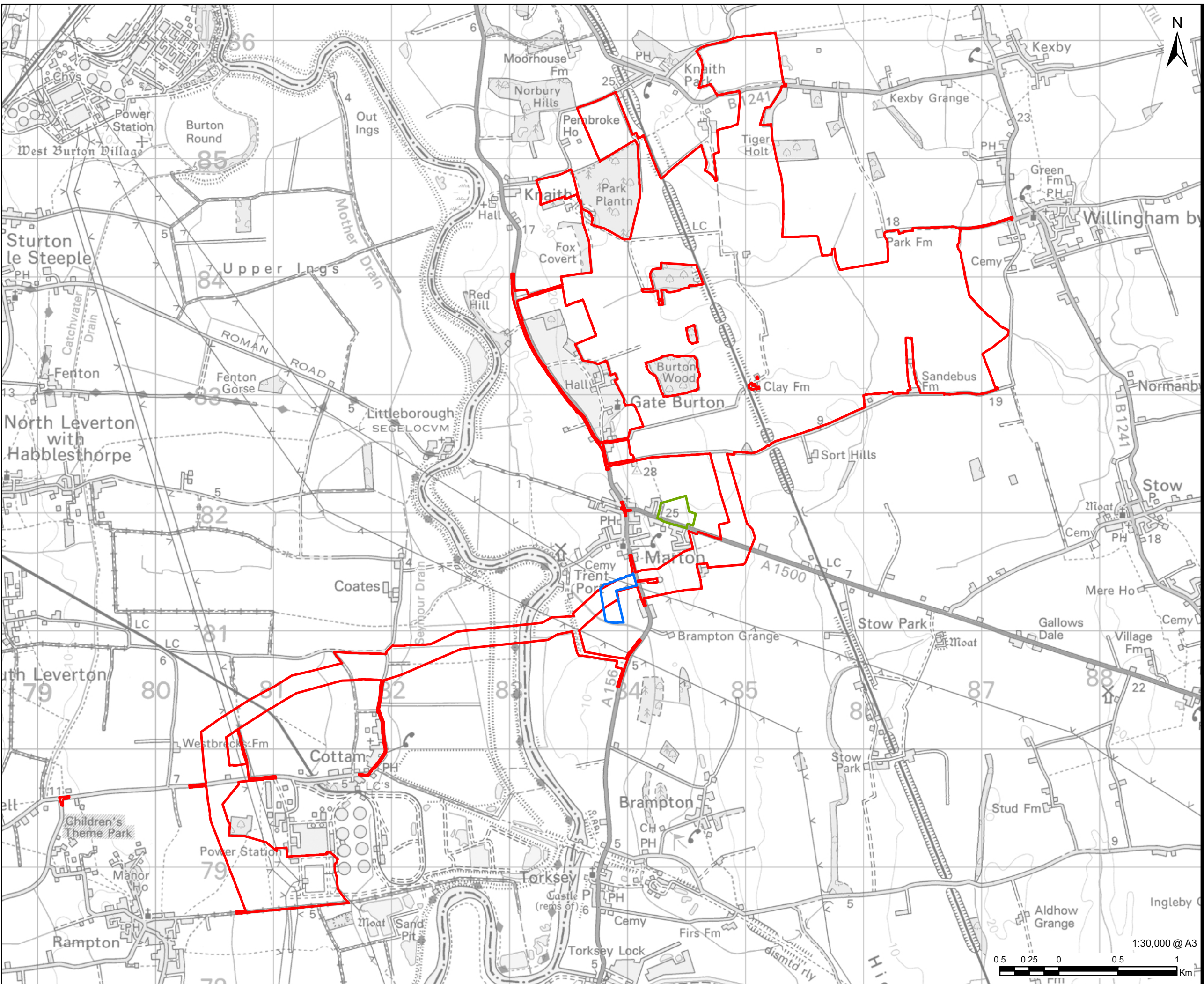
- 3.4.15 An application (ref: 145882) for two agricultural storage buildings was submitted to WLDC in November 2022 for Land at High Street, Marton, Gainsborough. The application proposes two agricultural buildings located within the Order limits for the Grid Connection Corridor. The planning application boundaries for this application and the application at Stow Park Road are shown in Figure 3-1b.
- 3.4.16 This area of the cable route features physical, ecological and heritage constraints, hence why it is relatively narrow compared to the rest of the cable route. There is limited flexibility to lay the required cable systems in this area so this application conflicts with installation of high voltage cable connection to the Cottam National Grid Substation. The Applicant submitted a representation objecting to the application to WLDC on 28 December 2022 due to the conflict between the application and the grid connections for the Gate Burton project.
- 3.4.17 The Applicant is engaged with the landowner to seek to achieve a resolution to the conflict, for example to investigate whether an alternative site can be found for the barns or measures put in place to enable the cable routes to be installed in this location with the barns in place. The Applicant is confident that a resolution will be found, and that the Scheme is deliverable within the Order limits.
- 3.4.18 This Application is not included in the long list of applications to assess cumulative impacts of the Scheme because:
- The Scheme is small scale and represents an agricultural development on agricultural land. It is therefore considered that there is therefore no scope for cumulative impacts; and
  - Given that the barns conflict with the Scheme, it is not currently known how the two projects would proceed together. Therefore, even if there were potential for cumulative impacts due to the nature of the development, it is not clear how cumulative impacts would be assessed.

### Applications Outside the Order Limits

- 3.4.19 The following planning applications are outside the Order limits within WLDC, but sufficiently close to the Scheme to warrant further mention.


### 39 Dwellings at Marton

- 3.4.20 A hybrid application (ref 133907), was consented on 24 October 2017, granting outline planning permission for the erection of up to 39 dwellings and a change of use of agricultural land to a school car park. The site is located on Land off Stow Park Road, Marton, Gainsborough. The application is located in close proximity to the Order limits as shown in Figure 3-1b.
- 3.4.21 The scale of the proposed development was initially set at 58 new dwellings on the basis of maximising the site area and the delivery of much need new housing. However, following a review of the comments received, particularly



**AECOM**

**PROJECT**  
Gate Burton Energy Park

**CLIENT**  
  
Gate Burton  
ENERGY PARK

**CONSULTANT**  
AECOM Limited  
Sunley House  
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Surrey, CR0 2AP, UK  
(REDACTED)

**LEGEND**

-  Order Limits
- Planning Application**
-  Ref 145882- Two agricultural barns at Marton
-  Ref 133907- 39 dwellings on Land off Stow Park Road, Marton

**NOTES**

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Planning Application Boundaries are Indicative.

**ISSUE PURPOSE**  
For Information

**PROJECT NUMBER**  
60664324

**FIGURE TITLE**  
Order Limits and Planning Application Boundaries

**FIGURE NUMBER**  
Figure 3-1b

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those of the parish council and local residents, the application was revised to a maximum of 39 new dwellings. This was also supported by the Planning Case Officer as delivering a more acceptable form of development on the site.

- 3.4.22 Subsequent applications have been submitted for the approval of reserved matters (ref 144922 determined in July 2022) to provide details of reserved matters and applications to confirm compliance with planning conditions (ref 145019 consented July 2022; ref 144600 consented April 2022) or to remove them (ref. 144697 decision pending). Another application has been approved for construction of an electrical substation at the same site (ref. 145517 consented in October 2022). This application is adjacent to the Order limits, to the south east along the Grid Connection Corridor and was requested by a non-statutory consultee to be included within the cumulative assessment.
- 3.4.23 The peak construction phase for the Scheme is likely to be in 2026. The construction timescale for the dwellings at Marton is unknown but given that reserved matters have been discharged in 2022, it is considered likely that construction would start before the Scheme, limiting the overlap in construction periods. Even if the construction periods aligned, given the size of development it is considered that construction impacts could be managed through measures such as the Construction Traffic Management Plans. Although this development will contribute to an impact on the non-designated heritage asset (MLI52472; AEC015 - a series of ditches and linear features which represent an Iron Age / Romano-British field system) through additional physical impacts to the asset, it is not considered that the combined impact of this project, either individually or together in combination with the Scheme, would raise the assessed level of impact reported in this ES.

#### **Other applications within 10km of the Order limits**

- Ref: 139840 - Application for approval of reserved matters for 60no. dwellings, considering appearance, landscaping, layout and scale, following outline permission 136309 granted 12 December 2018 at Land off Willingham Road, Lea, Gainsborough, DN21 5EN. This application was approved on 14 September 2020. The site is located approximately 1km to the north of the Order limits. If this development is operational by the future baseline year of the Scheme of 2026, it is assumed that any trips related to the scheme will have been incorporated as part of the background traffic growth.
- Ref: 144350 - Request for scoping opinion for the Gainsborough Southern SUE development at Foxby Lane, Gainsborough, Lincolnshire, DN21 1PP. Constitutes an outline application for 2,046 dwellings with associated employment land, community services and facilities, landscaping, new access junctions and associated infrastructure. It was decided that it was EIA development on 14 September 2020. The site is located approximately 1.5km north of the Order limits. As there has been no further application submitted in relation to this development, it has not been included within any cumulative assessment.
- Ref: 140081 - Reserved matters application at Land at Foxby Lane, Gainsborough, Lincolnshire, DN21 1PP for Phase 1 to erect 454n dwellings, considering appearance, landscaping, layout and scale,

following outline planning permission 138921 granted 29 August 2019. This application was approved on 27 January 2022. The site is located approximately 2.8km north of the Order limits. No cumulative impacts are anticipated due to the scale, location and timeline of this development.

- Ref: 136937 - Outline planning application for residential development of up to 750 dwellings with access to be considered and not reserved for subsequent applications. Land northeast of Highfields roundabout, Corringham Road, Gainsborough, DN21 1XZ. This application was approved on 06 February 2020. The site is located approximately 5km north of the Order limits. No additional trips are anticipated on the road network in association with this planning application during the future baseline year of the Scheme of 2026 and no cumulative impacts are anticipated.

### Bassetlaw District Council

3.4.24 A number of other applications have also been submitted in the BDC area.

- Ref: 22/00831/SCR - Screening Opinion application for the demolition of West Burton A Power Station, North Road, West Burton, Nottinghamshire was determined in July 2022 confirming that an EIA would be required. This development is approximately 3km to the north west of the Scheme's Order limits. The proposed demolition work is not expected to generate any additional road trips therefore there are no cumulative impacts anticipated in relation to transport.
- Ref: 21/01550/SCR - screening opinion for the installation of a solar farm and battery storage facility immediately to the west of Saundby. Decided that it was not EIA development on 4 November 2021. This development would be approximately 5.1km northwest of the Scheme's Order limits. No construction traffic is expected to be on the network during the future baseline year of the Scheme of 2026 therefore there are no cumulative impacts anticipated in relation to transport.
- Ref: 20/00117/FUL - Installation and Operation of a Solar Farm Comprising an Array of Ground Mounted Solar PV Panels with Associated Infrastructure Including Housing for Inverters a Substation Compound, Point of Connection Mast, Fencing, Security Cameras, Cabling, Access Tracks and a Temporary Construction Compound on Land North West And South Of Field Farm, Wood Lane, Sturton, was granted on 27 August 2020. This development is located approximately 4km to the west of the Order limits. No construction traffic is expected to be on the network during the future baseline year of the Scheme of 2026 therefore there are no cumulative impacts anticipated in relation to construction or transport.
- Ref: 21/00737/SCR - Screening Opinion for Solar Photovoltaic Farm on Land West Of Sturton Road, Bole. Nottinghamshire was decided that it was not EIA development on 26 May 2021. This development is located approximately 5km to the northwest of the Order limits. No construction traffic is expected to be on the network during the future baseline year of the Scheme of 2026 therefore there are no cumulative impacts anticipated in relation to construction or transport.

- Ref: 1/22/00047/CDM – Variation of the trigger date of conditions 67 and 68 to 31 December 2024 to afford sufficient time for additional surveys, to secure all necessary approvals under non-planning regimes and implementation works to take place prior to extraction recommencing on-Land at Sturton le Steeple, Gainsborough Road, Retford. The quarry is located approximately 4.6km northwest of the Order limits. This application seeks to delay the recommencement of mineral extraction within the previously authorised quarry. There are not anticipated to be any cumulative transport impacts due to the proposed routing of this application via the A620, which is not in proximity to the Scheme.
- Ref: 1/19/01556/CDM – Variations of conditions 11, 13, 37 and 53 of planning permission 1/18/00234/CDM to enable full ash recovery from phase 1B/2 and revisions to method statement, restoration, landscaping and aftercare at West Burton Power Station and Bole Ings Ash Disposal Site, Retford, DN22 9BL. This application would have significant cumulative effects due to the export of ash via road transport including HGV's. The site is located approximately 3.5km west of the Order limits. There are not anticipated to be any cumulative transport impacts due to the proposed routing of this application via the A620, which is not in proximity to the Scheme.

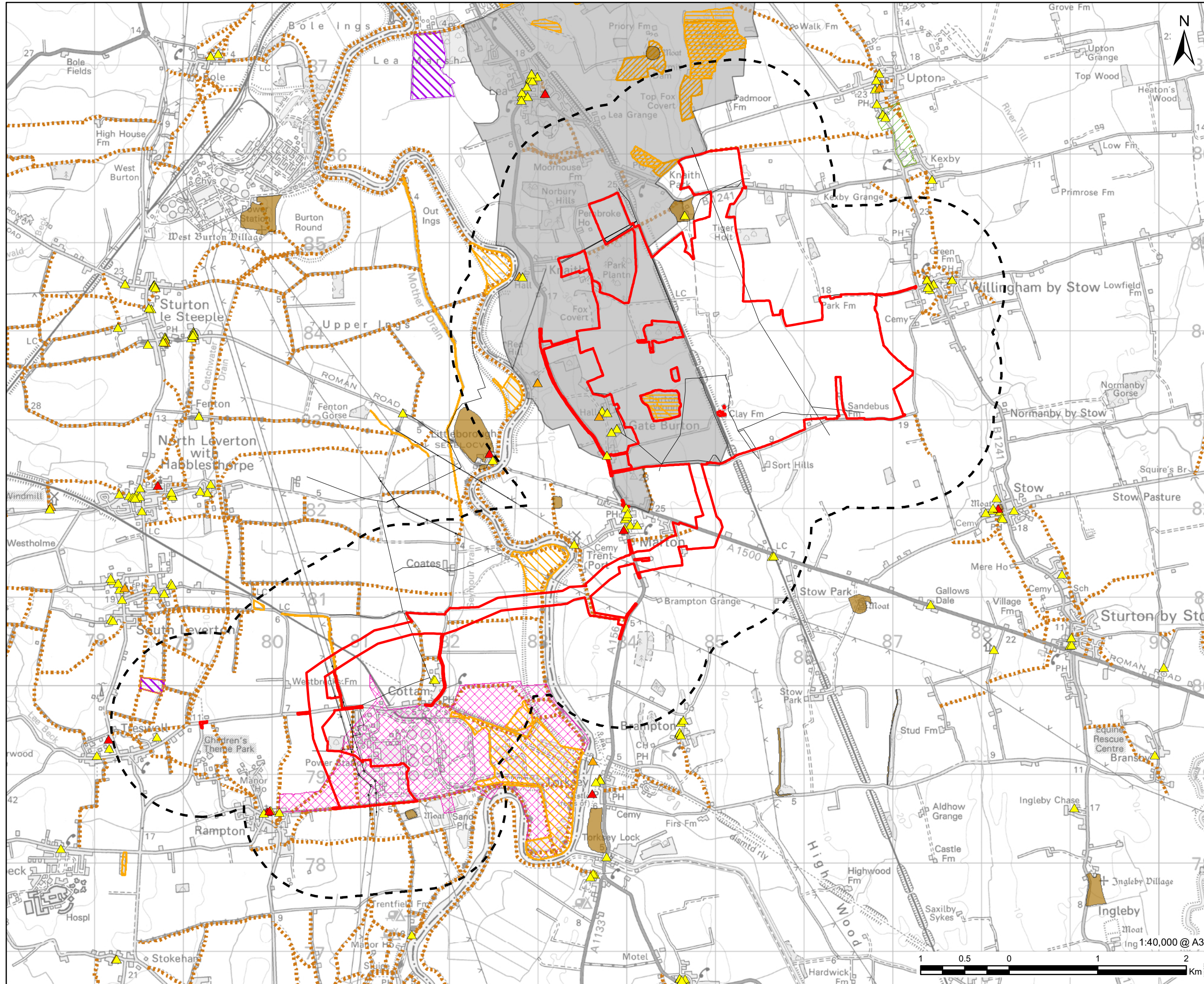
3.4.25 In addition, an application for the demolition and site clearance of Cottam Power Station and adjoining land was approved in March 2022 (Ref: 21/01661/DEM). This followed a Screening Opinion (Ref: 19/00167/SCR), where the application was determined to not be EIA development in February 2019. Cottam power station was a 2,000 MW coal fired station located at the grid connection point for the Scheme. It consisted of four large coal-fired generating units of 500 MW each and ceased generation in 2019. The demolition was anticipated to take up to 48 months and is considered of a temporary nature. The scheme is not anticipated to have any cumulative impacts on the basis of it being completed by late 2025, before the future baseline of the Scheme of 2026. Further, the demolition would not affect the ability for the Scheme to connect to Cottam Substation.

## 3.5 Designations and Allocations

### Statutory Designations

- 3.5.1 The Scheme's Order limits fall within the local authority boundaries of WLDC and BDC. The Order limits have been selected and designed to avoid designated areas. Figure 3-2 shows the key national and local designations within and near the Order Limits.
- 3.5.2 There are no National Parks or Areas of Outstanding Natural Beauty within or in close proximity to the Order limits. There are also no Sites of Special Scientific Interest (SSSI), Special Areas of Conservations, Special Protection Areas, Scheduled Monuments or listed buildings within the Order Limits.





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PROJECT  
Gate Burton Energy Park

CLIENT  
**Gate Burton**  
ENERGY PARK

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(REDACTED)

LEGEND

- Order Limits
- 1km Buffer
- Overhead Line
- Public Right of Way
- Ancient Woodland
- Scheduled Monument
- Site of Special Scientific Interest (SSSI)
- Green Wedge
- Lincolnshire Local Wildlife Site
- Nottinghamshire Local Wildlife Site
- Cottam Priority Regeneration
- Area of Great Landscape Value

Listed Building

- Grade I
- Grade II\*
- Grade II

NOTES

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FIGURE TITLE  
Key Designations Near The Order Limits

FIGURE NUMBER  
Figure 3-2



3.5.3 There are five areas of ancient woodland within 2km of the Order Limits, these include:

- Burton Wood, which is located outside the Order limits, but bordered on four sides by the Order limits for the Solar and Energy Storage Park;
- Stag Wood, located approximately 190m to the north of the Solar and Energy Storage Park;
- Thurlby/Caistor's Wood, located approximately 825m north of the Solar and Energy Storage Park;
- Lea Wood (includes replanted woodland) approximately 1.9km to the north of the Solar and Energy Storage Park; and
- Unnamed ancient woodland (includes replanted woodland) approximately 1.9km to the north of the Solar and Energy Storage Park.

3.5.4 Within a 10km radius of the Order Limits, there are a number of statutory designated nature conservation sites, including Ashton's Meadow SSSI located 1.5km to the west of the Order Limits and Lea Marsh SSSI located 1.7km north west of the Order Limits.

3.5.5 There are 15 non-statutory sites designated for nature conservation within 2km of the Order Limits, all are designated Local Wildlife Sites. These include:

- Cow Pasture Lane Drains LWS which crosses the Order limits within the Grid Connection Corridor
- Knaith Park Wood LWS, which is located approximately 15 m west of the (Solar and Energy Storage Park)
- Coates Wetland LWS, located approximately 35 m north of the Order limits (Grid Connection Corridor)
- Cottam Wetlands LWS, located approximately 205m south east of the Order limits (Grid Connection Corridor)
- Littleborough Lagoons LWS, located approximately 360 m west of the Order limits (Solar and Energy Storage Park)
- Thurlby Wood LWS, located approximately 420 m north of the Order limits (Solar and Energy Storage Park)
- Out Ings LWS, located approximately 535 m west of the Order limits (Solar and Energy Storage Park)
- Ashton's Meadow LWS, located approximately 550 m west of the Order limits (Grid Connection Corridor)
- 5/2324 (Cottam Ponds) LWS, located approximately 800 m south of the Order limits (Grid Connection Corridor)
- Broad Lane Grassland, North Leverton LWS, located approximately 865 m north-west of the Order limits (Grid Connection Corridor)
- Mother Drain, Upper Ings LWS, located approximately 955 m north of the Order limits (Grid Connection Corridor)
- Torksey Ferry Road Ditch LWS, located approximately 985 m east of the Order limits (Grid Connection Corridor)
- Priory Farm LWS, located approximately 985 m north of the Order limits (Solar and Energy Storage)

- Thornhill Lane Drain, Littleborough LWS, located approximately 1.62 km west of the Order limits (Solar and Energy Storage Park)
  - Retford Road Wood, Rampton LWS, located approximately 1.63 km west of the Order limits (Grid Connection Corridor)
- 3.5.6 There are six scheduled monuments located within 3km from the Solar and Energy Storage Park comprising:
- *Segelocum* Roman town (1003669);
  - Roman fort south of Littleborough Lane (1004935);
  - Medieval Bishops palace, Stow Park (1019229);
  - Hermit Dam moated site (1016110);
  - Site of Heynings Priory (1008685); and
  - Site of college and Benedictine Abbey, St Mary's Church, Stow (1012976).
- 3.5.7 There is one scheduled monument located within the 500m from the Grid Connection Corridor comprising:
- Fleet Plantation moated site (1008594).
- 3.5.8 There are nine scheduled monuments located within a wider 5km area, comprising:
- Dog Island moat near Gainsborough medieval moated site (1002949);
  - Site of Torksey medieval town (1004991);
  - Torksey Castle (1005056), also a Grade I listed building (1064079);
  - Moated manorial complex immediately north west of Elm Tree Farm (1016920);
  - Thorpe medieval settlement (1016978);
  - Coates medieval settlement and moated site (1016979);
  - Medieval settlement and open field system immediately south east of Low Farm (1017741);
  - Cross in All Saints churchyard (1018290); and
  - Dovecote at Elm Tree Farm (1020196).
- 3.5.9 There are no listed buildings within the Order Limits, however there are 65 listed buildings within 3km of the Order Limits, comprising seven Grade I, six Grade II\* and 80 Grade II listed buildings. The listed buildings are found in clusters within the study area either within the area's settlements, or comprising and within elite estate landscapes, such as at Gate Burton Hall and Knaith Hall. A small number of isolated listed buildings are located outside these foci, generally comprising farms. These are set out in full in **Chapter 7: Cultural Heritage of the ES [EN010131/APP/3.1]**.
- 3.5.10 There are no conservation areas located within the Order limits, 3km from the Solar and Energy Storage Park, or 500m from the Grid Connection Corridor. There are no other designated heritage assets recorded within 3km of the Order limits, including World Heritage Sites, Registered Parks and Gardens, or Registered Battlefields. There are 31 non-designated heritage assets recorded within the Solar and Energy Storage Park, and 9 non-designated heritage assets recorded within the Grid Connection Corridor.



- 3.5.11 The Solar and Energy Storage Park is located predominantly within Flood Zone 1, with areas of Flood Zone 2 in the north. To the east of the Order Limits there is an area of Flood Zone 3 associated with Padmoor Drain. To the west there is an area of Flood Zone 2 and 3 which is associated with the River Trent. The areas of flood risk are associated with small watercourses on the site, with the site layout designed to reduce development in those areas.
- 3.5.12 The Grid Connection Route is located predominantly within Flood Zone 3, with a small area located within Flood Zone 1 in the vicinity of Marton. The Cottam Power Station is located within the floodplain so any grid connections to this site are required to pass through areas with elevated flood risk.

## Local Designations and Allocations

- 3.5.13 The relevant development plan documents for the areas covered by the Order limits comprise:
- Central Lincolnshire Local Plan (CLLP) 2012-2036 (covering West Lindsey), adopted 24 April 2017 (Ref 1-19);
  - Lincolnshire Minerals and Waste Local Plan including the Core Strategy & Development Management Policies Plan adopted in June 2016 and the Site Locations Plan adopted in December 2017 (Ref 1-21);
  - Treswell and Cottam Neighbourhood Plan, made February 2019 (Ref 1-22);
  - Rampton and Woodbeck Neighbourhood Plan, made May 2021 (Ref 1-23);
  - Lea Neighbourhood Development Plan, made January 2018 (Ref 1-24);
  - Sturton by Stow and Stow Neighbourhood Development Plan, made July 2022 (Ref 1-25)
  - Bassetlaw District Council Core Strategy (BLCS) and Development Management Policies DPD, adopted 22 December 2011 (Ref 1-26);
  - Nottinghamshire Minerals Local Plan, adopted March 2021 (Ref 1-28);
  - Nottinghamshire Waste Local Plan, adopted 2002 (Ref 1-29); and
  - Nottinghamshire Waste Core Strategy, adopted 2013 (Ref 1-30).
- 3.5.14 The following draft development plan documents are also sufficiently advanced that they have been reviewed here:
- Bassetlaw District Council Draft Local Plan (Draft BLP) 2020-2038 (Ref 1-27);
  - Central Lincolnshire Local Plan (CLLP) Review (March 2022) (covering West Lindsey) (Ref 1-20);
- 3.5.15 The area of the Solar and Energy Storage Park to the west of the railway line falls within an Area of Great Landscape Value (AGLV), designated by West Lindsey's adopted CLLP, Policy LP17 (see Figure 3-2). The AGLV is shown on Figure 3-2. The Examination for the CLLP Review was held between 15 November 2022 and 16 December 2022. The Order limits also falls within an AGLV in the CLLP Review, covered by Policy S62. Policy LP17 and Policy

S62 both seek to conserve, enhance, protect and maintain landscape qualities and character from development within or within the setting of AGLV.

- 3.5.16 Cottam Power Station is identified in the Draft BLP 2020-2038 as a Priority Regeneration Area and a broad location for future mixed-use regeneration under Policy ST6. Policy ST6 states that *“the site will be safeguarded from development which would jeopardise the comprehensive remediation, reclamation and redevelopment of the whole site”*. The site is being promoted by the land owner but has a legacy of contamination due to its historical uses associated with a coal fired power station and associated infrastructure. Although the Draft BLP states that the Council supports the site’s remediation and positive reuse, it recognises that there is still a lot of work to do prior to the full remediation of the site. There are also accessibility issues, therefore the Council are not reliant on the delivery of the Cottam site to meet its development needs but recognise that once all policy requirements have been complied with, development could come forward. The Scheme would only consist of temporary construction works to bury a cable to connect with the existing National Grid Substation, therefore will not jeopardise the comprehensive redevelopment of the site.
- 3.5.17 Within BLCS Policies Map, the Order limits cross the following designation and allocations:
- The Grid Connection Corridor crosses the River Trent Main Green Corridor (Policy DM9). During construction the River Trent will be crossed using underground techniques (e.g. horizontal directional drilling (HDD) techniques) that would not disturb the watercourse.
  - The Grid Connection Corridor crosses a small section of Cow Pasture Lane Drains Local Wildlife Site (LWS) (Policy DM9). The drain and hedge will be avoided during construction, with crossing methods to lay cabling utilising non-intrusive methods and with setbacks of 10 m from the centre line of the drain to protect habitats. These measures to remove impacts on the LWS have been formalised into the **Framework CEMP [EN010131/APP/7.3]**, secured through the DCO.
- 3.5.18 Policy DM9 seeks to protect and enhance green infrastructure assets and ensure that development proposals take opportunities to restore or enhance habitats and species populations so that they will not adversely affect LWSs.
- 3.5.19 The Draft BLP started examination in November 2022. The Order limits fall within the same designations and allocations in the Draft BLP, covered by policies ST39 and ST40 respectively. Policy ST39 seeks to protect and enhance watercourses. Policy ST40 provides more detail on the protection of LWS, and sets out a mitigation hierarchy, whilst also seeking to protect, restore enhance and provide appropriate buffers around ecological features.
- 3.5.20 An assessment of how the Scheme responds to these designations is provided in Section 7 of this document.

## 4. Design

### 4.1 Introduction

- 4.1.1 This section sets out the evolution of the Scheme, including alternatives considered. It goes on to describe the use, amount and scale of the components of the Scheme, identifying the principal components of the Scheme and supporting infrastructure. It also describes how the Scheme has been designed to take into consideration the site context, surrounding constraints and feedback received from local planning authorities, key stakeholders, landowners and members of the public.
- 4.1.2 A number of the design aspects and features of the Scheme cannot be confirmed until contractors are on board, detailed design is completed and decisions are made on equipment to be purchased. Given that the technology in the energy sector is moving rapidly, flexibility is required to enable the Applicant to make decisions on equipment based on efficiency, latest designs, availability and cost. To provide certainty on environmental effects whilst retaining this flexibility, the Applicant commits to implementing the Scheme within a set of **Outline Design Principles [EN010131/APP/2.3]**. These design principles have been informed by consultation responses and the Environmental Impact Assessment process.

### 4.2 Alternatives

- 4.2.1 Chapter 3 of the ES **[EN010131/APP/3.1]** describes how alternatives have been considered in the development of the Scheme.

#### General Requirements to Consider Alternatives

- 4.2.2 Paragraph 2 of Schedule 4 of the Environmental Impact Assessment (EIA) Regulations (**Error! Reference source not found.-8**) requires [Applicant's emphasis] *'A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects'*.
- 4.2.3 When considering assessment principles, NPS EN-1 paragraph 4.4.1 states that *'As in any planning case, the relevance or otherwise to the decision-making process of the existence (or alleged existence) of alternatives to a proposed development is in the first instance a matter of law, detailed guidance on which falls outside the scope of this NPS. From a policy perspective this NPS does not contain any general requirement to consider alternatives or to establish whether the proposed project represents the best option.'* This paragraph is retained without amendment in Paragraph 4.2.11 of Draft NPS EN-1.

- 4.2.4 NPS EN-1 paragraph 4.4.3 goes on to state that: *‘where (as in the case of renewables) legislation imposes a specific quantitative target for particular technologies... the IPC should not reject an application for development on one site simply because fewer adverse impacts would result from developing similar infrastructure on another suitable site, and it should have regard as appropriate to the possibility that all suitable sites for energy infrastructure of the type proposed may be needed for future proposals’.*
- 4.2.5 Paragraph 4.2.13 of Draft NPS EN-1 similarly states that: *‘the SoS should not refuse an application for development on one site simply because fewer adverse impacts would result from developing similar infrastructure on another suitable site.’*
- 4.2.6 Therefore, whilst there is a requirement to include information about the reasonable alternatives considered by the developer in the ES (as is provided in ES Chapter 3 [EN010131/APP/3.1]) to meet the requirements of the EIA Regulations, there is no general policy requirement to consider alternative sites. It is also not the case that an application should be refused solely on the grounds that another site exists for the development that would result in fewer adverse effects.
- 4.2.7 NPS EN-1 and Draft NPS EN-1 do, however, highlight that in addition to the requirement under the EIA Regulations, there are other specific legislative requirements and policy circumstances which require the consideration of alternatives. These circumstances include a requirement to assess alternatives where there are likely significant effects on the national site network for the purposes of the Conservation of Habitats and Species Regulations 2017; where there are significant effects to biodiversity and geological conservation interests; where there is development in areas of flood risk or where there is development in nationally designated landscapes.

### Policy Requirements to Consider Alternatives

- 4.2.8 There is a requirement to consider alternatives where there likely significant effects of the Scheme on the national site network for the purposes of the Conservation of Habitats and Species Regulations 2017. A Habitats Regulations Assessment [EN010131/APP/7.2] has been submitted alongside the Application. It concludes there are no likely significant effects on any European site from the Scheme alone or in-combination with any other plans or projects.
- 4.2.9 There are also policy requirements to consider alternatives where there are likely significant effects on biodiversity and geological conservation interests; where there is development in areas of flood risk; and where there is development within nationally designated landscapes (see sections 5.3, 5.7 and 5.9 of NPS EN-1 and 5.4, 5.8 and 5.10 of Draft NPS EN-1). Paragraph 4.4.3 of NPS EN-1 (paragraph 4.2.13 in the Draft NPS EN-1) states *“where there is a policy or legal requirement to consider alternatives the applicant should describe the alternatives considered in compliance with these requirements”.*
- 4.2.10 On policies related to biodiversity and geology, Chapter 8: Ecology and Nature Conservation of the ES [EN010131/APP/3.1] reports that including embedded

mitigation measures there would be no likely significant adverse effects to biodiversity. However, opportunities to reduce impacts on biodiversity and maximise benefits in line with national and local planning policy have been taken throughout the design of the Scheme, with detail provided in ES Chapter 8. A Phase 1 Preliminary Risk Assessment (PRA) has also been provided in Appendix 15-E of the ES [EN010131/APP/3.3] and considers the context of the site in relation to geology. The PRA concludes the potential risks identified are not considered to pose a significant risk to the scheme. There is therefore no need to consider explicit alternatives as a result of biodiversity or geology effects.

- 4.2.11 On flood risk, the Scheme is classified as 'essential infrastructure' and the majority of the Solar and Energy Storage Park is situated within an area of low risk of flooding from any source. A sequential approach has been applied to the layout and design of the Solar and Energy Storage Park to avoid permanent development in the small areas of higher flood risk around watercourses on site. The BESS and on-site Substation are located in areas with the lowest risk of flooding. Where required, embedded mitigation has been included within the design. Further information is available in **Appendix 9-D: Flood Risk Assessment of the ES [EN010131/APP/3.3]**. Given that the majority of the Solar and Energy Storage Park has a low risk of flooding, no further work on alternatives is required for the Solar and Energy Storage Park element of the Scheme.
- 4.2.12 A large proportion of the Grid Connection Corridor is located in Flood Zone 3a. The location of solar farms is largely dictated by the presence of a grid connection point with sufficient capacity for the electricity generated. This grid connection is available at the former Cottam Power Station site. The former power station is located in Flood Zone 2 and is surrounded by areas of Flood Zone 3 (see fluvial flood risk map alongside the Order limits in **ES Volume 2: Figure 9-2 [EN010131/APP/3.2]**). Therefore, whilst alternative grid connection corridors were explored (see section on grid connection routes below) these alternatives were also located in Flood Zone 3 and there are no alternative routes available that avoid Flood Zones 2 and 3. Further information, including detail of how the development passes the Sequential and Exception tests, is provided in **Appendix 9-D of the ES [EN010131/APP/3.3]**.
- 4.2.13 The Scheme is not located within or in close proximity to any nationally designated landscapes, therefore there is no need to consider alternatives under NPS EN-1 section 5.9. However, the Scheme has been informed by the iterative EIA process, with the Scheme being carefully designed to take account of, and reduce, potential landscape and visual impacts. Further detail is provided in **Chapter 10: Landscape and Visual Amenity of the ES [EN010131/APP/3.1]**.

### Weight Applied to Consideration of Alternatives

- 4.2.14 NPS EN-1 paragraph 4.4.3 provides guidance on how consideration of alternatives should guide decision making on DCO applications. It states that '*Given the level and urgency of need for new energy infrastructure, the IPC should, subject to any relevant legal requirements (e.g. under the Habitats*

*Directive) which indicate otherwise, be guided by the following principles when deciding what weight should be given to alternatives...’.*

- 4.2.15 These principles include, but are not limited to:
- consideration of alternatives for policy requirements should be proportional;
  - decision makers should consider whether alternatives could realistically provide the same capacity and be delivered over the same timescale;
  - alternatives not studied by the applicant should only be considered where ‘important and relevant’ to decision making (proposals that are not commercially viable or vague will not meet this criterion); and
  - wherever possible, alternatives should be identified before an application is made.
- 4.2.16 The Applicant considers that the approach taken to consideration of alternatives has been proportional. No alternative sites have been highlighted to the Applicant, but alternatives proposed by key stakeholders and the community in terms of design, layout and landscaping have been considered during the design process.
- 4.2.17 The section below provides a brief overview of the developer’s site selection process, with more information on the iteration of the design of the Solar and Energy Storage Park and route of the Grid Connection Corridor provided in section 4.6.
- 4.2.18 Consideration of ‘no development’ as an alternative to the Scheme has not been considered further. This is because ‘no development’ is not considered to be a reasonable alternative to the Scheme as it would not deliver the proposed renewable electricity generation capacity; a key principle for consideration of alternatives as set out in NPS EN-1. Other generation schemes such as wind power, nuclear, coal or gas fired power stations have also not been assessed due to their unsuitability to the Site or inability to contribute to the UK’s net zero obligation.

## Site Selection

- 4.2.19 The identification of the site followed a four-stage process as set out below and in more detail in **ES Chapter 3 [EN010131/APP/3.1]**.

### Stage 1: Search Area Defined by Grid Connection

- 4.2.20 The East Midlands has good levels of irradiation and large flat open areas of land. A key requirement for the location of a new solar farm is the presence of an available grid connection. Cottam coal fired power station ceased generation in September 2019, however an existing National Grid Substation is located adjacent to the site with capacity for the electricity formerly generated by the power station. This means that there is an available grid connection at the National Electricity Transmission System (NETS) Cottam Substation with sufficient capacity for the new solar farm. The further a solar farm is from the point of connection, the less efficient transmission to the grid becomes and the connection becomes considerably more costly. This can significantly affect the viability of solar development. The Applicant identified



a desirable area of search of 8 km around the grid connection point. Constraints were mapped to 15 km to also capture potential constraints close to the area of search.

- 4.2.21 Moving away from the Cottam National Grid Substation, Gate Burton is one of the first areas outside the flood zone. It is beneficial to be located close to the grid connection point because this decreases the length of the grid connection, alongside reducing associated environmental impacts of installation and costs. Therefore, the area around Gate Burton was identified at an early point as a particularly desirable location for a new solar farm.

### Stage 2: Environmental Constraints

- 4.2.22 Following identification of the grid connection point an initial feasibility assessment was carried out for a study area within 8km of the Cottam Substation to identify the presence/absence of key environmental and social constraints. The search for constraints was extended to 15km to potential capture constraints close to the area of search. The search was used to identify contiguous potential developable areas of around or greater than 300ha with the ability to accommodate a NSIP solar scheme and which were not overly constrained. The Applicant had a preference for a single contiguous site as this would present an efficient use of land and potentially simpler land negotiations. However, this would not exclude development of schemes across multiple sites should all other criteria be met. The environmental and social constraints explored below were used to guide selection of a site within the 8km search area:

- Areas of high flood risk;
- Landscape Designations and Green Belt;
- Ecological Designations;
- Heritage Designations;
- Local Allocations and Designations;
- Agricultural land classification; and
- Proximity to dwellings.

### Stage 3: Identification of Potential Solar Development Areas

- 4.2.23 Following the environmental and social constraints feasibility assessment within the 8km study area around the Cottam Substation, areas of land were identified as potentially suitable to accommodate a proposed solar development. This was further refined with the application of the following inclusionary criteria:

- Topography - the site needs to be flat or with gently south facing slopes;
- Site size and pattern - a suitable size of site is required for economic viability and the fields of a large and regular shape;
- Access - ease of access for construction and decommissioning stages to be considered;
- Brownfield land - suitable sites of brownfield land for the proposed solar farm were also considered; and
- Landowner - preference for a small number of willing landowners that could form a contiguous site.



## Stage 4: Assessment of Gate Burton Site Against Exclusionary and Inclusionary Criteria

4.2.24 Having regard to the above environmental constraints at Stage 2 and the inclusionary criteria at Stage 3, the Solar and Energy Storage Park site at Gate Burton was identified as being suitable for solar PV development. The site met all criteria and avoided those areas likely to lead to a policy requirement to consider whether alternative sites would be preferable. However, at all stages of design development and EIA process alternatives have been considered to maximise benefits of the Scheme and minimise adverse environmental and social impacts.

### Summary

4.2.25 The section above and **Chapter 3 of the ES [EN010131/APP/3.1]** describes how the Applicant identified and selected the Gate Burton site. The site is mostly located outside Flood Zones 2 and 3, is close to the grid connection point, on an area with flat land, has willing landowners and relatively few environmental constraints. As described in the remainder of this PDAS, the site performs well when assessed against national and local planning policy, with limited environmental impacts for an NSIP. The sections below describe the reasonable alternatives considered by the Applicant, including those related to development design, technology, location, size and scale required by the EIA Regulations.

4.2.26 The site has been selected to avoid sensitive areas, including those that would give rise to requirements to consider alternative locations for the development in more detail. National policy makes it clear that there is no general requirement for Applicants to consider explicit alternative *sites* because the decision maker should *'have regard as appropriate to the possibility that all suitable sites for energy infrastructure of the type proposed may be needed for future proposals'* (NPS EN-1). This policy is particularly noteworthy in the context of the Gate Burton scheme, given that three other NSIP solar proposals are proposed in the vicinity.

## 4.3 Use, Amount and Scale: Components of the Scheme

4.3.1 The Scheme comprises the principal infrastructure described in **Chapter 2: The Scheme of the ES [EN010131/APP/3.1]**. The Scheme components comprise:

- PV tables (mounting structures) and panels;
- Inverters;
- Transformers;
- An on-site Substation;
- Onsite cabling;
- A Battery and Energy Storage System (BESS);
- An underground 7.5km 400kV electrical connection to the National Grid Substation at Cottam Power Station;
- Fencing and security measures;
- Access tracks; and

- Landscaping and biodiversity enhancement.
- 4.3.2 During the construction phase, one main construction compound and three secondary compounds will be established as well as mobile welfare units and smaller compound areas together with temporary roadways to facilitate access to all land within the Solar and Energy Storage Park. Further detail on all aspects of the Scheme is provided below.
- 4.3.3 The area of land within the Order limits is 824 hectares, including 652 hectares within the Solar and Energy Storage Park and 172 hectares within the Grid Connection Corridor. However, this area will not all be used for development, with some areas remaining open and used for biodiversity mitigation, biodiversity enhancement or landscaping. The Order limits have evolved over time in response to the EIA and consultation. Figure 4-1 shows how the Order limits have evolved over time, showing the initial area presented at Stage 1 Consultation, the area presented at Stage 2 Consultation, the additional areas of the Order limits consulted on during the Targeted Consultation and the final Order limits.
- 4.3.4 In terms of the overall scale of electricity generated, the Scheme is estimated to have a capacity of approximately 531MW, with approximately 500MWh of battery storage. Draft NPS EN-3 paragraph 2.47.2 states that: *'Along with associated infrastructure, generally a solar farm requires between 2 and 4 acres for each MW of output.'* The area covered by Work Number 1 (the solar panels and balance of solar system plant) is approximately 476 hectares or 1,176 acres. This would indicate approximately 2.2 acres of land for each MW of capacity. The less land used for the same output, the more efficient the use of land so the Scheme presents a use of land within the range expected in Draft NPS EN-3 and is at the more efficient end of the spectrum. Even if you consider the whole area within the Solar and Energy Storage Park, to include battery storage and areas for landscaping and biodiversity, the Scheme is well within this range, with 652 hectares (1611 acres) requiring 3 acres of land per MW of capacity.
- 4.3.5 Draft NPS-EN3 at paragraph 2.47.2 states that *'Solar farm proposals are currently likely to consist of solar panel arrays, mounting structures, piles, inverters, transformers and cables. Associated infrastructure may also be proposed such as energy storage<sup>42</sup> or security arrangements (which may encompass flood defences, fencing, lighting and surveillance).'* The components of the Scheme comprise those elements expected in paragraph 2.47.2.

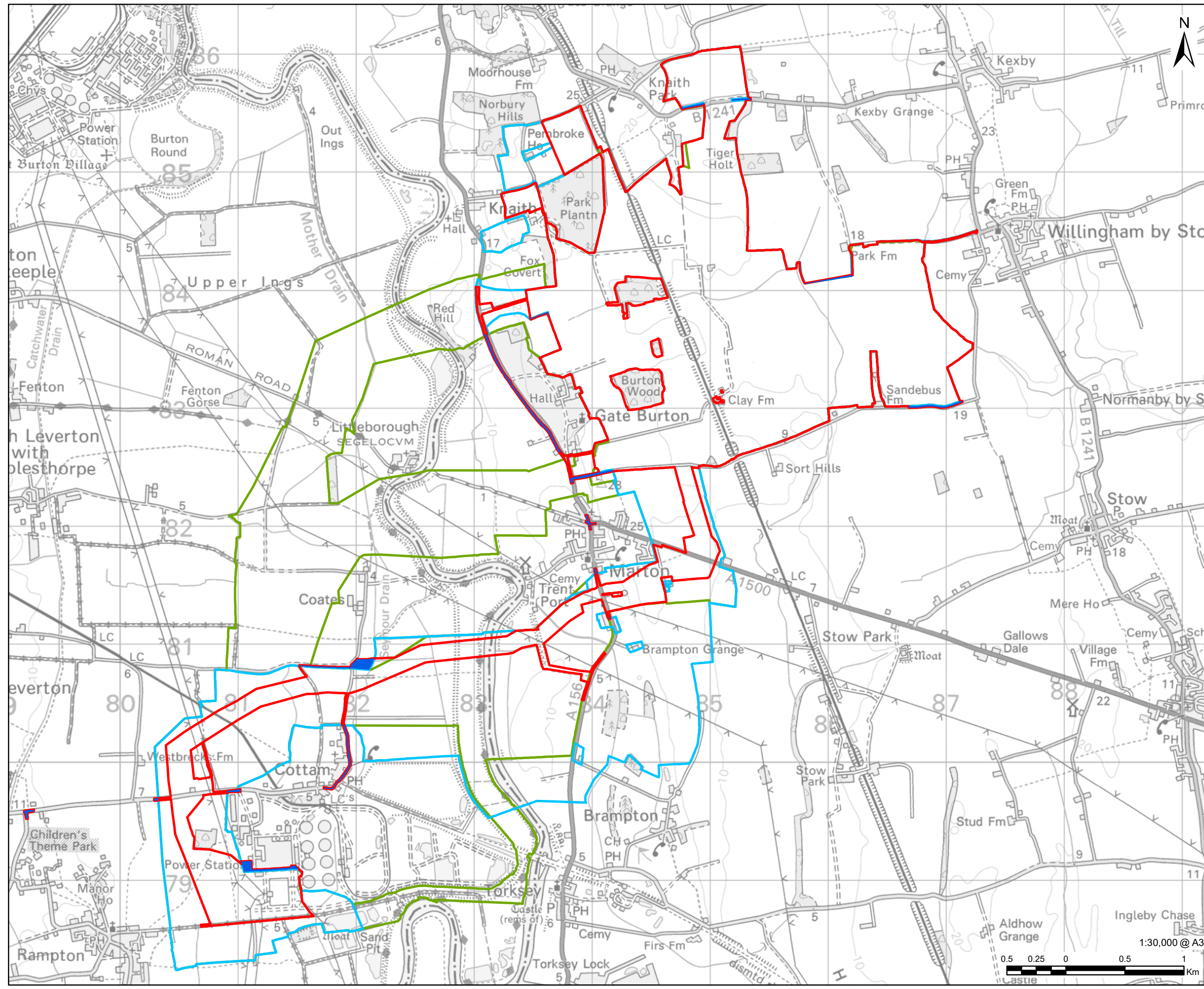
## 4.4 Principle Components of the Scheme

### Solar Panel Arrays

- 4.4.1 Solar panel arrays comprise PV panels and their mounting structures. Panel types include fixed racking systems, which are fixed to a certain orientation, and tracker panels, which change orientation through the day to follow the sun. The Gate Burton Scheme would use fixed racking systems.
- 4.4.2 Solar PV modules convert sunlight into electrical current. Individual panels are typically up to 2.5m long and up to 1.5m wide. The PV Tables will slope



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Filename: \\na.aecomnet.com\s\EMEA\crolydon\UKCRD1\Legacy\UKCRD1\UKCRD1\FP001-V11E\projects\general\GIS\Projects\Gate Burton Energy Park\02\_Maps\Statements of Common Ground\Planning Statement\Order Limits and the Evolution.mxd



**AECOM**

**PROJECT**  
Gate Burton Energy Park

**CLIENT**  
  
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ENERGY PARK

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**LEGEND**

- Order Limits
- Targeted Consultation (Additional Areas Added)
- Stage 2 Consultation
- Stage 1 Consultation

**NOTES**  
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**ISSUE PURPOSE**  
Planning, Design and Access Statement

**PROJECT NUMBER**  
60664324

**FIGURE TITLE**  
Order Limits - Evolution Over Time

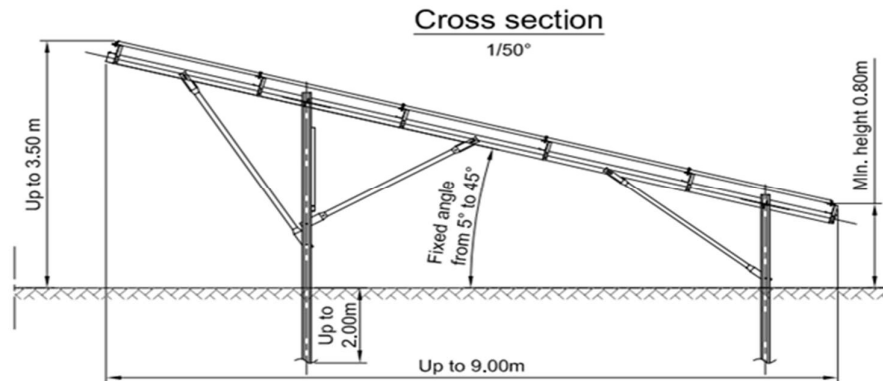
**FIGURE NUMBER**  
Figure 4-1

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towards the south at a fixed angle of 5 to 45 degrees from horizontal. An illustrative cross section of a solar panel has been provided below in Figure 4-2 and in the Engineering Section Drawings submitted with the application [EN010131/APP/5.4].

Figure 4-2 PV Table Cross Section Drawing [EN010131/APP/5.4]



- 4.4.3 The panels typically consist of a series of PV cells beneath a layer of toughened glass. Other PV technologies are developing rapidly and may be available at the time of construction. The module frame is typically built from anodised aluminium or steel.
- 4.4.4 Each module would likely have a DC generating capacity of between 400 and 850 watts (W), or more depending on advances in technology at the time of construction (the latest technology under development is up to 850 W). The modules are fixed to a mounting structure in groups known as 'strings'. The number of PV Panels which will make up each PV Table is not yet known. This will depend on the final panels selected and may potentially vary across the site.
- 4.4.5 The PV Tables will slope towards the south at a fixed angle of 5 to 45 degrees from horizontal. For the purposes of assessment, both a 5 degree and a 45 degree tilt is considered for the basis of the assessment of effects (predicted worse-case) for Glint and Glare and Landscape and Visual.
- 4.4.6 Each string of modules will be mounted on a metal rack, known as a frame. In all fixed panels options, the frames are usually supported by galvanized steel poles typically driven 1m - 2m into the ground. This is the most common solution on existing UK solar farms.
- 4.4.7 For a south facing configuration, between each row of frames, the separation distance will range from approximately 2m to 15m, dependent upon angle and length of slope, to allow for appropriate maintenance and to minimise inter-row shading.
- 4.4.8 The panel modules across the Solar and Energy Storage Park will be mounted on structures with a minimum above ground level clearance of 0.8m up to 1.1m, and a maximum upper height of up to 3.5m AGL. The final elevations of the racks will be influenced by various design factors such as local topography, flood risk and configuration.



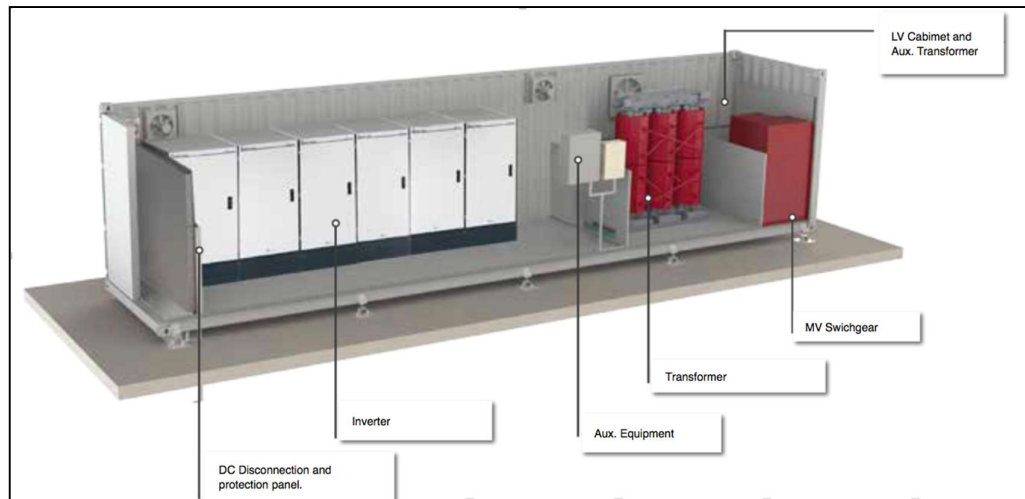
## 4.5 Supporting Infrastructure

4.5.1 The supporting infrastructure comprises inverters, transformers, and switchgear, which will be mounted on concrete foundations. This infrastructure is referred to as 'Power Conversion Units (PCUs)'. The PCUs fulfil a number of functions, including converting the direct current to alternating current and stepping up the voltage, as well as containing isolators and monitoring equipment.

### Power Conversion Units

4.5.2 A Power Conversion Station comprises the inverter, transformer, and switchgear. It could consist of the inverter, transformer and a switchgear being located separately (an "Outdoor Solar Station") or enclosed within a single container (referred to as "Indoor Solar Station"). The Power Conversion Units will be located within the Solar PV Array area. It is anticipated that plant would be installed on compacted gravel and concrete bases.

**Figure 4-3 - Indoor equipment interior (image reproduced courtesy of Power Electronics)**





## Inverters

- 4.5.3 As the Scheme design develops the likely configuration of equipment will be determined based upon environmental and technical factors, with string or central inverters being used. String inverters (as illustrated in Figure 4-4) are small enough to be mounted underneath the modules and would be protected with mesh if sheep are to graze the site. Central inverters are much larger because there are fewer of them and require their own electrical cabinet enclosures. These would be located at regular intervals amongst the PV arrays, and they occupy an area that depends on such intervals. Typically, this area is 6m x 3m and can be up to 3.5m in height.

Figure 4-4 - Typical string inverter (image reproduced courtesy of Huawei)



## Transformers

- 4.5.4 Transformers are required to step up the voltage of the electricity generated before it reaches the Substation. Transformer cabins will therefore be located across the Solar and Energy Storage Park at regular intervals and would be outdoor or indoor. The maximum footprint of an outdoor transformer would be up to 4m x 3.5m and 3.5m in height.
- 4.5.5 Indoor transformers can be installed in a cabin, jointly with indoor switchgear, typically with a footprint of 8m x 5m and with a height of 3.5m. Transformer cabins would be externally finished in keeping with the prevailing surrounding environment, often with a green painted finish. Alternatively, as described above, transformers can be installed in a high cube container together with an inverter and switchgear as part of an indoor solar station.

**Figure 4-5 - Typical transformer cabin (including switchgear) (alternative option for Solar Station) (Image reproduced courtesy of Selma)**



## Switchgear

- 4.5.6 Switchgear are the combination of electrical disconnecter switches, fuses or circuit breakers used to control, protect and isolate electrical equipment. Switchgear is used both to de-energise equipment to allow work to be done and to clear faults downstream. Switchgear has a typical footprint of 3m x 3.5m and up to 3.5m in height. Switchgear can be also located in a cabin together with the transformer and inverter.

## Energy Storage Facility

- 4.5.7 The Scheme will include a BESS. The BESS is designed to provide peak generation and grid balancing services to the electricity grid. It will do this primarily by allowing excess electricity generated from the solar PV panels to be stored in batteries and dispatched when required. It may also import surplus energy from the electricity grid.
- 4.5.8 Batteries will be located within up to a maximum of 156 individual enclosures or housed within a larger building or buildings. The precise number of individual battery storage enclosures will depend upon the level of power capacity and duration of energy storage that the Scheme will require.
- 4.5.9 The BESS will have a heating, ventilation, and cooling (HVAC) system to ensure the efficiency of the batteries, which are integrated into the containers. This may involve a HVAC system that is external to the containerised unit located either on the top of the unit or attached to the side of the unit. If this uses air to heat and cool it will have a fan built into it that is powered by auxiliary power.

- 4.5.10 The Switchgear/Control Room operates, isolates, and controls the exported power from the energy storage system. This would comprise a building of similar dimensions to the containers; either an adapted container or built from glass reinforced plastic (GRP), located within the main battery energy storage system compound.
- 4.5.11 Fire water would be stored within onsite water tanks and allowance made for fire water storage. Water will be supplied either via a connection to the existing water pipeline adjacent to the A156 to the west or Willingham Road to the south (**ES Volume 2: Figure 2-4 [EN010131/APP/3.2]**) or delivered via truck.

### On-site Cabling

- 4.5.12 Low voltage on-site electrical cabling connects the PV modules and battery energy storage system to inverters (typically via 1.5/1.8kV cables), and the inverters to the transformers on-site (typically via 0.4/1 kV cables). The dimension of the trenches will vary depending on the number of ducts they contain but would typically be up to 1.2m in width and 0.8m to 1.2m in depth.
- 4.5.13 Medium voltage cables (around 33kV) are then required between the transformers and the switchgear and from switchgear to the on-site electrical infrastructure. The dimension of the trenches will vary depending on the number of circuits they contain but could be typically up to 1.2m in width and up to 1.2m in depth. Where possible, the higher voltage cables will share trenches with the lower voltage cables on the same route.
- 4.5.14 Cabling between PV modules and the inverters will typically be required to be above ground level (along a row of racks), fixed to the mounting structure, and then underground (between racks and in the inverter's input). In identified archaeologically sensitive areas, cables will be installed to avoid or minimise disturbance below ground level.
- 4.5.15 Data cables will be installed, typically alongside electrical cables in order to allow for monitoring during operation, such as the collection of solar data from pyranometers and inverters.

### Substation

- 4.5.16 A new on-site Substation will be located within the Solar and Energy Storage Park which will include transformers, switchgear and metering equipment required to facilitate the export of electricity to the National Grid.
- 4.5.17 The Substation would have up to four transformers and would have a maximum footprint of up to 220m x 130m and up to 13m in height.
- 4.5.18 The Substation would also include a warehouse and storage building with a maximum footprint of 36m by 15m and a height of 7.2m and a control building, which would be up to 20m x 20m in plan, and up to 6m in height. This will include office space and welfare facilities as well as operational monitoring and maintenance equipment. Illustrative elevations and a floorplan for the new building is provided in the **Engineering Section Drawings [EN010131/APP/5.4]**.

- 4.5.19 The Substation will be connected to the PV modules and BESS via Medium Voltage Distribution Cables in order to collect electricity (at 33kV) from those components of the Scheme. The Substation will convert the electricity to 400 kV for onward transmission to Cottam Substation via the Grid Connection Cable.

### Fencing and Security

- 4.5.20 A security fence will enclose the operational areas of the Solar and Energy Storage Park. The fence will be similar to a deer fence or other mesh security fencing, approximately 2.5m to 3m in height. Pole mounted internal facing closed circuit television (CCTV) systems will be deployed around the perimeter of the operational areas of the Site. It is anticipated that these would be 5m high. CCTV cameras would be aligned to face internally and along the fence.
- 4.5.21 To comply with British Standard (BS) EN 62271-1:2017 (Ref 4-2), if outdoor transformers are used, they will be surrounded by a secure wire mesh fence. This fence is likely to be 1.8 to 2.5m in height.
- 4.5.22 Lighting sensors for security purposes will be deployed around the electrical infrastructure and potentially at other pieces of critical infrastructure. No areas are proposed to be continuously lit. It is anticipated that the lighting will be controlled via infrared.
- 4.5.23 The Substation will also be fenced. This will be metal palisade fencing, approximately 2.5m in height.

### Surface Water Drainage

- 4.5.24 An outline Drainage Strategy has been developed and is provided within **ES Volume 3: Appendix 9-C [EN010131/APP/3.3]**. The strategy outlines how surface water will be managed in order to prevent any increase in flood risk. It describes measures to manage drainage from new infrastructure (e.g. PV panel arrays, access tracks and areas of hardstanding across the site) and manage any required changes to existing land drainage arrangements. The strategy will be developed into a detailed drainage strategy prior to construction.
- 4.5.25 The design of new drainage systems will be based on the FRA, the results of which are provided within **Chapter 9: Water Environment of the ES [EN010131/APP/3.1]**.

### Biodiversity and Landscaping

- 4.5.26 The Scheme will involve new planting, field boundary enhancement and planting of seed mixes within the solar PV area as shown in **ES Volume 2: Figure 2-4 [EN010131/APP/3.2]**. Planting will also be used to provide screening. The enhancements and planting would increase biodiversity and contribute to the Scheme achieving Biodiversity Net Gain (BNG) in line with the principles in the Environment Act 2021, NPPF and local planning policy: Central Lincolnshire Local Plan, and Bassetlaw District Council Core Strategy and Development Management Policies DPD. Further information is provided

within **Chapter 8: Ecology and Nature Conservation** and **Chapter 10: Landscape and Visual Amenity of the ES [EN010131/APP/3.1]**.

## 4.6 Design Evolution and Layout

### Overview

- 4.6.1 Prior to arriving at the final proposed Order limits there were several stages of design evolution, during which the original area of the Order limits was refined. That process of design evolution has been informed by ongoing environmental assessments, engineering and design considerations, as well as engagement with stakeholders. Several routes for the grid connection were also considered and whether the route would be overhead or underground. The layout of the Scheme also progressed and evolved over time in response to consultation and the EIA.
- 4.6.2 More detail on design evolution and layout evolution is provided below.

### Progression of the Order Limits

- 4.6.3 The area covered by the Order Limits evolved over time in response to further knowledge on design requirements, the environmental impact assessment process and consultation. Figure 4-1 at the start of this section shows how the Order Limits area has evolved over time, with a description provided below.

### EIA Scoping (12 November 2021)

- 4.6.4 For the purpose of EIA scoping the initial layout comprised several parcels of land within the Solar and Energy Storage Park, and four potential grid connection corridors leading to a total area of 1,654ha. This site boundary was produced with data from desk based and preliminary environmental surveys and was adopted with a view to including in the Scoping Report any land that could ultimately be within the Order limits.

### Stage 1 Non-statutory Consultation (January/ February 2022)

- 4.6.5 At Stage 1 non-statutory consultation the Proposed Order Limits included within the Concept Masterplan used the same boundary as was used for EIA Scoping. with a total area of 1,654ha. Four broad corridors were still included for the grid connection. The Indicative Concept Masterplan produced for Stage 1 consultation was a preliminary and high-level layout showing the key features of the Scheme. It was developed with the feedback from the EIA scoping process, input from the design team, preliminary environmental mitigation recommendations (e.g. key areas for planting and screening), development of initial design principles and ongoing landowner discussions.

### Stage 2 Statutory Consultation and PEI Report Boundary (June 2022)

- 4.6.6 The PEI boundary comprised several parcels of land separated by areas of woodland totalling 1,436ha comprising the Solar and Energy Storage Park and a single grid cable connection corridor. Selecting one grid connection corridor resulted in a reduction in the area covered by the site from the EIA scoping and non-statutory consultation.



4.6.7 In developing the proposed Order limits for the Stage 2 Statutory Consultation, consideration was given to environmental opportunities and constraints of the site and non-statutory consultation feedback, particularly in relation to scale, proximity to existing residential areas, visual impact, and ecological and heritage assets. This identified developable areas for solar PV, battery storage and suitable locations for associated infrastructure as well as environmental mitigation.

### Stage 3 Targeted Consultation

4.6.8 Through ongoing engineering and construction review, design evolution of the Scheme proposals resulted in the Applicant making a number of localised changes to the proposed Order limits that had been consulted on at Stage 2 Consultation. The changes related to minor additions to the indicative Order Limits resulting in a small increase in land take.

4.6.9 The changes proposed related to transport and access requirements to accommodate the potential removal of vegetation along highways to ensure sufficient visibility and engineering and feasibility requirements. Following feedback at Stage 2 on fire safety, the Order limits were changed to include provision for the connection to an existing water main to provide the Substation and BESS with a direct supply of water.

### Proposed Order Limits

4.6.10 The proposed Order limits total an area of 824ha, resulting in a reduction in size from the PEI boundary, despite the small increases consulted on during Stage 3 consultation. This was due to several changes being made to the PEI Report boundary following feedback received during statutory consultation and ongoing engineering and construction review.

4.6.11 The changes and refinements to the Order limits include:

- Removing large areas of woodland from the Order Limits, such as Burton Wood to reflect the lack of development proposed within these locations;
- The removal of the majority of land within the Order Limits shown as 'Solar Panel Exclusion Zone' in the north-west of the Solar and Energy Storage Park. This land was not considered necessary to include as biodiversity net gain could be achieved within other areas of the Order Limits;
- Refinement of the Order Limits to reduce the land take required for the main access point from the A156;
- Reduction in area within the Order limits for the Grid Connection Corridor when compared to the Order limits presented in the PEI Report. This was primarily to refine the Order limits following review of additional survey information and further feasibility studies;
- Inclusion of road verges and highways land for minor road widening as consulted on during Stage 3 consultation; and
- Inclusion of a section along the A156 enabling provision of a water supply directly to the sub-station and battery storage facility in response to concerns regarding fire safety, also consulted on during Stage 3 consultation.

## Grid Connection Corridor: How a Route was Selected

- 4.6.12 An optioneering process was undertaken to identify the cable route corridors for the Scheme to connect to the existing Cottam Substation. The Grid Connection Corridor Appraisal presents the options considered and is included in **ES Volume 3: Appendix 3-A [EN010131/APP/3.3]**.
- 4.6.13 At EIA Scoping and non-statutory consultation stage, an initial four corridor options were considered for connection at the Cottam Substation. An options appraisal exercise was undertaken to identify and review the engineering, constructability and environmental constraints within each of the corridors in order to identify a preferred corridor. The options appraisal and the non-statutory consultation undertaken in February 2022 included consideration of both an overhead power line (OHL) and an underground cable. The corridors considered are referred to as Corridors A, B, C1 and C2 and are shown in **ES Volume 2: Figure 3-3 [EN010131/APP/3.2]**.
- 4.6.14 Key feedback from the environmental and social options appraisal and the non-statutory consultation included the following:
- An underground cable was identified as preferred due to lower visual effects and less intrusion in surrounding area;
  - Installation of OHL across the River Trent would potentially give rise to ecological likely significant effects;
  - An OHL option in Corridors A, B and C2 would give rise to significant permanent effects to designated built heritage assets including the parkland garden of Knaith Hall Grade II listed building, Gate Burton Grade II\* listed building, the Burton Chateau Grade II\* listed building and a Grade II listed building at Littleborough Cottage; and
  - The existing flood defence embankments on the eastern and western sides of the River Trent were identified as a key constraint
- 4.6.15 The PEI Report boundary consulted on during the Stage 2 statutory consultation was determined through a combination of a preference for an underground cable; the extent of known beneath ground archaeological assets located in Corridors A & B; and the ruling out of Corridor C2 due to constraints east of Cottam power station. This resulted in the selection of Corridor C1 as the preferred option. Corridor C1 was identified as providing the best balance of minimising impacts on the environment and the local community whilst meeting the technical and constructability feasibility requirements.
- 4.6.16 Following a review of additional survey information and further feasibility studies, there was a reduction in the area within the Order limits for the Grid Connection Corridor when compared to the Order Limits presented in the PEI Report. This included the avoidance of archeologically sensitive areas such as the Viking Great Army Winter Camp in fields to the south of the proposed PEI Report corridor route. There was also the inclusion of road verges and highways land for minor road widening around the Grid Connection Corridor as illustrated in Figure 4-1.

## Evolution of the Site Layout

4.6.17 Within the Order limits, the Scheme's design has evolved over time.

### Solar and Energy Storage Park

4.6.18 The Non-Statutory Consultation Indicative Concept Masterplan was a preliminary and high-level layout showing the key features of the Scheme. It was developed with the feedback from the EIA scoping process, input from the design team, preliminary environmental mitigation recommendations (in particular key areas for planting and screening), development of initial design principles and ongoing landowner discussions.

4.6.19 The Scheme design further evolved at the Stage 2 Statutory Consultation following feedback from consultees at Stage 1 non-statutory consultation and continued environmental design review. As a result of the environmental design process, the larger built elements of the solar farm such as the on-site Substation and BESS were carefully located in areas of reduced flooding and screened by existing woodland with views further screened by topography and existing vegetation.

### BESS and Substation

4.6.20 The BESS and Substation are located to the west of the railway line primarily so that access could be provided to the facilities from the A156. During construction a large abnormal indivisible load vehicle (65.8m) is required to deliver the transformer to this area of the site. This vehicle could not travel under the railway line so would need to utilise the A156 to access the west of the site; or smaller roads if the Substation were located to the east of the railway line. Given the size of the vehicle, it would be preferable for it to access from the A156.

4.6.21 A significant number of construction vehicles would also be required for construction of the BESS and Substation and it would also be preferable for these vehicles to access the site from the A156 to minimise impacts on local road users. During operation it is important that good emergency access is provided in the event of a fire. Locating the BESS and Substation to the west of the site means that emergency vehicles can access the site directly from the A156, providing more efficient access in the event of an emergency incident than could be provided if the BESS and Substation were to the east of the railway line.

4.6.22 Locating the BESS to the west of the railway line also reduces the number of cable connections that need to pass under the railway.

4.6.23 On the western side of the railway the BESS and Substation were located close to the railway to increase the separation distance between this area of the site and sensitive receptors to the west, including residents and heritage assets at Gate Burton. The decision to locate the BESS and Substation close to the railway was informed by the EIA assessments and consultation. The area near the railway was also considered to be a less sensitive part of the AGLV than areas further west. Locating the BESS and Substation between the two large blocks of woodland on site screens the area from views to the

north and south and the topography in this area means it would be less visible than in other areas of the site.

4.6.24 Once the broad location for the BESS and Substation was established, three locations were considered that were on the western side of the railway, but on the eastern edge of this part of the site and between the woodland blocks. These locations are shown on Figure 4-6. Option 1 was the first location considered, being further north along the railway. However, this location was ruled out as it incorporated an area of higher flood risk and would have involved development in woodland buffers. Options 2 and 3 were then identified by the team as being two alternative locations and compared to assess which would have lesser environmental impacts. The options were fairly similar in terms of environmental impacts, but Option 3 would affect a larger area of BMV land and would be more visible than Option 2. Therefore, Option 2 was determined as the general location. This area was then refined based on more detailed environmental surveys and to move the final area closer to the railway line to further increase separation distances between this area of the site and Gate Burton.

### **Design Principles**

4.6.25 The following design principles were adopted in development of the overall Scheme layout:

- Provision of buffers and offsets from existing landscape features such as ponds, hedgerows, woodland and Public Rights of Way;
- A heritage setting buffer was proposed to provide offset from listed buildings at Gate Burton, at the Solar and Energy Storage Park's western boundary;
- New grassland and wildflower mixes under the panels were proposed to enhance the range of fauna, enhancing biodiversity and providing resource for pollinators;
- Screening and planting design was proposed to reduce visual impact by providing environmental enhancement areas, off-sets and buffer zones; and
- Siting of infrastructure to avoid below ground archaeological features wherever possible was also considered and screening and planting was designed to minimise impact on the setting of heritage assets.

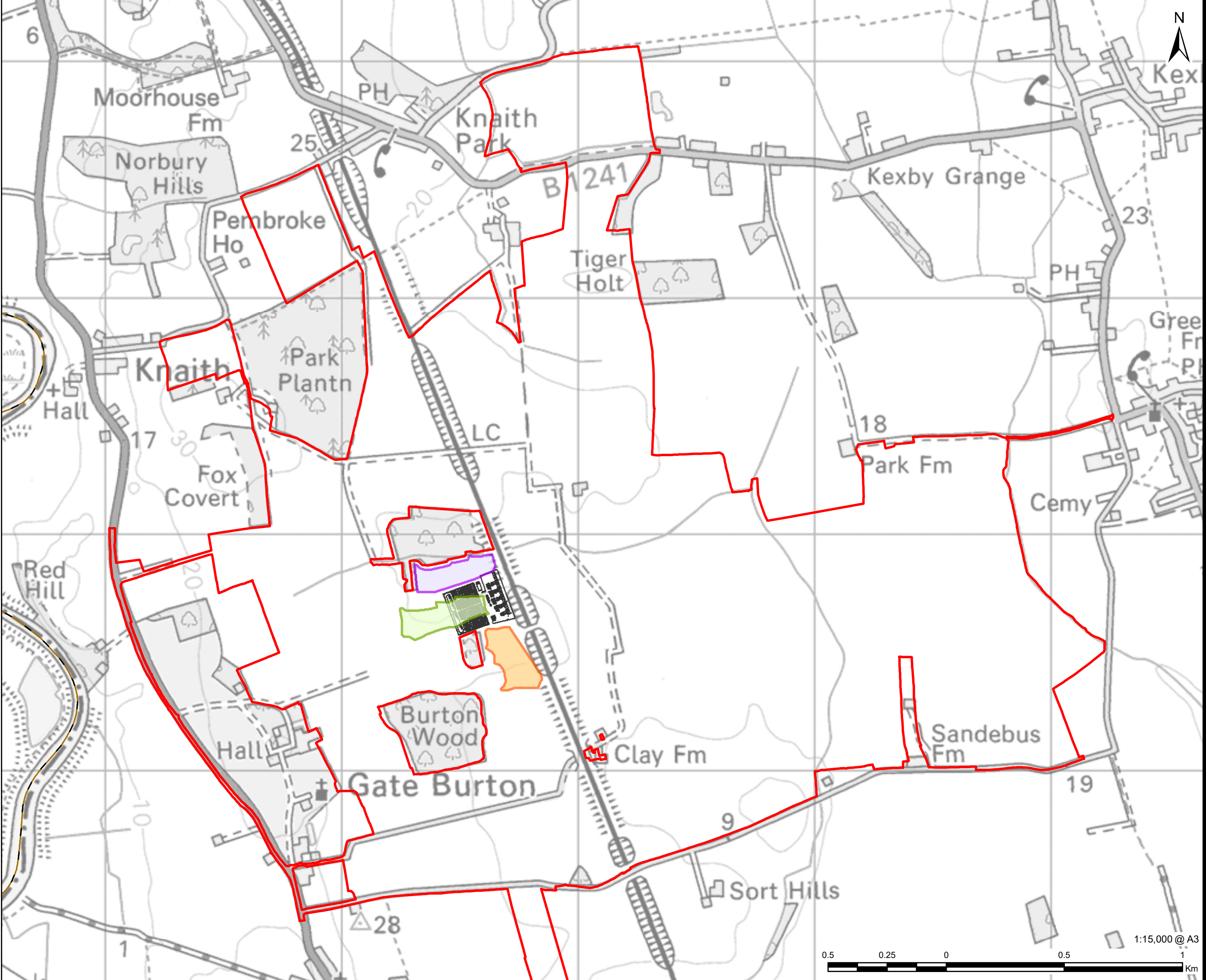
4.6.26 The strategic environmental design was developed for the PEI Report to respond to the environmental opportunities and constraints of the Site and non-statutory consultation feedback, particularly in relation to scale, proximity to existing residential areas, visual impact, and ecological and heritage assets. This identified developable areas for solar PV, battery storage and suitable locations for associated infrastructure as well as environmental mitigation.

4.6.27 Following feedback from consultees during the Stage 2 statutory consultation, several changes were made to the Scheme's design:

- Offsets from properties were reviewed and adjusted through design development to respond to the existing character of views from residential properties. This includes removal of panels from:




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**AECOM**

**PROJECT**  
Gate Burton Energy Park

**CLIENT**  
  
Gate Burton  
ENERGY PARK

**CONSULTANT**  
AECOM Limited  
Sunley House  
4 Bedford Park  
Surrey, CR0 2AP, UK  
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**LEGEND**

- Order Limits
- District Boundary
- County Boundary

**Options Considered for BESS/ Substation Location**

- Option 1: Original Location
- Option 2: Alternative Option A
- Option 3: Alternative Option B
- Option 4: Final BESS / Substation Location

**NOTES**

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**PROJECT NUMBER**  
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**FIGURE TITLE**  
Options Considered for BESS/  
Substation Location

**FIGURE NUMBER**  
Figure 4-6

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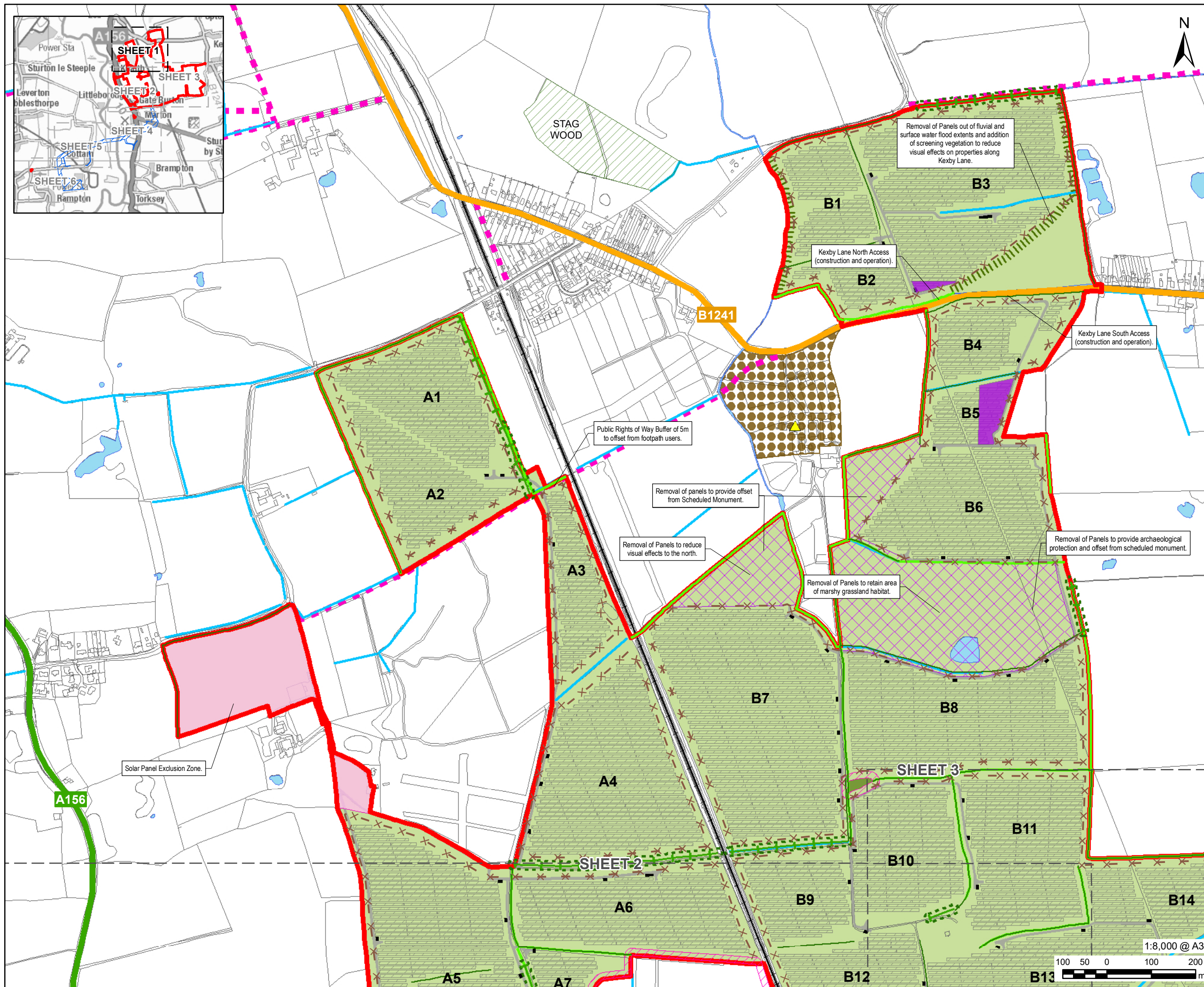
- The north-easternmost field, to reduce visual effects on properties along Kexby Lane;
- The central northern part of the Solar and Energy Storage Park, to reduce visual effects on Knaith Park;
- The area surrounding Clay Farm; and
- The area surrounding Sandy Barr.
  - The Scheme design has been carefully sited where it would appear in views experienced by residents to avoid or minimise adverse effects.
  - The removal of a large area of panels in close proximity to ‘Site of Heynings Priory’ Scheduled Monument to provide offset and therefore reduce setting effects of the Scheme on the asset, in response to comments from Historic England. The removal of panels in this field was also beneficial to ecology, as it removed an area of marshy grassland, considered of higher ecological value than surrounding fields.
  - Removal of panels from areas of higher flood risk and incorporation of skylark habitat.
  - Undergrounding of existing overhead lines across the Site.

4.6.28 The Scheme’s design evolved further in response to changes to the Order limits prior to the statutory Targeted Consultation as detailed above. This included refinements to the Scheme’s transport and access requirements including potential vegetation removal to increase visibility. The internal access road to the BESS was also re-routed to be further from designated heritage assets. Engagement with Lincolnshire Fire and Rescue Service also led to design changes to ensure access to the whole BESS in the unlikely event of a fire. Further details on how the Scheme’s design has evolved following engagement with consultees is included in Tables 9-2, 9-3 and 10-5 of the **Consultation Report [EN010131/APP/4.1]**.

### Proposed Layout

- 4.6.29 **Figure 2-4 of Chapter 2 the ES [EN010131/APP/3.1]** shows the current site layout and identifies areas that have been avoided throughout the design of the Scheme, and the reasons for this. This plan has been replicated in Figure 4-7 of this PDAS. Whilst the final site layout may change with detailed design, the **Outline Design Principles [EN010131/APP/2.3]**, which are secured through the DCO, secure the main features of the layout.
- 4.6.30 This section provides a high-level summary of the Site layout decisions that have been made with regard to environmental designations.
- 4.6.31 The Scheme’s proposed location sought to minimise the area of land that is, or includes, BMV land. The majority of land (88%) within the Solar and Energy Storage Park is not classified as BMV land and the land within the Grid Connection Corridor will be returned to agricultural use after construction.
- 4.6.32 The Order limits avoid international and nationally designated sites, including Sites of Special Scientific Importance (SSSI), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar Sites, National Nature Reserves (NNR), Local nature Reserves (LNR), Local Wildlife Sites (LWS),

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**PROJECT**  
Gate Burton Energy Park

**CLIENT**  
 Gate Burton  
ENERGY PARK

**CONSULTANT**  
AECOM Limited  
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4 Bedford Park  
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(REDACTED)

- LEGEND**
- Solar and Energy Storage Park
  - Solar Panel Exclusion Zone
  - Solar Panel
  - Construction Compound
  - Power Conversion Unit (PCU)
  - Security Fence
  - Proposed Mitigation/Enhancement**
  - Proposed or Strengthened Hedgerow
  - Tree and Shrub Belt Planting
  - Proposed Species Rich Grassland
  - Heritage Setting Buffer
  - Existing Hedge with Trees - 10m Buffer
  - Ancient Woodland and Existing Woodland - 15m Buffer
  - Existing Infrastructure/Features**
  - A Road
  - B Road
  - Public Right of Way
  - Internal Access Road
  - Railway
  - Ordinary Watercourse
  - Existing Hedgerow with Trees
  - Existing Hedgerow
  - Existing Woodland
  - Waterbody/Watercourse
  - Environmental Designations**
  - Grade II Listed Building
  - Ancient Woodland
  - Scheduled Monument

**Figure 4-7: Site Layout Plan as presented in ES Figure 2-4 [EN010131/APP/3.2]**

**ISSUE PURPOSE**  
Environmental Statement

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**FIGURE TITLE**  
Indicative Site Layout Plan  
Sheet 1 of 6

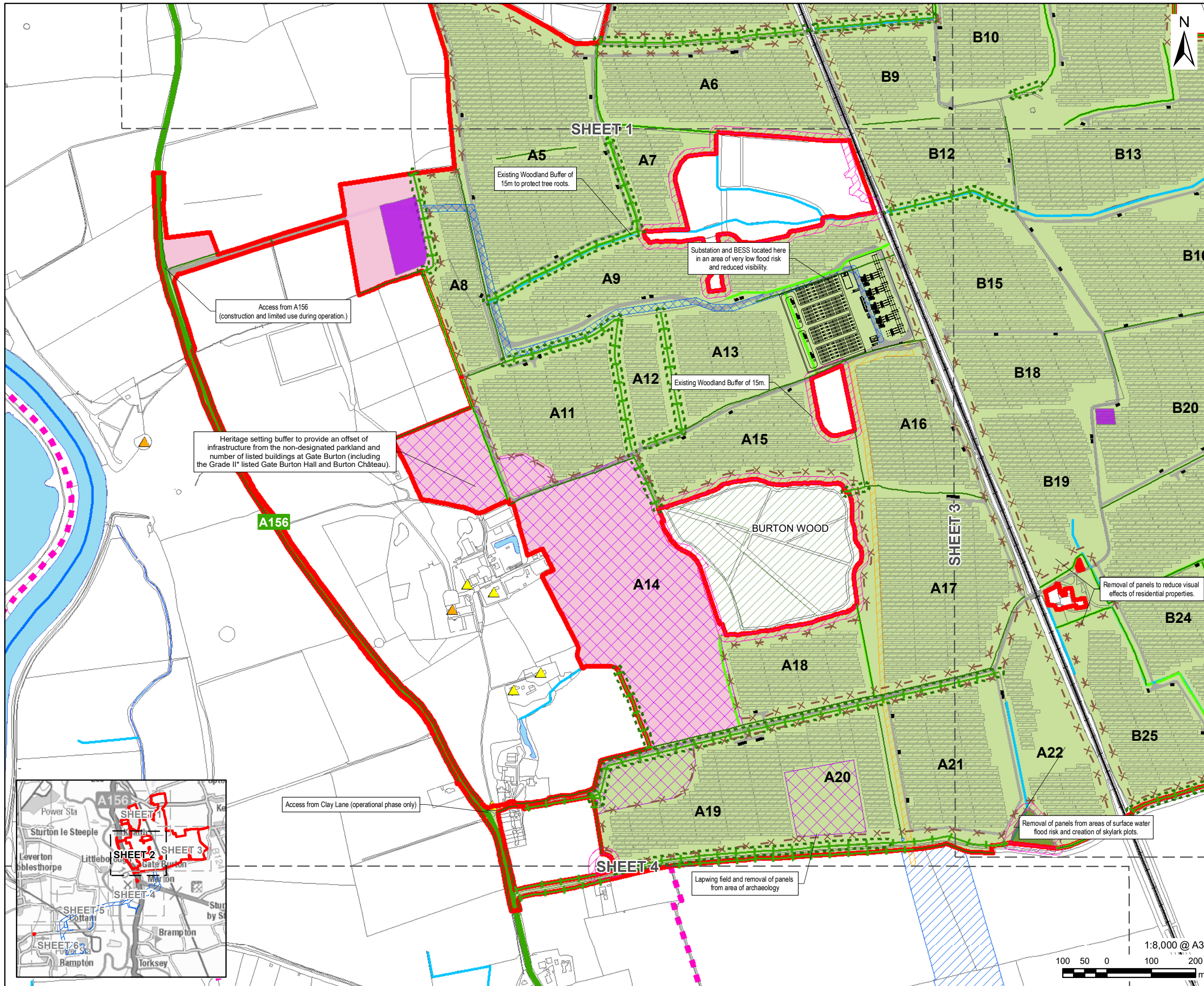
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Figure 2-4

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- LEGEND**
- Solar and Energy Storage Park
  - Grid Connection Corridor
  - Solar Panel Exclusion Zone
  - Solar Panel
  - Construction Compound
  - Power Conversion Unit (PCU)
  - Security Fence
  - Water Supply Easement
  - Water Supply and 400kV Cable Route Easement
  - Proposed Mitigation/Enhancement**
  - Proposed or Strengthened Hedgerow
  - Proposed Species Rich Grassland
  - Heritage Setting Buffer
  - Existing Hedge with Trees - 10m Buffer
  - Ancient Woodland and Existing Woodland - 15m Buffer
  - Existing Infrastructure/Features**
  - A Road
  - Public Right of Way
  - Internal Access Road
  - Railway
  - Main River
  - Ordinary Watercourse
  - Existing Hedgerow with Trees
  - Existing Hedgerow
  - Existing Woodland
  - Waterbody/Watercourse
  - Environmental Designations**
  - Grade II\* Listed Building
  - Grade II Listed Building
  - Ancient Woodland

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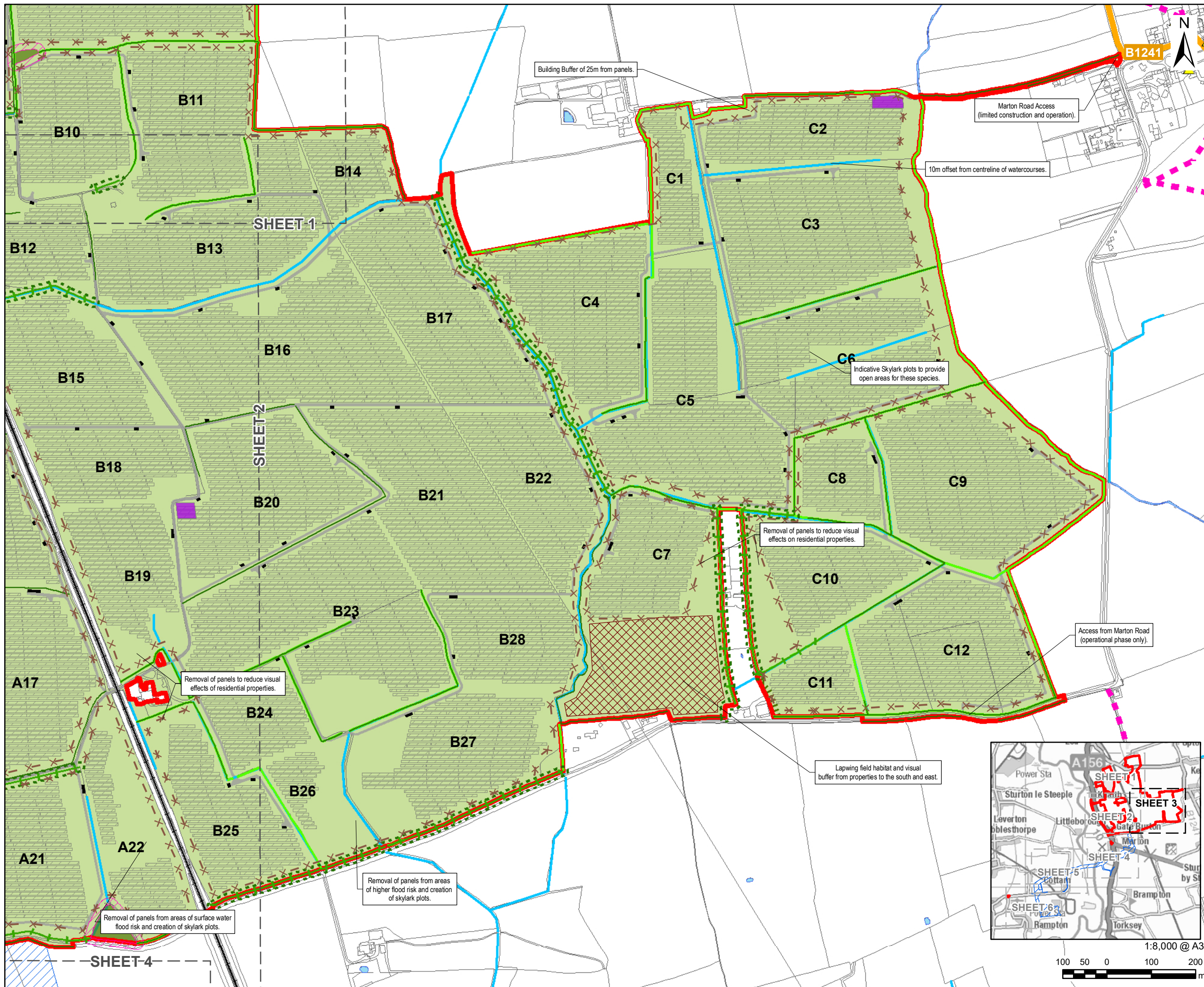
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Indicative Site Layout Plan  
Sheet 2 of 6

**FIGURE NUMBER**  
Figure 2-4

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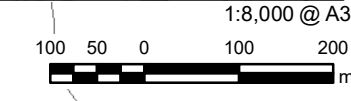
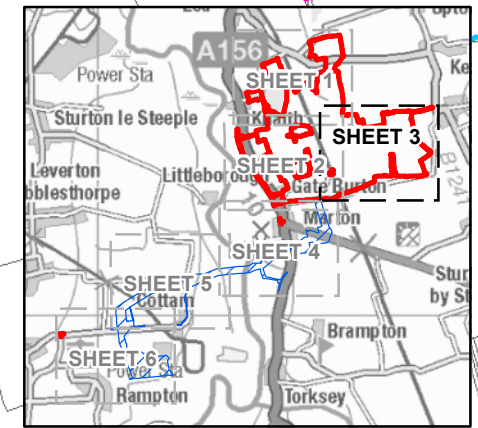
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Gate Burton Energy Park

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 Gate Burton ENERGY PARK

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4 Bedford Park  
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**LEGEND**

- Solar and Energy Storage Park
- Grid Connection Corridor
- Solar Panel
- Construction Compound
- Power Conversion Unit (PCU)
- Security Fence
- Lapwing Field
- Proposed Mitigation/Enhancement**
  - Proposed or Strengthened Hedgerow
  - Tree and Shrub Belt Planting
  - Proposed Species Rich Grassland
  - Existing Hedge with Trees - 10m Buffer
  - Ancient Woodland and Existing Woodland - 15m Buffer
- Existing Infrastructure/Features**
  - B Road
  - Public Right of Way
  - Internal Access Road
  - Railway
  - Ordinary Watercourse
  - Existing Hedgerow with Trees
  - Existing Hedgerow
  - Existing Woodland
  - Waterbody/Watercourse
- Environmental Designations**
  - Grade II Listed Building



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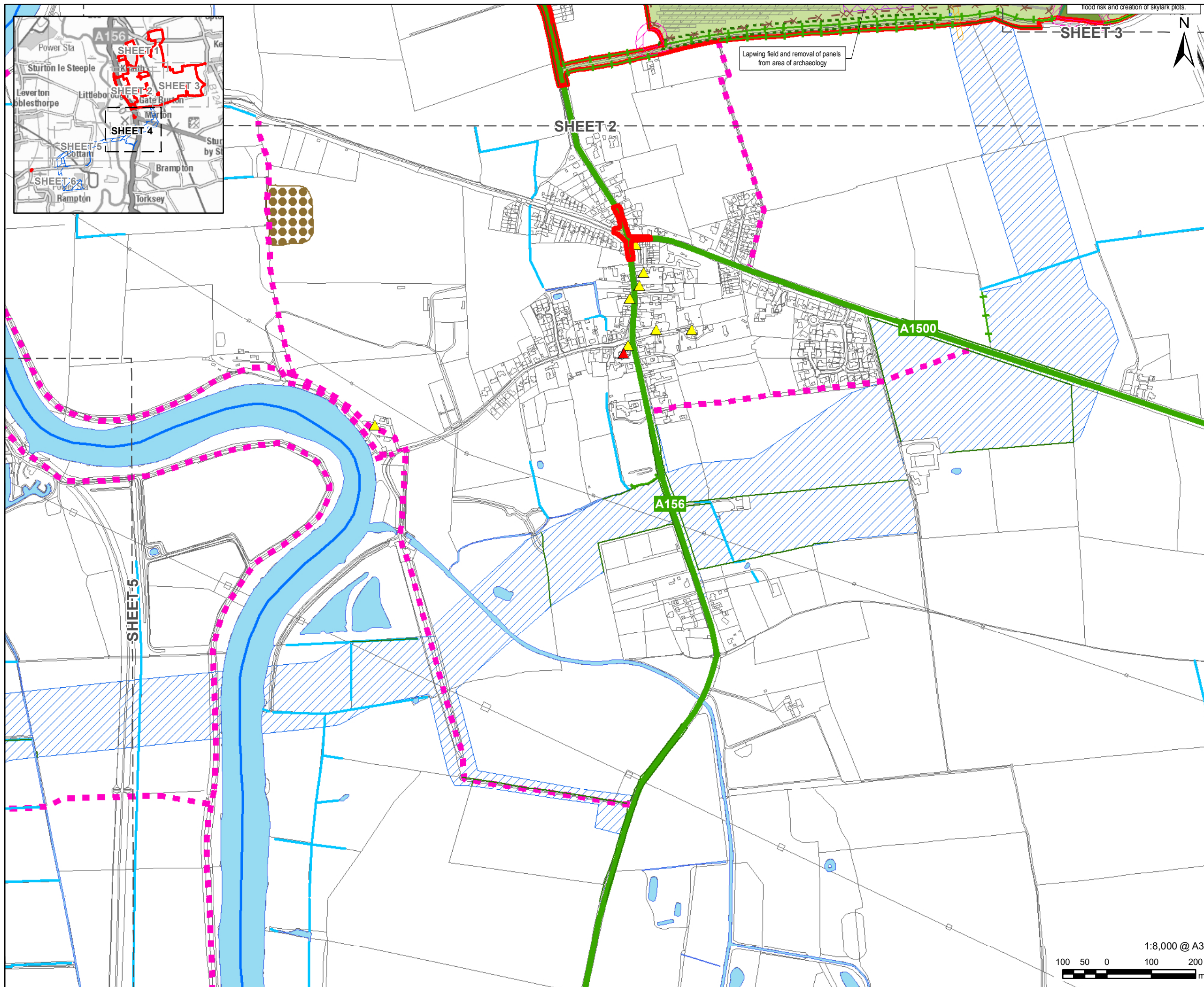
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Indicative Site Layout Plan  
Sheet 3 of 6

**FIGURE NUMBER**  
Figure 2-4

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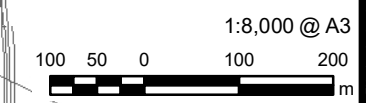
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- Solar and Energy Storage Park
  - Grid Connection Corridor
  - Solar Panel
  - Security Fence
  - Water Supply and 400kV Cable Route Easement
  - Proposed Mitigation/Enhancement
  - Proposed or Strengthened Hedgerow
  - Proposed Species Rich Grassland
  - Heritage Setting Buffer
  - Existing Hedge with Trees - 10m Buffer
  - Ancient Woodland and Existing Woodland - 15m Buffer
  - Existing Infrastructure/Features**
  - A Road
  - Public Right of Way
  - Internal Access Road
  - Railway
  - Main River
  - Ordinary Watercourse
  - Existing Hedgerow with Trees
  - Existing Hedgerow
  - Existing Woodland
  - Waterbody/Watercourse
  - Environmental Designations**
  - Grade I Listed Building
  - Grade II Listed Building
  - Scheduled Monument

**ISSUE PURPOSE**  
 Environmental Statement

**PROJECT NUMBER**  
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**FIGURE TITLE**  
 Indicative Site Layout Plan  
 Sheet 4 of 6

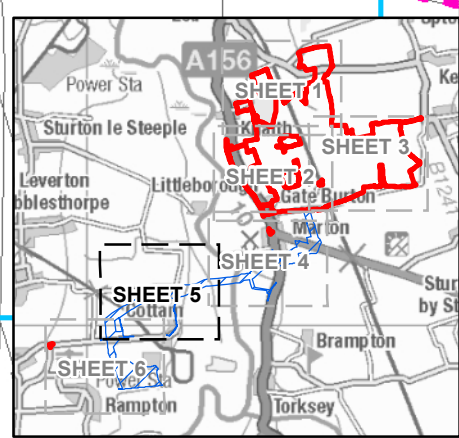
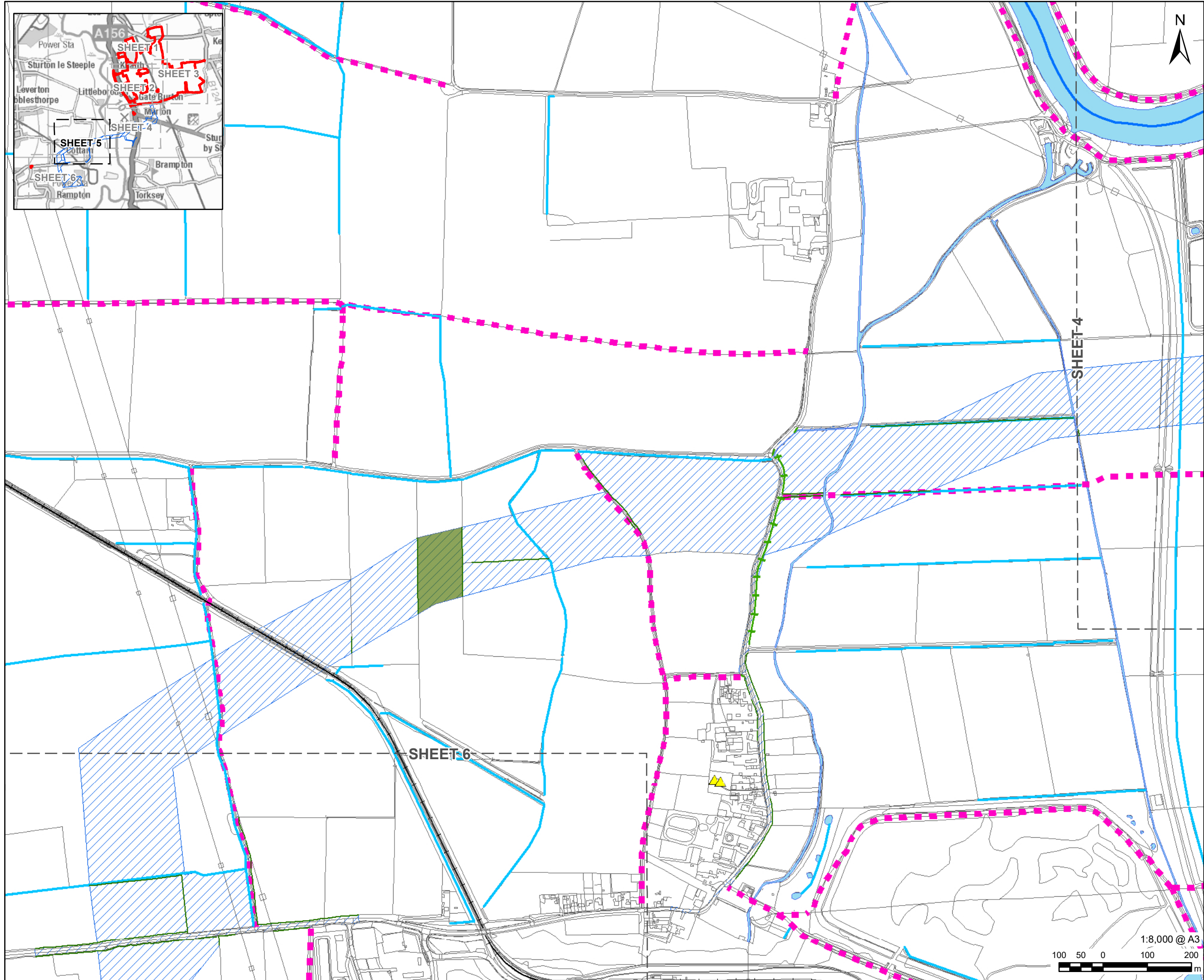
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







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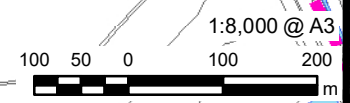
- LEGEND**
-  Grid Connection Corridor
  -  Public Right of Way
  -  Railway
  -  Main River
  -  Ordinary Watercourse
  -  Existing Hedgerow with Trees
  -  Existing Hedgerow
  -  Existing Woodland
  -  Waterbody/Watercourse
- Environmental Designations**
-  Grade II Listed Building

**ISSUE PURPOSE**  
 Environmental Statement

**PROJECT NUMBER**  
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**FIGURE TITLE**  
 Indicative Site Layout Plan  
 Sheet 5 of 6

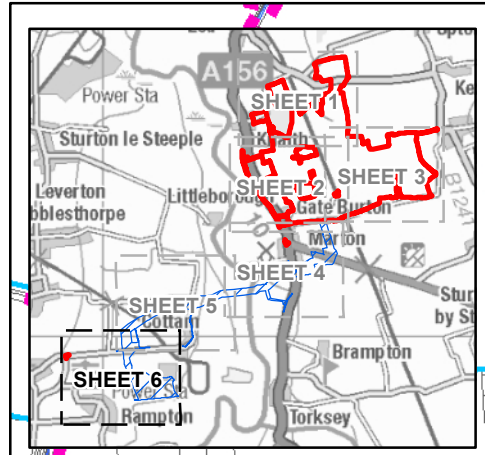
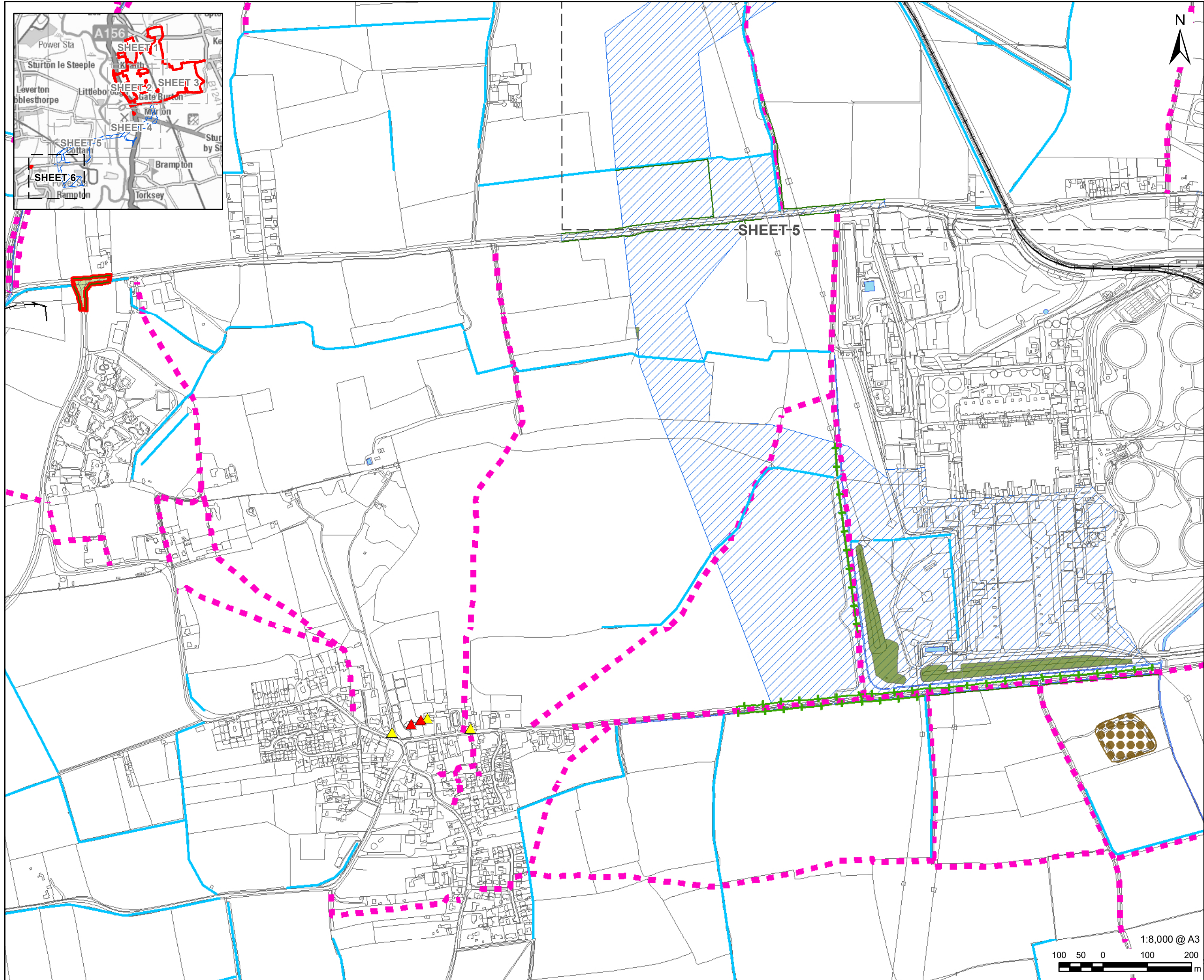
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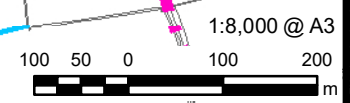
- LEGEND**
-  Solar and Energy Storage Park
  -  Grid Connection Corridor
  -  Proposed Species Rich Grassland
  -  Railway
  -  Ordinary Watercourse
  -  Existing Hedgerow with Trees
  -  Existing Hedgerow
  -  Existing Woodland
  -  Waterbody/Watercourse
  - Environmental Designations**
  -  Grade I Listed Building
  -  Grade II Listed Building
  -  Scheduled Monument

**ISSUE PURPOSE**  
Environmental Statement

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Indicative Site Layout Plan  
Sheet 6 of 6

**FIGURE NUMBER**  
Figure 2-4



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Site of Importance for Nature Conservation (SINCs), as well as National Parks, Areas of Outstanding Natural Beauty (AONB), Country Parks, and Special Landscape Areas.

- 4.6.33 Three areas of woodland (including ancient woodland), which include Burton Wood, Quilters Wood and Long Nursery, have been removed from the Order limits, to provide certainty to consultees that these areas will be retained. Buffer areas of 15m have also been incorporated in the layout to protect roots of trees within ancient woodland, with this commitment secured in the **Outline Design Principles [EN010131/APP/2.3]**.
- 4.6.34 In addition, no Conservation Areas, Listed Buildings, Scheduled Monuments, Registered Parks and Gardens and Registered Battlefields are located within the Order limits.
- 4.6.35 At statutory consultation Historic England raised ‘serious concerns’ about the impact of the Scheme on Heynings Priory and Gate Burton Hall. Therefore, a large area of panels in close proximity to ‘Site of Heynings Priory’ Scheduled Monument and an area of panels near Gate Burton was removed from the layout to provide offset and therefore reduce setting effects of the Scheme on the assets (see Historic England Statement of Common Ground for further detail [**EN010131/APP/4.3D**]).
- 4.6.36 Historic England subsequently provided accepting the mitigation for Heynings Priory but providing continued concerns regarding Gate Burton Hall:
- 4.6.37 *“At Gate Burton Hall we were concerned that as proposed the scheme does not address the significance of the house in its parkland setting, the present park land under pasture is a tight area and were the panel array to be set out as shown it would we consider (having viewed the site) result in a degree of less than substantial harm which in respect of a highly graded asset such as this (the II\* House) would be likely to comprise a significant environmental effect. We note the corridor set out between the park and associated woodland and the set back of the array half way across the field, however on the ground this still feels constrained and tends with the extent of panels proposed, to disarticulate the house in its immediate parkland setting from the wider designed and borrowed landscape context. This could we believe be remedied by deleting array A14 to allow the landscape to run through to the wood.”*
- 4.6.38 This resulted in additional removal of panels in the vicinity of Gate Burton Hall to remove all panels between the Hall and Burton Wood, in order to reduce the effect of Scheme on the house in its parkland setting. This area is now shown as an expanded solar panel exclusion zone in the layout plan. The internal access road was also relocated to enter the BESS and Substation at the north western corner rather than the south western corner so that it no longer passes through the exclusion zone. In addition, infrastructure would be sited to avoid below ground archaeological features wherever possible including the Winter Camp of the Viking Army at Torskey which extends partially across the Grid Connection Corridor.
- 4.6.39 In response to consultation comments raising concerns about fire safety, the Order limits were amended in November 2022 to include additional areas to



enable installation of a connection to the water mains, providing mains water directly to the BESS. During ongoing engagement with Lincolnshire Fire and Rescue Service, comments were also provided regarding the need for an access road all around the BESS so that fire engines could access all parts of the enclosure in the unlikely event of a fire incident. This access has been incorporated into the site layout.

- 4.6.40 A small area of Flood Zone 2 and 3 is located within the Solar and Energy Storage Park, however the built elements of the scheme have been located out of these areas. With the exception of the buried cable connection, no operational infrastructure is located within Flood Zone 2 and 3. Further details of how the Scheme relates to Flood Zone 2 and 3 can be found in Section 7.8 of this document.
- 4.6.41 The Scheme has also been amended to remove a number of panels throughout the site in order to reduce visual effect on residential properties as a result of design development. This includes residential properties along Kexby Lane, Clay Lane and properties off Marton Road.
- 4.6.42 Overall, the proposed layout has evolved through an iterative process, responding to consultation comments and the EIA to present a layout that maximises the benefits of the Scheme in terms of electricity generation, whilst minimising local impacts. Decisions have been made over time to reduce electricity generation where it is warranted by the reduction in environmental effects.

## 4.7 Construction

### Construction Programme

- 4.7.1 Subject to being granted consent and following a final investment decision, construction is anticipated to start in Q1 2025 and will require an estimated 24 to 36 months. The Scheme is therefore anticipated to be operational from approximately Q1 2028.

### Construction Activities

- 4.7.2 Construction activities will include:
- Site preparation including setting up access, compounds and security;
  - Import of construction materials, plant and equipment to site;
  - Diversion and installation of utilities as required;
  - Upgrading of existing site tracks/access roads and construction of new tracks;
  - Marking out the location of infrastructure;
  - Import of components to site;
  - Erection of PV Mounting Structures;
  - Mounting of PV Panels;
  - Installation of electric cabling;
  - Installation of Power Conversion Stations;
  - Installation of BESS;
  - Construction of on-site Substation;

- Cable installation (including trenching);
- The establishment of mobilisation areas and running tracks ;
- Stripping of topsoil in sections for the cable connection, sub-station and BESS area only;
- Trenching in sections;
- Appropriate storage and capping of soil;
- Appropriate construction drainage with pumping where necessary;
- Sectionalised approach of duct installation;
- Excavation and installation of jointing pits;
- Cable pulling;
- Testing and commissioning; and
- Site reinstatement and habitat creation.

4.7.3 Commissioning of the Scheme will include testing and commissioning of the process equipment. Commissioning of the solar PV infrastructure will involve mechanical and visual inspection, electrical and equipment testing, and commencement of electricity supply into the grid. Individual sub-systems will be commissioned separately, with each having its own procedures and prerequisite lines, and it may be necessary to commission these elements separately or at the same time, depending on the end technology utilised at the time of construction.

4.7.4 This process will take place prior to operation of the Scheme which is anticipated to commence in 2028.

### Construction Staff

4.7.5 At the peak of construction, which is expected to be during 2026, it is estimated that a maximum of up to 400 workers will be required. This number will be less at other times of the construction phase and if construction is carried out over a slightly longer period than the anticipated 36 months. Overall, 363 full-time equivalent jobs will be generated for the construction period.

### Construction Hours of Work

4.7.6 The core working hours are defined in Table 2-1 of the **Framework Construction Environmental Management Plan (Framework CEMP) [EN010131/APP/7.3]**, which in turn is secured by requirement 12 in the Draft DCO **[EN010131/APP/6.1]**. In the summer, working hours will be 7am to 7pm Monday to Friday, and Saturday 9am to 1pm. In the winter, working hours will be 8am to 6pm Monday to Friday, and Saturday 9am to 1pm.

4.7.7 Some works activities may need to occur out of these hours/times due to activities requiring to be undertaken continuously (such as HDD and cable jointing). As set out in the Framework CEMP, where work outside of times is necessary prior notification will be provided to the relevant local planning authority. Additionally, quiet non-intrusive works such as the installation of PV modules may take place over longer periods during the high summer and other quiet non-intrusive works such as electrical testing, commissioning and inspection may take place over longer periods throughout the year.

## Construction Compounds

- 4.7.8 Construction compound locations are shown on **Figure 2-4 of Chapter 2 of the ES [EN010131/APP/3.2]**. The main construction compound is located on the western site boundary with access from the A156. Secondary compounds are located off Kexby Lane and off the B1241 (Gainsborough Road).
- 4.7.9 In addition to the main compound and the secondary compounds, smaller short-term use construction compounds will be located across the Order limits. The compounds will be approximately up to 150m x 150m and will contain a site office, mobile welfare units, generators, canteen facility, a fenced area for storage and waste skips and space for short-term parking, storage, download and a turning area. The compounds will be converted to solar PV or landscaping at the end of their use.
- 4.7.10 The approximate locations of the Grid Connection Corridor construction compounds are shown on **Figure 2-5 of Chapter 2 of the ES [EN010131/APP/3.2]**. There will be two main compounds adjacent to Cottam Road and Broad Lane. At each of the grid connection access points there will be 50m by 50m compounds. The compound area footprint will be determined by the contractor and will take into consideration topography, drainage and heritage and environmental constraints. The compounds will allow construction vehicles to turn off the public highway and park safely. They will include parking bays, portacabins, welfare facilities, unloading and storage areas and power generators. The areas will be secured using heras fencing and security cameras. Upon completion of construction, the compound areas will be removed and the land reinstated.

## Storage of Plant and Materials

- 4.7.11 No long-term onsite storage of materials is required during the construction phase. Materials will be delivered via HGVs at regular intervals to the construction compounds and transported directly to where it is required within the Order limits using smaller LGVs.
- 4.7.12 Short term storage of materials and plant will be accommodated within the construction compounds until required.

## Construction Lighting

- 4.7.13 During winter months, mobile lighting towers with a power output of 8kVA may be used during construction in isolated work areas. There will also be lighting at the main construction compounds while construction is underway.

## Construction Environmental Management Plan

- 4.7.14 A **Framework CEMP** has been prepared **[EN010131/APP/7.3]** which describes the framework of construction and environmental mitigation measures to be followed and to be carried forward to a detailed CEMP prior to construction. The aim of the CEMP is to avoid and/or reduce environmental impacts from:
- Construction traffic (including parking and access requirements) and changes to access and temporary road or footpath diversions (if required);

- Use of land for compounds;
- Noise and vibration;
- Utilities diversion;
- Dust generation;
- Soil removal;
- Lighting; and
- Waste generation.

4.7.15 The detailed CEMP will be produced by the Applicant prior to the start of construction as required by Requirement 12 in the draft DCO. The CEMP will identify the procedures to be adhered to and managed by the Applicant and its contractors throughout construction.

## 4.8 Site Reinstatement and Habitat Creation

4.8.1 Prior to, during and following the construction phase, a programme of site reinstatement and habitat creation will be implemented.

4.8.2 The Scheme has been designed to integrate with and enhance the local green infrastructure network, improving ecological connectivity across the Order limits. The initial proposed planting design, shown in **ES Volume 2: Figure 2-4 [EN010131/APP/3.2]**, has responded to the varied character by allowing views to remain open, where tall screening would not be appropriate. New planting would include:

- New native hedgerows;
- Native hedgerow enhancement, gapping up and infill planting;
- New native grassland buffer planting to form ecological corridors;
- Native linear tree belts; and
- New species rich grassland and amenity grassland mixes under the panels and along perimeter buffers. This will be created in advance of construction so that any displaced bird populations have alternative areas of habitat available during construction.

4.8.3 Embedded mitigation measures for the construction phase are set out in the Framework CEMP, including measures such as construction and exclusion zones in relation to retained vegetation, heritage exclusion zones, lapwing fields, skylark plots, stockpile management, and storing topsoil in accordance with best practice measures.

4.8.4 An **Outline Landscape and Ecological Management Plan (LEMP)** has been prepared **[EN010131/APP/7.10]**. This document sets out the principles for how the land will be managed throughout the operational phase, following the completion of construction. A detailed Landscape and Ecology Management Plan will be produced prior to commencement of construction as secured by Requirement 7 in the draft DCO. The detailed LEMP is required to be substantially in accordance with the Outline LEMP.

## 4.9 Operation



## Operational Activities

- 4.9.1 During the operational phase, activity on the Solar and Energy Storage Park will be limited and would be restricted principally to vegetation management, equipment maintenance and servicing, periodic replacement of components, periodic fence inspection, and monitoring to ensure the continued effective operation of the Scheme.
- 4.9.2 Given the 60-year operational life of the Scheme, there will be requirement for periodic replacement of some or all of the Solar and Energy Storage Park elements. Chapter 15: Other Environmental Topics of the ES [EN010131/APP/3.1] includes an assessment of the likely impact of component replacement (e.g. panels, batteries, inverters, transformers) and outlines measures to be put in place to ensure that these components are able to be diverted from the waste chain.
- 4.9.3 Fire suppression water at the BESS will be provided either via a connection to the existing water mains on the A156 or will be stored on site in tanks. The alignment of the connection to the existing mains is shown on ES Volume 2: Figure 2-4 (presented as Figure 4-7 in this PDAS) [EN010131/APP/3.2].

## 4.10 Decommissioning

- 4.10.1 The design life of the Scheme is expected to be 60 years. When the operational phase ends, the Solar and Energy Storage Park will be decommissioned. All PV modules, mounting poles, inverters and transformers would be removed and recycled or disposed of in accordance with good practice and market conditions at the time. Buried medium voltage cables would either be removed or left in situ. The majority of the Solar and Energy Storage Park would be returned to the landowner after decommissioning and will be available for its original use. The future of the substations and associated control buildings would be agreed with the relevant Local Planning Authority prior to commencement of decommissioning. Requirement 19 on the draft DCO requires that a Decommissioning Environmental Management Plan should be prepared and submitted to the relevant planning authority for approval prior to decommissioning.
- 4.10.2 Decommissioning is expected to take between 24 and 48 months and would be undertaken in phases.
- 4.10.3 The specific method of decommissioning the project at the end of its operational life is uncertain at present as the engineering approaches to decommissioning will evolve over the operational life of the Scheme.

### Land Reinstatement

- 4.10.4 The majority of land within the Solar and Energy Storage Park will be returned to its original use after decommissioning with medium voltage buried cables remaining in situ. Any modification work to the Cottam National Grid Substation to facilitate the connection would remain under National Grid's control. It is not currently known if the buried 400 kV cables would be left in situ or removed. For the purposes of assessment, both scenarios are considered within this ES with the worst case for any given topic assessed. It

is anticipated that some areas of habitat and biodiversity mitigation and enhancement may be left in-situ for species protection. Any required species licences would be obtained for reinstatement works if necessary.