

Cottam Solar Project

Preliminary Environmental Information Report: Chapters 1-6: Introductory and Non-Technical Chapters

Prepared by: Lanpro
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6.1 Legislative Context and National Energy Policy

Issue Sheet

Report Prepared for: Cottam Solar Project Ltd.

Preliminary Environmental Information Report Chapters 1-6: Introductory and Non-Technical Chapters

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1 Introduction

1.1 Background

- 1.1.1 This Preliminary Environmental Information Report (PEIR) has been prepared on behalf of Cottam Solar Project Limited (“the Applicant”) and represents the preliminary findings of the environmental and social studies and the design evolution process for the Cottam Solar Project (hereafter referred to as ‘the Scheme’). The PEIR is being used to inform the statutory consultation process of the proposed application for a Development Consent Order (DCO) to be submitted under Section 37 of the Planning Act 2008 (the “Act”) to the Secretary of State for Department for Business, Energy & Industrial Strategy (BEIS).
- 1.1.2 The Scheme comprises a number of land parcels (the ‘Site’ or ‘Sites’) described as Cottam 1, 2 and 3 for the solar arrays, grid connection infrastructure and energy storage; and the cable route corridors. The Sites are located approximately 6.5km south east and 4km north east of Gainsborough.
- 1.1.3 The grid connection point will be at the National Grid substation at Cottam Power Station.
- 1.1.4 The Sites are shown on the overall Scheme plan at **Appendix 3**. The cable route corridor search areas are shown in light green shading on the overall scheme plan and the plans at **Appendix 3** show the expected maximum extent of land that would be included within the application for a DCO for the solar array, grid connection and energy storage elements which includes all land being considered for the purposes of the Scheme. Additional land may be included in the DCO application for mitigation works, such as highway improvement works, and ecological mitigation and enhancement measures.
- 1.1.5 The majority of the Scheme will be located within the administrative boundary of West Lindsey District Council and Lincolnshire County Council; with the grid connection infrastructure located within the administrative boundary of Bassetlaw District Council and Nottinghamshire County Council.

1.2 The Regulations

- 1.2.1 As the Scheme will generate over 50MW of electricity it is defined as a Nationally Significant Infrastructure Project (NSIP) under 14(1)(a) and 15(2) of the Act and will therefore require a DCO.
- 1.2.2 The Scheme is considered to be ‘EIA development’ as defined by the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended in 2018) (the ‘EIA Regulations’) requiring an Environmental Impact Assessment. Under Regulation 12 of the EIA Regulations, the Applicant is required to set out in its

Statement of Community Consultation ('SoCC') how it intends to publicise and consult on the preliminary environmental information relating to the Scheme. Regulation 12(2) of the EIA Regulations states that the purpose of the PEIR is to provide sufficient information to enable stakeholders to develop an informed view of the likely significant effects of the development (and of any associated development). Planning Inspectorate Advice Note 7 explains that the PEIR does not need to constitute a complete assessment and is a compilation of the environmental information available at the point in time the PEIR is produced.

1.3 Purpose and Structure of the PEIR

- 1.3.1 The information contained in this PEIR is 'preliminary' and may not represent the final project design or include the final Environmental Impact Assessment (EIA) considerations and conclusions. The Applicant is seeking consultation responses to the information presented in order to continue to refine the development design and to continue to obtain information that will inform the final assessment of the impacts which will be contained in the Environmental Statement (ES) which will accompany the DCO application.
- 1.3.2 The PEIR is being published to accompany the statutory consultation under Sections 42 and 47 of the Planning Act 2008 and follows informal consultation undertaken by the Applicant in late 2021. The formal pre-application consultation runs for a period of 6 weeks in accordance with the SoCC.
- 1.3.3 The SoCC sets out how the applicant proposes to consult people affected by the development or living in the vicinity of the Scheme. A copy of the SoCC is provided at **Appendix 1.1** and has been developed in consultation with West Lindsey District Council, Bassetlaw District Council, Lincolnshire County Council and Nottinghamshire County Council.
- 1.3.4 The PEIR will be made available to the prescribed consultees, local authorities and landowners and to members of the public and the wider community. This will enable the consultees, including the local community, to understand the potential environmental effects and implications of the Scheme so as to inform their responses to consultation.
- 1.3.5 The PEIR takes the form of a draft / emerging ES. A significant amount of survey work has been completed to date to inform the EIA process. The table below sets out the structure of the PEIR and the topics that are covered. The Applicant is advised by a team of experienced and competent environmental consultants who have addressed each topic. The consultants are also identified below. A statement of competence will be provided within the ES for the authors of the various chapters.

Table 1.1: PEIR Structure

Document	Consultant
Non-Technical Summary	Coordinated by Lanpro
Volume 1 - Main Statement	Coordinated by Lanpro
Introduction, Methodology, Site Description, Proposed Development, Alternatives, Policy (Chapters 1 -6)	Lanpro
Climate Change (Chapter 7)	Lanpro / Bureau Veritas
Landscape and Visual; and Arboriculture (Chapter 8)	Lanpro
Ecology and Biodiversity (Chapter 9)	Clarkson and Woods
Hydrology, Flood Risk and Drainage (Chapter 10)	Delta Simons
Ground Conditions (Chapter 11)	Delta Simons
Minerals (Chapter 12)	Clover Planning
Cultural Heritage (archaeology and built heritage) (Chapter 13)	Lanpro
Transport (Chapter 14)	Transport Planning Associates
Noise and Vibration (Chapter 15)	Tetra Tech
Glint and Glare (Chapter 16)	Pager Power
Air Quality (Chapter 17)	Tetra Tech
Socio-Economics (Chapter 18)	Lanpro
Waste (Chapter 19)	Lanpro
Other Environmental Topics (Chapter 20) – Human Health; Electromagnetic Fields; Major Accidents and Disasters; Telecommunication, Utilities and Television and Light pollution (Chapter 20)	Coordinated by Lanpro
Volume 2- Technical Appendices	Coordinated by Lanpro

1.4 The Applicant

- 1.4.1 The Scheme is being developed by the Applicant. The Applicant is part of Island Green Power Limited (IGP), who is a leading international developer of renewable energy projects, established in 2013.
- 1.4.2 IGP has delivered 26 solar projects worldwide totalling more than 1GW of capacity. This includes 14 solar projects in the UK and Republic of Ireland. Their mission is to increase solar energy usage, making more renewable energy possible and saving thousands of tonnes of CO₂ in the process.
- 1.4.3 IGP are also progressing the West Burton Solar Project, which is within the same locality as the Scheme. Whilst the West Burton Solar Project is being run in parallel with the Scheme, it will be the subject of a separate DCO application and is therefore the subject of a separate PEIR. The statutory consultation periods for the two projects will be run in conjunction with each other.

1.5 Consultation

1.5.1 The importance of consultation is key to the Planning Act 2008 and is fundamental to the success of the Scheme. The Applicant has sought to engage with key stakeholders from an early stage to brief them on the Scheme, focus the environmental studies and to identify specific issues. Consultation is an ongoing process during the development of the Scheme. It enables mitigation measures to be incorporated into the design and enhance environmental benefits. The publication of the PEIR is a key part of the consultation process.

1.5.2 There are a large number of stakeholders with different interests in the Scheme which require different levels and forms of consultation. The types of stakeholders include landowners, local communities, statutory consultees and specialist interest groups. The consultation activities, therefore, have been tailored to be appropriate for the particular groups.

1.5.3 Stakeholder engagement for the Scheme is based on the following principles:

- To be open and transparent – To be open and honest about the proposals, sharing consistent information and messages with stakeholders;
- Clear and well-timed – Promote understanding of the Scheme, its objectives and development process;
- Proactive engagement – Seek to build relationships, support and mitigate risks;
- Building trust with stakeholders – Develop good relationships, listening and ensuring stakeholders feel valued when providing views and clearly showing how we have taken feedback on board; and
- Ensure appropriate statutory consultation is undertaken in compliance with requirements of the Planning Act 2008, EIA Regulations and associated guidance.

DCO Consultation Requirements

1.5.4 The DCO process sets out a number of statutory requirements regarding consultation. The Act requires applicants to carry out statutory consultation on their proposals ahead of a formal DCO submission. The requirements are:

- Section 42 of the Act requires the Applicant to consult with the ‘prescribed persons’ which includes consultation bodies such as Natural England, Environment Agency, Historic England, host authorities, neighbouring authorities and persons with interest in the land and those who may be affected by the Scheme.

- Section 47 of the Act requires the Applicant to consult with the local community. As part of this, a Statement of Community Consultation (SoCC) must be prepared which sets out how the applicant proposes to consult on the Scheme. The Applicant must consult with the host authorities on this document and have regard to their comments.
- The SoCC will also include how the PEIR document will be publicised and consulted on.
- Section 48 of the Act requires the Applicant to publicise the Scheme in the 'prescribed manner' in a national newspaper, The London Gazette, and local newspapers. The Section 48 notice also needs to be sent to prescribed consultees.
- Section 49 of the Act requires the Applicant to have regard to any relevant responses received to the consultation and publicity that is required by Sections 42, 47 and 48 of the Act.

Consultation to Date

- 1.5.5 A number of meetings have taken place with statutory consultees to introduce the Scheme and commence discussions on detailed matters relating to the Scheme which include:
- West Lindsey District Council (Officers and Members);
 - Lincolnshire County Council (Officers and Members);
 - Bassetlaw District Council (Officers and Members);
 - Nottinghamshire County Council (Officers);
 - Environment Agency;
 - Natural England;
 - Historic England; and
 - Nottinghamshire and Lincolnshire Wildlife Trusts.
- 1.5.6 The Applicant will undertake on-going consultation with the host authorities, the stakeholders identified above and other relevant consultees and stakeholders throughout the duration of the Scheme development and preparation of the ES.
- 1.5.7 Within each technical chapter of the PEIR there is further detail on any topic specific consultations that have taken place to date.

- 1.5.8 In respect of the local communities affected by the development, the Applicant has already undertaken a first stage of (non-statutory) public consultation throughout November and December 2021. Consultation is on-going with local communities and individual property owners where appropriate. A summary of the feedback received through the non-statutory consultation was made available to stakeholders via the project website. Responses to the consultations will be taken into account as part of the design process.
- 1.5.9 The Scheme was subject to EIA scoping with a Scoping Opinion issued on the 9th March 2022. In the preparation of the Scoping Report consultation was undertaken with key stakeholders where possible. The Planning Inspectorate consulted on the Scoping Opinion with the prescribed consultation bodies as listed in Schedule 1 of The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (as amended). Those responses were included with the Scoping Opinion issued by the Planning Inspectorate. Any key matters raised in those responses will be covered in the individual technical chapters where relevant.
- 1.5.10 All of the pre-application consultation that is undertaken on the Scheme will be described in the Consultation Report that will form part of the DCO application.

2 EIA Process and Methodology

2.1 Introduction

2.1.1 EIA is the process undertaken to identify and evaluate the likely significant effects of a proposed development on the environment and to identify measures to mitigate or manage any significant negative effects. The EIA should be informed by consultation with statutory consultees, other interested bodies and members of the public. The purpose of identifying significant effects is to ensure decision makers are able to make an informed judgement on the environmental impacts of a proposal. The PEIR provides the preliminary environmental information obtained and assessed as part of the EIA.

2.1.2 This chapter of the PEIR explains the approach taken to assess and understand the potential environmental effects of the Scheme identified to date in the EIA process that the Applicant is undertaking. The approach taken in this PEIR is, where appropriate, to adopt relevant methodologies used in EIA and to report on the latest findings in the form of a draft/emerging ES. Any ES must contain the information specified in Regulation 14(2) of the EIA Regulations and must meet the requirements of Regulation 14(3) of the EIA Regulations. It must also include any additional information specified in Schedule 4 of the EIA Regulations which is relevant to the specific characteristics of the particular development or type of development and the environmental features likely to be significantly affected.

2.1.3 The EIA assessment, as reported in the PEIR, is being undertaken based on a number of related activities which will include the following:

- Consultation with the relevant statutory and non-statutory consultees throughout the process;
- Consideration of local, regional and national planning policies, legislation and guidelines as relevant to EIA;
- Consideration of technical standards for the development of significance criteria;
- Review of secondary information, previous environmental studies and publicly accessible databases and information;
- Physical surveys and monitoring;
- Desk based assessment;
- Computer modelling (where appropriate and proportionate); and
- Expert opinion.

2.1.4 Regard has been had to the following documents:

- Planning Inspectorate Advice Note 3: EIA Consultation and Notification August 2017 Version 7;
- Planning Inspectorate Advice Note 7: Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements June 2020 Version 7;
- Planning Inspectorate Advice Note 9: Rochdale Envelope July 2018 Version 3;
- Planning Inspectorate Advice Note 11: Working with Public Bodies in the Infrastructure Planning Process November 2017 Version 4; and
- Planning Inspectorate Advice Note 17: Cumulative Effects Assessment August 2019 Version 2.

2.1.5 The main objective of the EIA process is to present a clear, impartial assessment of the likely significant beneficial and adverse environmental impacts of the proposed development including direct or indirect effects.

2.2 EIA Scoping

2.2.1 The issues to be addressed within the PEIR (and the subsequent ES) were identified in the EIA Scoping Report submitted to the Planning Inspectorate (PINS) in January 2022. As noted above, the Secretary of State's (SoS) Scoping Opinion was received on 9th March 2022 (see **Appendix 2.1**). The Scoping Opinion confirmed which topics were scoped in and out of the EIA. Key issues raised in the Scoping Opinion are set out in the technical chapters in the PEIR and are being considered throughout the EIA process.

2.3 Assessment of Impacts

2.3.1 Each environmental topic to be considered in the PEIR will be given a separate chapter. Each of the technical assessments for the environmental topics has taken the following approach.

Baseline Conditions

2.3.2 In order to evaluate likely significant environmental effects, existing baseline conditions have been understood through a combination of desktop and physical surveys, and monitoring. This involves the Scheme Sites as well as the surrounding area. Once the baseline conditions are established, this is used to assess the sensitivity of receptors on and near the Scheme and what changes may take place during the construction, operation and decommissioning of the Scheme. Any effects

on these receptors will be assessed in full in the ES and assessments undertaken to date are reported on in the PEIR.

2.3.3 The data collected to establish the baseline conditions has been gathered from a variety of sources, including the following:

- Physical surveys and monitoring;
- Publicly accessible records and databases; and
- Environmental survey information that has been submitted for other development in the area.

2.3.4 The methods of data collection have been discussed with the relevant statutory and non-statutory consultees as appropriate. These discussions will be on-going through to submission of the DCO application. Consideration is also being given to how the baseline conditions will evolve, (the 'future baseline').

Spatial Scope

2.3.5 The topic chapters in the PEIR describe and justify the spatial scope, including the rationale for determining the specific area within which an assessment is focussed. The study areas are usually defined by the nature of potential impacts and the locations of potentially affected environmental resources or receptors.

Temporal Scope: Assessment Years

2.3.6 *Construction Phase.* For the purposes of the assessment, the construction phase effects are effects that result from activities during site preparation / enabling works, construction, and commissioning activities e.g. effects such as construction traffic, noise and vibration from construction activities, dust generation, site runoff, mud on roads, and the visual intrusion of plant and machinery on site. Some aspects of construction will last longer than others.

2.3.7 *Operational Phase.* These are effects associated with operation and maintenance activities during the generating lifetime of the Scheme e.g. the effects of the physical presence of the solar arrays and their use and maintenance. Timescales associated with these effects will be defined. In EIA terms, effects can be defined as short term (lasts for up to 12 months); medium term (lasts for 1 - 5 years); long term (more than 5 years); reversible long-term effects (long-term effects, which last for the lifetime of the Scheme, but which cease once it has been decommissioned; and permanent effects (those which cannot be reversed following decommissioning).

2.3.8 *Decommissioning Phase.* Effects are those arising from activities for the duration of the decommissioning stage and will likely be short term e.g. site traffic, noise and vibration from decommissioning activities, dust generation, site runoff etc.

2.3.9 *Assessment Years.* The EIA will consider the environmental impacts of the Scheme at all three stages described above. The operational period for the Scheme is anticipated to be approximately 40 years and this time period will be assessed in the EIA (and within this PEIR).

2.3.10 The 'existing baseline' year for assessment will be 2021 as this is the date on which baseline studies for the project were commenced. A future baseline will also be considered within the EIA (and this PEIR) for certain assessments. The future baseline considers factors that will change the current baseline, without the Scheme proceeding. Committed developments are one factor that can influence the future baseline ('committed developments', which are those with current planning permission or allocated in adopted development plans). The potential effects of the Scheme will be considered against both the current baseline and the future baseline in the EIA.

2.3.11 The assessment scenarios that are being considered for the purposes of the EIA (and considered in the PEIR) are:

- Existing Baseline 2021.
- Construction 2024 – 2026.
- Operation 2026. It has been assumed for the purposes of the EIA that the Scheme will be operational by end of Q1 2026.
- Decommissioning 2066. This would be the year when decommissioning of the Scheme would commence and has been based on a typical 40-year operational lifetime for solar projects. It has therefore been assumed for the purposes of the EIA that the Scheme will be decommissioned in approximately 2066. However, the DCO will not specify a specific decommissioning date.
- A future year of 2041 (15 years post opening of the Scheme) will be considered for the landscape and visual assessment i.e. 15 years after opening, which is the typical period for the maturation of landscape planting.

Assessment of likely effects

2.3.12 In order to provide for a consistent approach to the description of significance, a standard methodology is applied in instances where no specific criteria are required by technical guidance. The methodology for determining sensitivity will be assessed using the following criteria:

Table 2.1: Sensitivity Methodology

Sensitivity	Definition
High	The receptor or resource has little ability to absorb the change without fundamentally altering its present character or it is of international or national importance.
Medium	The receptor or resource has moderate capacity to absorb the change without significantly altering its present character or is of high and more than local (but not national or international) importance.
Low	The receptor or resource is tolerant of change without detrimental effect, is of low or local importance.
Negligible	The receptor or resource can accommodate change without material effect, is of limited importance.

2.3.13 The methodology for determining the impact magnitude will be assessed using the following criteria:

Table 2.2: Magnitude Criteria

Magnitude	Definition
Major	The total loss or major change/substantial alteration to key elements/features of the baseline (pre-development) conditions, such that the post development character/composition/attributes will be fundamentally changed
Moderate	Loss or alteration to one or more key elements/features of the baseline conditions, such that post development character/composition/attributes of the baseline will be materially changed
Minor	A minor shift away from baseline condition. As change arising from the loss/alteration will be discernible/detectable but not material. The underlying character/composition/attributes of the baseline condition will be similar to the pre-development circumstances/situation
Negligible	Very little change from baseline conditions. The change will be barely distinguishable and approximating to a non-change situation
Neutral	No change from baseline conditions

2.3.14 The general matrix to determine effects is shown below:

Table 2.3: Degrees of Significance

Sensitivity	High	Medium	Low
Magnitude			
High	Major	Major/Moderate	Moderate
Medium	Major/Moderate	Moderate	Moderate/Minor
Low	Moderate	Moderate/Minor	Minor
Negligible	Moderate/Minor	Minor	Negligible
Neutral	Neutral	Neutral	Neutral

2.3.15 As noted above, the PEIR stage does not represent the final assessments, and whether an activity leads to a significant effect or the levels of significance of effects in many cases, and any mitigation required as a result, will not be concluded at this stage. Each technical chapter of the PEIR will explain the preliminary findings of the EIA process, give reasons as to why final conclusions cannot be reached at this stage, but also set out what on-going assessment work is taking place and how the final assessments will be concluded in the ES.

In-combination and Cumulative effects

2.3.16 The in-combination effects which will be assessed are:

- The combination of individual effects, for example, the combined effects of noise, dust and visual effects on a particular receptor;
- The combination of individual topics, for example, the combined effects of climate change on ground conditions;
- The combination of different works of the Scheme on a particular receptor for example, the in-combination effects of the construction of the cable route and the energy storage at the same time; and
- The combined effects of the three generating stations (i.e Cottam 1, 2 and 3).

2.3.17 A Summary table will be provided in the ES which sets out the in-combination effects for the Scheme as a whole.

2.3.18 In accordance with EIA Regulations, the ES will also need to give consideration to the cumulative effects of the Scheme which will consist of the combined effects of the Scheme with other significant and relevant committed proposals within the vicinity of the Scheme. The Planning Inspectorate's Advice Note 17 identifies a four-stage approach to the assessment of cumulative effects which will be followed. In summary the following process will be undertaken:

Stage 1 - Establish the Zone of Influence (ZOI) for each environmental aspect considered within the ES;

Stage 2 - Identify the 'other existing development and/or approved development' which fall into those ZOI and assign a level of certainty to them, subject to the level of detail that is available;

Stage 3 - Establish a shortlist of projects through the use of threshold criteria to ensure any projects which could have significant cumulative effects is taken forward; and

Stage 4 - Information gathering of the shortlisted projects. The information should be secured through a number of sources including LPA websites, Planning Inspectorate (if relevant), statutory bodies and relevant applicants/developers.

- 2.3.19 As noted above, the final list of shortlisted projects will be agreed with the relevant statutory bodies and LPA's in due course including through the statutory consultation stage. At the PEIR stage the applicant has identified a long list of potential projects that may be required to be taken forward in any cumulative assessment. This is provided at **Appendix 2.2**. Notable projects in close proximity to the Scheme are:
- West Burton Solar Project (currently same timescales as the Scheme); and
 - Gate Burton Energy Park (EIA scoping opinion issued December 2021).
- 2.3.20 Notably, the Scheme's Cable Corridor partially overlaps with Gate Burton Energy Park's 'Grid Connection Corridor Options'. The West Burton Solar Project Cable Corridor options also overlay the Gate Burton Energy Park's 'Grid Connection Corridor Options' very closely.
- 2.3.21 The Applicant and the developer progressing the Gate Burton scheme have worked collaboratively in respect of the overlap area (or 'Shared Grid Connection Corridor'). The land comprises an area within which the Gate Burton project will provide a connection to Cottam Power Station; the Cottam Solar Project will provide a connection to Cottam Power Station; and the West Burton Solar Project will provide a connection to West Burton Power Station. Given the proximity of the proposed schemes and a common grid connection area, the developers have worked collaboratively on design development and environmental avoidance mitigation to maximise opportunities for reducing overall environmental and social effects, in particular on communities in proximity to the grid connection corridor and on known ecological and archaeologically sensitive areas adjacent to the River Trent.
- 2.3.22 The installation of common elements that will accommodate three cable connections in the future would provide the potential for environmental and community benefit by substantially reducing the amount of disturbance and levels of construction activity in the area. The three Schemes are shown on the cumulative sites plan at **Appendix 2.3**, which indicates the potential area of overlap. This collaborative approach facilitates the ability to reduce environmental impacts through the following activities:
- Site survey, utility identification, site set out, fencing and security;
 - Provision of reduced numbers of construction accesses
 - Common construction routing options to grid connection working areas.

- Common construction compound and compound set up;
- Topsoil strip in sections and storage;
- Mark-out trench alignment;
- Excavation and installation of jointing pit;
- Use of common jointing pit dimensions;
- Installation of launch and exit pits for the River Trent directional drill;
- Trench excavation and placement of protective layer;
- Installation of cable ducts, either laid within the trench or via directional drill;
- Trench and jointing pit backfill and reinstatement.

2.3.23 The above activities will be subject to a single (common) environmental assessment to be included in all three ES's at the DCO application stages. Approval will be sought for the above activities within each of the three DCOs.

2.3.24 As part of their response to EIA scoping, Lincolnshire County Council requested that:

"A county-level alternative assessment area should be applied which as a minimum should consider scope for connection into the National Grid at the locations proposed by the registered NSIP solar projects, and with specific consideration of agricultural land impacts."

2.3.25 It is a fact that grid connection offers from West Burton and Cottam Power stations have been made available to the market and the developers of the Scheme, West Burton Solar Project and Gate Burton Energy Park are responding to this. The land at Mallard Pass Solar Park and Heckington Fen Solar Park are related to different points of connection and the developers of those projects have taken up grid offers. As noted above, grid connection availability is the key locational factor for solar projects as the further away from the grid connection point the array site is, the environmental factors can become more complex and a project becomes more costly. This point is further explained in **Chapter 5** of the PEIR. Notwithstanding, ongoing discussion is taking place with Lincolnshire County Council over the approach to cumulative assessment in respect of impacts on agricultural land, and this will be addressed in the ES at the DCO application stage.

2.3.26 More broadly, each technical chapter of the final ES will assess the potential for significant cumulative effects. At the PEIR stage, due to the information currently available, a high-level review has been undertaken and where relevant within each

topic chapter, commentary has been provided on the likelihood of which other developments may give rise to cumulative effects in combination with the Scheme.

Mitigation Measures

- 2.3.27 Paragraph 7 of Schedule 4 of the EIA Regulations notes that an ES should include “A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset and should cover both the construction and operational phases.”
- 2.3.28 Mitigation measures specified can relate to both methods of construction or particular design elements, that are to be incorporated within the completed Scheme. At the PEIR stage and given that the design of the Scheme continues to evolve, where mitigation has been identified it will be described. Notwithstanding, in many cases, because assessments have not been completed, the need for mitigation may not have been identified or the preferred mitigation measure may not have been selected.
- 2.3.29 Many mitigation measures will become integral to the design of the Scheme (‘embedded mitigation’). Where impacts cannot be avoided, even with embedded mitigation, further measures will be identified in order to assist in the reduction of effects to acceptable levels. Embedded mitigation, within the latest Scheme layouts, is described in **Chapter 5 Alternatives and Design Evolution**.

Consideration of Alternatives

- 2.3.30 Regulation 14(2)(d) of the EIA Regulations requires an ES to include “a description of the reasonable alternatives studied by the applicant, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the options chosen, taking into account the effects of the development on the environment”.
- 2.3.31 Alternatives in respect of site selection, alternative cable routes and alternative design options is reported in **Chapter 5** of the PEIR. Further details of alternatives and options considered between PEIR and submission of the DCO application will be provided in the ES that accompanies the DCO application.

Summary

- 2.3.32 The assessments provided in this PEIR are preliminary. The design evolution of the scheme is continuing and the feedback from the statutory consultation stage and ongoing discussions with stakeholders will inform further assessment work to be



ultimately reported in the ES which is submitted with the DCO application. As such, different conclusions about the significance of effects may be reached in the ES at the DCO application stage.

3 Development Site

3.1 Introduction

3.1.1 This chapter describes the proposed development Site for the Scheme and its context. The Development Site comprises the following elements, which are described below:

- Sites for built development (Section 3.2 below); and
- Cable route corridors (Section 3.3 below).

3.1.2 This chapter is supported by site plans and figures contained in **Appendix 3.1**.

3.2 Sites for Built Development

3.2.1 The Sites identified for built development, namely, solar panels, sub-stations and energy storage for the Scheme are located within a 19km radius of the grid connection at the former Cottam Power Station.

3.2.2 Cottam 1 is made up of a number of sites / fields clustered within an area of countryside centred around the village of Coates in the District of West Lindsey. Cottam 2 sits to the north of Cottam 1 and is located to the east of the village of Corringham. Cottam 3 sits to the north of Cottam 2 and is split in to two areas:

- Cottam 3a, to the north-east and south-east of the village of Blyton; and
- Cottam 3b, to the east of Pilham.

Cottam 1 (CO1)

3.2.3 **Size:** 894ha

3.2.4 **Use:** The entirety of the Cottam 1 is in agricultural use. Isolated parts of the landholding appear to be used for storing materials associated with farming.

3.2.5 **Features:** The topography at Cottam 1 is relatively flat and the development Sites are predominantly well screened from their immediate surroundings by tall hedges around the boundaries of the Site.

3.2.6 The fields are generally large and typically have dividing hedgerows. There are only isolated trees outside of field margins. The Site is interspersed with other landholdings that accommodate farmsteads. The Site benefits from existing farm access tracks and field accesses.

3.2.7 The River Till meanders in a predominantly north/south direction across the western portion of the landholding. In some areas the river comprises part of the red line

area identified, and in others it adjoins the boundary. The banks of the river are lined with trees. A section of river, joining the River Till, in the north-eastern portion of the landholding, appears to have been canalised. Where this has taken place there are wide open river banks with only low lying vegetation.

- 3.2.8 There are many woodland blocks adjoining and within close proximity to the eastern portion of the landholding. Overhead lines cross parts of the Site.
- 3.2.9 **Settlements and Roads:** There is a chain of villages on the B1398, which runs north/south to the east of the Sites. The villages within close proximity of the Site are Glentworth, Fillingham, Ingham, Cammeringham, Brattleby, Aisthorpe and Scampton.
- 3.2.10 There is also a chain of villages on the B1241, running north/south to the west of the Site. The closest villages are Kexby, Willingham by Stow, Normanby by Stow, Stow, Sturton by Stow and Bransby.
- 3.2.11 Thorpe Lane runs along the southern edge of the landholding, connecting the settlement of Thorpe in the Fallows (with around five dwellings in total, with some slightly offset from the Site) to Sturton by Stow, to the west, and Brattleby, to the east.
- 3.2.12 Ingham Road, turning into Stow Lane runs east/west through the centre of the landholding, connecting the villages of Stow and Ingham. Part of the Site boundary adjoins the road. The settlement of Stow Pasture lies on this road, comprising around seven dwellings. The Site boundary adjoins the gardens of some of these properties and is in close proximity to others.
- 3.2.13 The small settlement of Coates, comprising around ten houses is accessed off the Ingham Road, and lies within the centre of the landholding area. Whilst the settlement is in the centre of the landholding, the closest Site boundary to any dwelling is over 500m. The settlement also contains the historically important St Edith's Church.
- 3.2.14 The closest larger settlements are Gainsborough, approximately 7km north-west of the landholding, and Lincoln, approximately 9km south-east of the landholding. The landholding is situated in the centre of a 'square' of A roads: The A15, A57, A156 and A631. The closest of these, the A15, is approximately 4km east of the landholding.
- 3.2.15 **Railway Lines:** The railway line to the west of the landholding, connecting Lincoln and Gainsborough is over 3km from the Site.
- 3.2.16 **Public Rights of Way:** There are public footpaths and bridleways running alongside and through the Site. The most notable of these are:

- The public footpath that connects Ingham, to the villages of Coates and Stow Pasture 'Stow/83/1' (part of which runs through the Site);
- The bridleway that connects Thorpe in the Fallows to Ingham Road 'Camm/31/1' (part of which runs through the Site);
- The bridleways extending north-west from Ingham, running alongside the Site: 'Fill/86/1' and 'Fill/85/2';
- The public footpath 'Stur/73/1' that extends to the east of Sturton by Stow terminates at the Site; and
- The public footpath running north from Broxholme 'TLFe/32/1' extends to Thorpe Lane (which runs along the south of the Site) joins the Site boundary.

3.2.17 **Power Stations:** The decommissioned Cottam Power Station is around 8km from the Site.

3.2.18 **Airfields:** There are airfields in the surrounding area including Scampton around 3.5km to the south-east of the landholding; and Sturgate around 3.5km to the north-west of the Site.

3.2.19 **Rivers:** The River Till meanders in a predominantly north/south direction across the western portion of the Site. In some areas the river comprises part of the red line area identified, and in others it adjoins the boundary. The banks of the river are lined with trees. A section of river, joining the River Till, in the north-eastern portion of the landholding, appears to have been canalised. Where this has taken place there are wide open river banks with only low lying vegetation.

3.2.20 **Woodland:** There are many woodland blocks adjoining and within close proximity to the eastern portion of the Site.

3.2.21 **Political Planning Boundaries:** The Site is distributed across the parishes of: Fillingham, Willingham, Stow, Cammeringham, Brattleby and Sturton by Stow. The Site also adjoins the parishes of Thorpe in the Fallows, Kexby and Glentworth.

Historic designations

3.2.22 **Conservation Areas:** A number of the villages on the B1398, to the east of the Site, accommodate conservation areas. The villages with conservation areas are Hemswell, Glentworth, Fillingham, Ingham, Brattleby, South Carlton and Burton-by-Lincoln.

3.2.23 In addition, the village of Springthorpe, south of the Site at Corringham, has a conservation area. There is also a small conservation area in the village of Saxilby.

- 3.2.24 **Listed Buildings:** There are a considerable number of listed buildings in the settlements around the Site.
- 3.2.25 **Archaeology:** There are two Scheduled Ancient Monuments (SAMs) in the centre of the Area, within the village of Coates, and a SAM adjoining the Site to the south.
- 3.2.26 Consideration of the setting of these SAM's and any proposed setbacks from the or other mitigation measures are set out in **Chapter 13 Cultural Heritage** of the PEIR.

Landscape designations

- 3.2.27 **Areas of Great Landscape Value (AGLV):** There is an AGLV which runs along the chain of villages on the B1398, to the east of the Sites. It extends on average between 500-900 metres from the road to the west. This AGLV comprises the B1398 'Cliff Road' and its immediate views over the landscape to the west. The Sites are generally over 1.5km west of the designation, however the undulating shape of the designation around the village of Fillingham means the closest landholding at Cottam 1 is 200 metres from the designation.
- 3.2.28 There is an AGLV designated around the town of Gainsborough, which encompasses woodland and surrounding farmland. The impact of the Scheme on the AGLVs and the setting of the AGLVs is set out in **Chapter 8 Landscape and Visual** of the PEIR.

Ecological designations

- 3.2.29 **Biodiversity improvement areas:** A significant portion of the Site is identified by Central Lincolnshire as either an opportunity for creation or an opportunity for management as part of the ecological network.
- 3.2.30 Opportunities for Biodiversity Net Gain are outlined in **Chapter 9 Ecology and Biodiversity** and a detailed Biodiversity Net Gain assessment will be carried out in due course to support the DCO application. It is anticipated that a significant gain will be possible for area based, linear and water habitats due to the large scale reversion of arable land to permanent grassland.
- 3.2.31 **Sites of Special Scientific Importance (SSSI):** There are none within close proximity to the Site.
- 3.2.32 **Special Areas of Conservation (SAC):** There are none within close proximity to the Site.
- 3.2.33 **Special Protection Areas (SPA):** There are none within close proximity to the Site.
- 3.2.34 **Local Wildlife Sites (LWS):** There is a single wildlife site – 'Willingham to Fillingham Road Verge LWS'. It is located along road verges within the red line boundary of the Site.

Geological designations

- 3.2.35 **Minerals safeguarding areas:** The majority of the Site at Cottam 1 to the north of the woodland 'Normanby Gorse', west of Normanby by Stow, is designated as a Sand and Gravel Area of Search in the Lincolnshire Minerals Local Plan. There are small parts of the Cottam 1 Site which also have this designation, around Lowfield farm and the corner of the field on the edge of the Site next to the bridge leading to Sturton by Stow from Thorpe in the Fallows.
- 3.2.36 The entirety of the Site is designated as a Petroleum Exploration Development Licence (PEDL) Block.

Flood Risk and Drainage designations

- 3.2.37 **Flood Risk:** Small parts of the Site are located in flood zones 2 and 3 and are at risk from Surface Water flooding.

Cottam 2 and 3 (CO₂ & CO₃)

- 3.2.38 **Size:** Cottam 2 is 132ha. Cottam 3 is 244ha.
- 3.2.39 **Use:** The entirety of the Sites are in agricultural use. This includes an area which appears to be used for storage in relation to farming.
- 3.2.40 **Features:** The Site at Cottam 2 is bounded by Corringham Beck to the north-west, and Yewthorpe Beck to the east. Corringham Beck appears to be canalised, with wide banks with only low vegetation. Yewthorpe Beck is a meandering river with established vegetation and trees lining its banks. There is a farmstead, and a house which are surrounded by the Site. The land is relatively flat and is predominantly well screened from its immediate surroundings by tall hedges around the boundaries of the Sites. The fields are generally large and typically have dividing hedgerows. There are only isolated trees outside of field margins. The Site benefits from existing field accesses. Overhead lines cross parts of the Site.
- 3.2.41 Part of the Site at Cottam 3a comprises a former airfield. Two former runways running north-west/south-east and north-east/south-west cross the Site. Their positioning is still visible from aerial imagery. Kirton Road (B1205) runs along the south of the Site. Most of the boundary with Kirton Road benefits from reasonably well-established hedges. There are sections with lower hedges.
- 3.2.42 The remainder of the former airfield, parts of which adjoin the Site, and parts of which are surrounded by the Site, are used for motorsport and storage and distribution. There is also a house next to the storage and distribution area, which adjoins the north-western part of the Site. The Site benefits from vehicular access from Kirton Road, which is shared with these other land uses. There are two isolated houses to the south of the B1205 in the proximity of the Site.

- 3.2.43 The A159 Laughton Road runs north/south along the western extent of the Site. There is reasonably well established hedging with trees along the boundary.
- 3.2.44 The village of Blyton is approximately 250 metres to the south-west of Cottam 3a. Properties from the village may have views towards the Site. A smaller number of these towards the northern edge of the village may have views of the western extent of the Site. There are scattered isolated dwellings to the north of the landholding, all more than 500 metres from the Site boundary.
- 3.2.45 The fields are generally large and some have dividing hedgerows. There are only isolated trees outside of field margins. Overhead lines cross parts of the Site.
- 3.2.46 The landholding at Cottam 3b comprises medium-large agricultural fields, approximately 400 metres east of the village of Pilham. A trainline runs along the northern border of the Site.
- 3.2.47 **Settlements and roads:** The Sites are situated approximately 5km to the east/north-east of Gainsborough. There are smaller villages between Gainsborough and the sites, including the closest villages of Blyton and Corringham. The villages of Springthorpe, Pilham, Laughton, Scotton and Northorpe are located in close proximity of the Site. There is a chain of settlements on the B1398, which runs north/south to the east of the Sites. The settlements within close proximity of the Site are the villages of Hemswell, Willoughton, Blyborough, Grayingham and the market town of Kirton in Lindsey.
- 3.2.48 The main roads in the surrounding area are the A159 Laughton Road which runs north/south along the western extent of Cottam 3; The A631 Corringham Road, which runs to the south of Cottam 2; and the A15 which runs north/south to the east of the Sites, beyond the chain of villages along the B1398.
- 3.2.49 **Railway Lines:** The railway line between Gainsborough and Kirton in Lindsey runs in a north-east/south-west direction in between the landholdings of Cottam 3a and 3b.
- 3.2.50 **Public Rights of Way:** There are no public footpaths or bridleways within close proximity of the Cottam 2 or Cottam 3a landholdings, although the public footpaths of note are:
- The public footpath to the north of Cottam 3 'Blyt/32/1' around 500 metres to the west of the Site where there may be views across the landscape to the Site.
 - The public footpath to the north of Corringham village 'Corr/22/1', which is around 500 metres to the west of the Cottam 2 Site. It appears that the footpath may afford views across the landscape to the Site.

- 3.2.51 There is a public footpath 'Phil/20/1' which runs alongside and through the Cottam 3b site in an east/west direction, through the south of the Site.
- 3.2.52 **Power Stations:** West Burton Power Station is around 10km from Cottam 2 and 11km from Cottam 3. Cottam Power Station is around 14km from Cottam 2 and 16km from Cottam 3.
- 3.2.53 **Airfields:** The closest airfield is Sturgate, approximately 3km south of Cottam 2.
- 3.2.54 **Rivers:** Cottam 2 is bounded by Corringham Beck to the north-west, and Yewthorpe Beck to the east. Corringham Beck appears to be canalised, with wide banks with only low vegetation. Yewthorpe Beck is a meandering river with established vegetation and trees lining its banks.
- 3.2.55 **Woodland:** There is limited woodland in the area surrounding the Sites, save for Laughton Forest, which is around 2km north and north-west of Cottam 3.
- 3.2.56 **Other:** Cottam 3 is surrounded by an ex-airfield which is now used for motorsport and storage and distribution.
- 3.2.57 **Political Planning Boundaries:** The Sites are split over four parishes: Corringham; Pilham; Blyton; and Laughton. The Cottam 3a Site adjoins the parish of Northorpe.

Historic designations

- 3.2.58 **Conservation Areas:** There is only one conservation area close to the area, within the village of Hemswell, to the east of Cottam 2. Potential impacts of the Scheme on the conservation areas and their settings are considered in **Chapter 8 Landscape and Visual** and **Chapter 13 Cultural Heritage** of the PEIR.
- 3.2.59 **Listed Buildings:** There are a couple of listed buildings in the rural area surrounding Cottam 3.
- 3.2.60 **Archaeological:** There are three SAMs in the area between the landholdings. None of these are in close proximity to the Sites.

Landscape designations

- 3.2.61 **Areas of Great Landscape Value (AGLV):** There is an AGLV which runs along the chain of villages on the B1398, to the east of the Sites. It extends on average between 500-900 metres from the road to the west. This AGLV comprises the B1398 'Cliff Road' and its immediate views over the landscape to the west. Cottam 2 is around 4km west of the designation.

- 3.2.62 There is an AGLV designated around the town of Gainsborough, which encompasses woodland and surrounding farmland. The closest land parcel of Cottam 2 is over 2km east of this designation.
- 3.2.63 The third AGLV of note comprises Laughton Woods AGLV, which is located to the north and west of Cottam 3. The closest part of Cottam 3 to the AGLV is around 1km, from the northernmost extent.
- 3.2.64 The impact of the Scheme on the AGLVs and the setting of the AGLVs is set out in **Chapter 8 Landscape and Visual** of the PEIR.

Ecological designations

- 3.2.65 **Biodiversity improvement areas:** There are no Biodiversity Opportunity Areas designated on the Sites, although an area to the north of Cottam 3 is identified for possible creation.
- 3.2.66 **Sites of Special Scientific Importance (SSSI):** There are SSSIs within Laughton Forest: Laughton Common SSSI; Scotton and Laughton Forest Ponds SSSI; Scotton Beck SSSI; Scotton Common SSSI; and Tuetoes Hills SSSI. Cottam 3 is in the impact risk zones for those SSSIs. Cottam 2 is outside of any impact risk zones.
- 3.2.67 **Special Areas of Conservation (SAC):** There are none within close proximity of the Sites.
- 3.2.68 **Special Protection Areas (SPA):** There are none within close proximity of the Sites.

Geological designations

- 3.2.69 **Minerals safeguarding areas:** The western third of Cottam 3 is designated as a Sand and Gravel Area of Search in the Lincolnshire Minerals and Waste Local Plan.
- 3.2.70 The fields to the west of Cottam 2 are designated as a Sand and Gravel Minerals Safeguarding Area.
- 3.2.71 The entirety of Cottam 2 and 3 are designated as a Petroleum Exploration Development Licence (PEDL) Block.

Flood Risk and Drainage designations

- 3.2.72 **Flood Risk:** A very small portion of Cottam 2 is in Flood Zone 3 and small parts are at risk from Surface Water flooding.

[Agricultural Land Use Classification \(ALC\)](#)

- 3.2.73 Initial draft ALC survey reports are appended to the PEIR at **Appendix 3.2** (dated May 2022). This indicates the following land grading within the full red line boundary

of the Cottam Sites - Grade 1 – 0%; Grade 2 – 2.0%; Grade 3a – 6.2%; Grade 3b – 91.7%. A breakdown of ALC per Site is also provided in the ALC report. Further soil sampling (including in-field carbonates testing) has been undertaken to supplement these reports and the samples are currently being processed. If the results become available during the statutory consultation period, and the results materially change the grading percentages above, the Applicant will update the information to be provided by way of an addendum to **Appendix 3.2**. The ES submitted with the DCO application will set out the survey results in full.

3.2.74 Built form will not impact the entirety of the land area within the red line boundary of the Scheme. As the design of the Scheme has evolved some areas of higher-grade agricultural land have been taken out of the Scheme and structures have been set back from Site boundaries generally, and for example, where there is the potential for impacts on residential amenity. As the Scheme design continues to evolve, the Applicant anticipates that the impact of the Scheme on Best and Most Versatile (BMV) agricultural land reported in the PEIR will be reduced even further. This will be set out at the DCO application stage.

3.2.75 In respect of the impacts on agricultural land quality relating to the cable routes. The cable route (and its length) for Cottam continues to be refined. At this stage, it could be in the region of 22 Km in length. A 25 metre working area is likely to be required during construction, with a lesser area being affected by intrusive works to install the underground cable. The impact on ALC will be addressed in the ES through consideration of the following:

- Natural England ALC high level mapping;
- limited land required for the cable route easements;
- the fact that once the cables have been constructed, the disturbed soils (having been protected during construction), will be re-instated; and
- farming practices can continue in these areas.

3.3 Cable Route Corridor Search Areas

3.3.1 The cable route corridors are shown on the plans in **Appendix 3.1**. The cable corridor as shown in the PEIR has been reduced and altered from the version submitted at the scoping stage, as further environmental assessments have been completed and conversations with landowners have advanced since then. There is still on-going assessment work in relation to the cable route which will inform the final corridor to be proposed in the DCO application.

3.3.2 The cable route corridor as shown in the PEIR links the Sites to the grid connection point running from Cottam Power Station north east towards Blyton. The majority

of the land within the corridor is agricultural land. Other land use types that the corridor crosses include the River Trent between Marton and Coates. There are some notable designations within the cable corridor including the Gilby medieval settlement and cultivation remains SAM which is located to the south of Pilham. The cable corridor goes around the north and west of Cottam Power Station. There are some small areas of the cable corridor which are located within Flood Zone 3 around the River Trent.

- 3.3.3 The voltage of the cables and the number of circuits will affect the width and number of cable trenches required. The range of typical cable trench widths is from 0.47m to 1.60m, with either one or two trenches anticipated to be required along the majority of the cable route. However, the width and spacing of the cable trenches may differ depending on environmental constraints, engineering requirements (for example, use of horizontal directional drilling or other trenchless techniques) or if crossing third party apparatus (e.g. railway lines).
- 3.3.4 In addition to the trenches, land will be required in the corridor for access and soil and cable 'lay down'. Construction compounds and access routes along the cable corridor will also be required. The likely temporary working area for the cable corridor is anticipated to be 25m in width.

4 Development Proposal

4.1 Development Summary

- 4.1.1 This chapter provides a description of the Scheme. The physical characteristics of the Scheme are described alongside the proposed programme. The key activities that will be undertaken during the construction, operation and decommissioning are included in this chapter and inform the technical assessments included in the PEIR.
- 4.1.2 The operational life of the Scheme is anticipated to be 40 years. Once the Scheme ceases to operate, the development will be decommissioned. A 40-year period for the operational phase of the development will be assessed in the EIA and reported in the ES accompanying the DCO application. However, as is typical for energy generation NSIPs, the DCO application will not seek a temporary or time limited consent.
- 4.1.3 The solar array Sites and associated substations and energy storage are to be connected to the National Grid at a substation at Cottam Power Station. The Scheme will connect to the National Grid substation via a new 400kV substation constructed as part of the Scheme to provide the connections to the various solar Sites at 132 or 33kV. The substations, cable connections and energy storage will be required for the duration of the Scheme. The substations and energy storage will be decommissioned and removed at the end of the lifetime of the Scheme but the underground cables are anticipated to be decommissioned in situ to minimise environmental impacts.
- 4.1.4 The solar panel installations within each of the three Sites will each have a generating capacity of more than 50MW and therefore each constitute an NSIP.
- 4.1.5 This chapter is supported by indicative layout plans for the solar array Sites at **Appendix 4.1**; the cable corridor plans; and indicative images of associated equipment.

4.2 Maximum Design Scenario

- 4.2.1 The DCO will be seeking to incorporate flexibility into the design of the Scheme which is supported through a number of the National Policy Statements on energy. The ES will consider two different design options for the solar panels.
- 4.2.2 The ES will employ a maximum design scenario approach reflecting the principle of the 'Rochdale Envelope'. This approach allows for a project to be assessed on the basis of maximum project design parameters i.e., the worst-case scenario in order to provide flexibility and take advantage of technological improvements, assessing

all potentially significant effects (positive or adverse) within the EIA process and reported in the ES.

4.2.3 As the design, environmental assessment and consultation processes (which run in parallel) evolve, the maximum parameters set out in the PEIR may change in order to deliver the best environmental outcomes for the Scheme. The design parameters have evolved since the submission of the Scoping Report.

4.2.4 Table 4.1 sets out the parameters that have been used for assessment by each of the technical topics in the PEIR to determine that disciplines significance. Each component is described in more detail in Section 4.3.

Table 4.1: Details of the design parameters used for the PEIR

Scheme Component	Parameter Type	Maximum Design Parameter
Solar Panels		
Tracking Panels	Maximum height of solar panels above ground level	4.5m
	Minimum height of the lowest part of the solar panel above the ground level	0.4m
	Indicative slope and orientation	+/- 60° aligned in north-south rows rotating east-west
	PV mounting structure	Metal frame securely fixed to the ground, other than where 'feet' may be required for archaeological protection, rather than intrusive works. Posts to be pile driven approximately 1.5-2m into the ground, dependant on ground conditions.
	Solar panel type	Bifacial monocrystalline panels
	Separation distance between rows	1 module in portrait tracker, between 4.5 and 6.5m pitch (pole to pole)

		2 modules in portrait tracker, between 9.5 and 12m pitch
Conversion Units/Inverters	Maximum dimensions	6.1m by 2.5m with a maximum height of 3.2m
	Materials	Units are housed in a container sitting on a concrete base or concrete feet.
	Fencing	Deer type wire and mesh and wooden post fencing with a maximum height of 2.5m
	Security	CCTV camera poles with a maximum height of 3m. Poles to be galvanized steel painted green
Substations		
400KV - Cottam 1	Maximum compound area	3.5ha
	Maximum height	13m to the top of the busbars
	Compound perimeter	2.6m high palisade fencing around the compound 2.5m high deer type wire mesh and wooden post fencing outside of the palisade fencing
	Access Track	Max 5m wide constructed of Permeable compacted hardcore
	Relay and Control Rooms – maximum dimensions	Maximum dimensions of 4.7m by 14.8m and maximum height of 3.85m
	33kV Switch Room – maximum dimensions	Maximum dimensions of 6m by 23.6m and maximum height of 3.85m
	Housing	Maximum height of 6m
132kV - Cottam 2 and 3	Maximum compound area	6.4m by 67.9m
	Maximum height	64.44m to the top of the busbars

	Compound perimeter	2.6m high palisade fencing around the compound 2.5m high deer type wire mesh and wooden post fencing outside of the palisade fencing
	Relay and Control Rooms – maximum dimensions	Maximum dimensions of 4.7m by 14.8m and maximum height of 3.85m
	Housing	Maximum height of 6m
Energy Storage		
Cottam 1 West Option A	Maximum compound area	6.58ha
	Maximum dimensions	16m by 3m and maximum height of 3.2m
	Compound perimeter	2.6m high palisade fencing around the compound. CCTV cameras will be installed (number to be confirmed)
	Access	4m wide. Parking bays will be provided (number to be confirmed)
Cottam 1 West Option B	Maximum compound area	15.34ha
	Maximum dimensions	16m by 3m and maximum height of 3.2m
	Compound perimeter	2.6m high palisade fencing around the compound. CCTV cameras will be installed (number to be confirmed)
	Access	4m wide. Parking bays will be provided (number to be confirmed)
Grid Connection Corridor	Maximum width	The range of cable trench widths will be from 0.47m to 1.60m, either 1 or 2 trenches are anticipated along the cable route.

		The cable corridor is expected to require a maximum of a 25m wide working area within the Grid Connection Corridor
	Maximum depth	2m subject to design and ground conditions
National Grid Connection	Point of connection	Connection from the 400kV substation to the existing Cottam Power Station substation

4.3 Proposed Built Development

4.3.1 The Scheme will consist of the infrastructure described as above and in further details below. Indicative layouts for each Site are provided at **Appendix 4.1**. Given the nature of the Scheme being made up of different Sites, there are variations to the proposed built development across the Sites to reflect the individual Site constraints and context. These variations are listed below.

Solar Panels

4.3.2 The panels will convert sunlight/daylight into electrical current. They are made up of a series of photovoltaic cells beneath a layer of toughened glass. Other PV technology is developing rapidly and may be available at the time of construction. The panel frames are typically built from anodised aluminium or steel.

Tracking panels

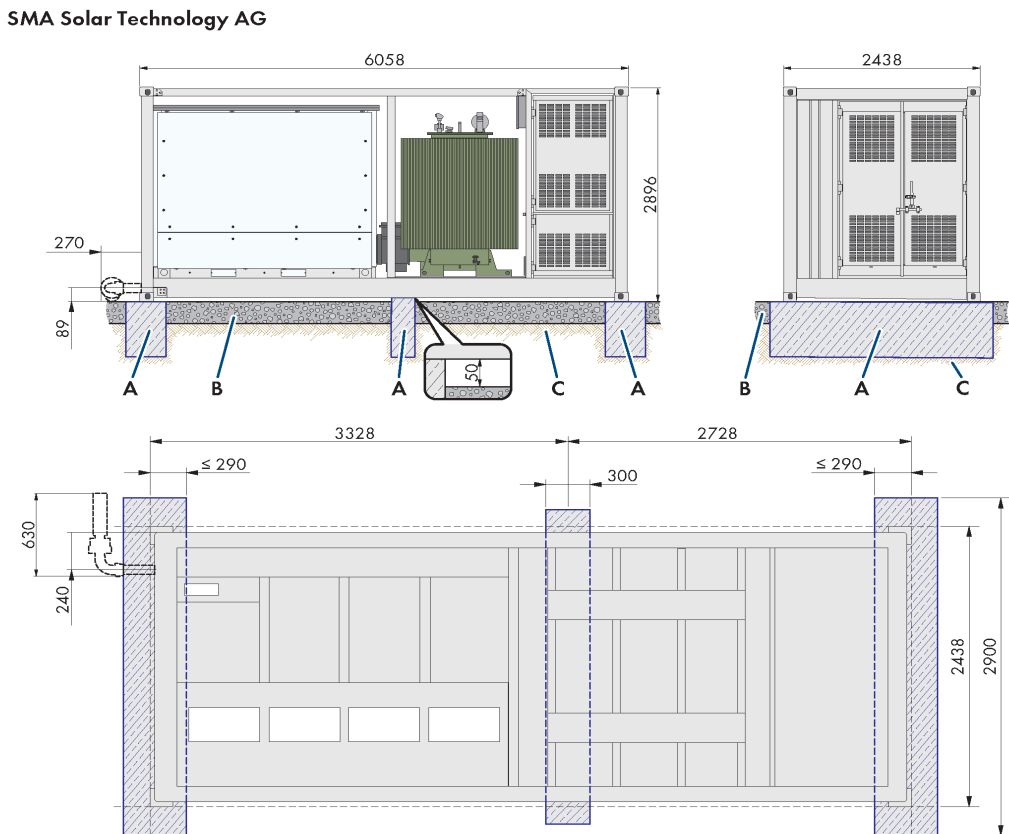
Photo 4.1 Typical tracking panels



Conversion Units/Inverters

4.3.3 These units contain the inverters, transformers and associated equipment to convert the Direct Current (DC) electricity produced by the arrays, into Alternating Current (AC) electricity required to import into the grid. An example image is shown below.

Image 4.2 Typical inverter unit



Position	Designation
A	Strip foundation
B	Pea gravel ground
C	Solid ground, e.g., gravel

Substations

4.3.4 There are two types of substations required across the project as noted in Table 4.1. The 400kV substation which will be located within Cottam 1 and will be air insulated and an example of this type of substation is shown in Photo 4.3.

Photo 4.2 Typical (large 400kV) power transformer



- 4.3.5 On the Cottam 2 and 3 Sites there are proposed to be 132kV substations. The technical details on these are set out in Table 4.1. An example photo is provided below.

Photo 4.3 Typical 132kV substation compound



Energy Storage

- 4.3.6 The candidate technology being assessed for the energy storage facility will be batteries. The battery energy storage is designed to provide peak generation and grid balancing services to the electricity grid. It will primarily allow excess electricity generated from the solar PV panels to be stored in the batteries and exported to the grid when required. It will also allow excess energy from the grid to be imported to the batteries. The energy storage will provide flexibility and grid reliability.
- 4.3.7 The role of electricity storage facilities are becoming increasingly well placed to deliver a number of ancillary services for the National Grid electricity system which is of growing importance in Great Britain. Recent and projected development of the electricity storage sector points to significant growth which will support the integration of projected renewable generation capacity onto the transmission system, through both collocated and standalone schemes.
- 4.3.8 The battery storage system will require heating, ventilation and cooling systems to ensure the efficiency of the technology. These features are integrated into the units

they are housed in. The battery system will comprise Bi-directional AC/DC inverters to control the charge of the batteries from the solar PV energy output or the charge of the batteries when drawing energy from the grid.

Image 4.4 Typical Energy Storage Units



4.3.9 The Applicant is proposing that the energy storage will be located within Cottam 1. There are two options presented in the PEIR:

- Cottam 1 West Option A showing one potential area for energy storage; and
- Cottam 1 West Option B showing three potential areas for energy storage.

Fencing and Security

4.3.10 The location of the fencing is still being determined and will be reliant on the final designs which will be provided in the DCO application. The design principles of the fencing will be deer wire mesh and wooden post fencing with a maximum height of 2.5m as illustrated in Photo 4.5.

Photo 4.5 Typical Deer Fencing



- 4.3.11 Pole mounted internal facing CCTV systems will be used around the perimeter of the operational elements of the Sites. It is anticipated that these will be galvanised steel painted green poles with a maximum height of 3m.
- 4.3.12 There will be palisade fencing around the substations and energy storage compound which will have a maximum height of 2.6m.

Lighting

- 4.3.13 Lighting is not required within the solar arrays. Lighting will be provided within substations and within the Energy Storage site to be used only in the event of it being required for maintenance and security purposes. Down lighting would be used.

Cable Corridor

- 4.3.14 The electricity generated by the Scheme will be imported and exported via new underground cables to the National Grid at the existing substation at Cottam Power Station.
- 4.3.15 The electricity generated by the solar panels from the Scheme will be exported via new underground cables to the National Grid at the existing substation at Cottam Power Station. These underground cables will also import and export energy between the energy storage and the National Grid.

- 4.3.16 The cable corridor as shown in the PEIR has been reduced and altered from the version submitted at the scoping stage, as further environmental assessments have been completed and conversations with landowners have advanced since then. There is still on-going assessment work in relation to the cable route which will inform the final corridor to be proposed in the DCO application.
- 4.3.17 The voltage of the cables and the number of circuits will affect the width and number of cable trenches required. The range of typical cable trench widths is from 0.47m to 1.60m, with either one or two trenches anticipated to be required along the majority of the cable route. However, the width and spacing of the cable trenches may differ depending on environmental constraints, engineering requirements or if crossing third party apparatus (e.g. railway lines).
- 4.3.18 In addition to the trenches, land will be required in the corridor for access and soil and cable 'lay down'. Construction compounds along this route will also be required. The likely working area for the cable route is anticipated to be 25m wide.
- 4.3.19 Any existing overhead power lines will be retained, and no new overhead lines will be required.

District Network Operation Connections

- 4.3.20 It is envisaged that local grid connections to the distribution network (operated by Northern Powergrid and Western Power Distribution) will be made for each of the energy generating stations.
- 4.3.21 These will allow each generating station to connect to the local grid network to obtain short-term auxiliary power to the substations to maintain operation in the event that there is a technical problem with the connection to the National Grid.
- 4.3.22 Discussions are ongoing with the DNOs about the best place for these connections for each Site. These are likely to be via existing 11kV or 33kV lines either crossing the Sites or in the surrounding area, depending on grid capacity.

4.4 Access

- 4.4.1 During the temporary construction phase, the following construction access points will be required.
- Cottam 1: 11 access junctions including:
 - 1 from Thorpe Lane;
 - 1 from Stow Lane;
 - 1 from Ingham Road;

- 2 from Fleets Lane;
 - 1 from South Lane;
 - 3 from Willingham Road;
 - 2 from an existing farm track to the west of Coates.
- Cottam 2: 1 access junction from the A631 to the east of Corringham;
 - Cottam 3: 2 access junctions from the B1205, to the east of Blyton.

4.4.2 Where construction vehicle accesses utilise existing agricultural access points or tracks, the access points will be formalised and widened if necessary. Swept path analysis will be included within the ES to demonstrate that they can operate safely.

4.4.3 All construction vehicles will access the Site via the A15, from either the M180 Motorway to the north, or the A46 to the south. From the A15, construction vehicles will take the following routes to the Site:

- Cottam 1 – either the A1500 Till Bridge Lane or Ingham Lane/Stow Lane;
- Cottam 2 – A631;
- Cottam 3 – B1205.

4.4.4 Construction accesses will be upgraded to form operational accesses, or additional access points will be provided. The indicative layout plans show potential access gates. On-going dialogue is taking place with the relevant highway authorities over operational access points and the position will be updated at the DCO application stage.

4.5 Construction, Operation and Decommissioning

Construction and Phasing

4.5.1 The Scheme currently has a grid connection date of 2029. However, it is possible that an earlier connection date may be obtained. The construction of the Scheme is proposed to be phased over a two-year period and subject to the DCO consenting process, the earliest construction may start is 2024.

4.5.2 The construction period will vary across the Sites and for the larger Sites there will be opportunities for having multiple construction crews working at the same time. The following timeframes are anticipated for the solar array elements of the Scheme:

- Cottam 1 –28 weeks

- Cottam 2 – 18 weeks
- Cottam 3 – 20 weeks

4.5.3 The energy storage construction period is likely to be 40 weeks in duration for Option A and likely to be around 80 weeks for Option B. There will be additional time for site preparation work with this likely to be done in parallel with the 400kV substation.

4.5.4 The 400kV substation will take in the region of 18-24 months to construct. Each 132kV substation will take in the region of 12 months to construct.

4.5.5 There will be temporary construction compounds required for the Sites and the grid connection works which is likely to be in the region of 12-18 months. An indicative plan of potential construction compound locations is provided at **Appendix 4.2**. The temporary construction compounds will comprise:

- Compound maximum dimensions will typically be 80m by 80m;
- Temporary portacabins for construction operatives (the dimension of the portacabins would vary and the maximum size for individual units is expected to be 10m by 3m with a typical maximum height of 3m);
- Perimeter security fencing with a typical maximum height of 3m;
- Parking area for construction and workers vehicles;
- Secure compound for storage;
- Temporary hardstanding;
- Wheel washing facilities;
- Temporary gated compound;
- Storage bins for recyclables and other waste; and
- Lighting will be required during construction periods but will be temporary in nature and normal working hours will be adhered to except in specified circumstances (as set out below).

4.5.6 Construction activities are likely to be carried out Monday to Friday 07:00-18:00 and between 08:00 and 13:30 on Saturdays. However, some activities may be required outside of these times (such as the delivery of abnormal loads, night time working for cable construction works in public highways or horizontal direction drilling activities). Where possible, construction deliveries will be coordinated to avoid HGV

movements during the traditional AM peak hour (08:00-09:00) and PM peak hour (17:00-18:00).

Construction Environmental Management Plan

- 4.5.7 Prior to the commencement of any phase of development a Construction Environmental Management Plan (CEMP) will be submitted to and approved by the relevant planning authority, and this will be secured by the Requirements in the DCO. The CEMP for each phase will be in accordance with the Outline CEMP which will be submitted as part of the DCO application. This will ensure the potential construction impacts are minimised.
- 4.5.8 A draft Outline CEMP is submitted as part of the PEIR and can be found in **Appendix 4.3**. The Outline CEMP will be updated and progressed alongside the design evolution process.
- 4.5.9 The CEMP outlines the allocated responsibilities, procedures and requirements for Site environmental management. It would include relevant Site-specific method statements, operating practices, and arrangements for monitoring and liaison with local authorities and stakeholders.
- 4.5.10 The Main Contractors undertaking the construction of the Scheme would need to adopt and comply with the CEMP, allocate environmental management responsibilities to a Site manager and ensure that all sub-contractors' activities are effectively managed in accordance with the CEMP.
- 4.5.11 If the Scheme and the West Burton Solar Project and Gate Burton Projects progress in parallel, the Applicant will seek to plan and co-ordinate any construction activities, via the CEMP and Construction Traffic Management Plan, to reduce environmental impacts, if possible and where practicable.

Operation

- 4.5.12 Once the Scheme is operational, traffic generated by it will be limited to that associated with occasional maintenance work.
- 4.5.13 Movement within the Sites will be by way of quad bike or small, farm utility vehicle. Personnel will visit the Sites from time to time to check the apparatus. No on-site staff will be required to operate the Scheme but there will be limited staff facilities located in the control rooms associated with the 400 and 132kV substations. Some permanent equipment for monitoring the Sites will be located in the Relay and Control Room. Whilst this would typically be accessed remotely, it would be available for occasional physical access during routine visits.
- 4.5.14 Noise impact is largely limited to the construction phase of the development. There would be a small amount of noise generated by the vehicle movements across the

site coupled with the installation of equipment. There will be some noise transmitted from the transformers, substations, tracking panels and energy storage but these levels are predicted to be low and are addressed in full in the noise Chapter.

Decommissioning

- 4.5.15 The decommissioning of the Scheme is expected to take 12-24 months and will be undertaken in phases. A Decommissioning Plan will be prepared will be submitted to and approved by the relevant planning authority prior to decommissioning, and this will be secured by the Requirements in the DCO. The Decommissioning Plan for each Site or phase of decommissioning will be in accordance with the Outline Decommissioning Plan which will be submitted as part of the DCO application. This will ensure the potential decommissioning impacts are minimised.
- 4.5.16 A draft Decommissioning Statement is submitted as part of the PEIR and can be found in **Appendix 4.4**. This will be updated and progressed alongside the design evolution process.
- 4.5.17 The Solar PV arrays and related built infrastructure, ancillary infrastructure, substations and energy storage will be removed and recycled or disposed of in accordance with good practice and market conditions at that time.
- 4.5.18 The underground ducting within the Cable Corridor will be decommissioned but left in-situ to avoid unnecessary intrusion. It is possible to remove the cable itself by extracting it at the joint bays from within the ducting, so that the cable can be recycled. This will be considered further in the ES.
- 4.5.19 The effects of decommissioning are similar to, or often of a lesser magnitude than construction effects and will be considered in the relevant sections of the PEIR. However, there can be a high degree of uncertainty regarding decommissioning as legal and policy requirements engineering approaches and technologies are likely to change over the operational life of the Scheme.

Waste

- 4.5.20 Waste will be generated during all phases of the development. Solid waste materials generated during construction and decommissioning will be segregated and stored on site prior to transport to an approved, licensed third party landfill and recycling facility. Waste arisings are addressed in **Chapter 19 Waste** of the PEIR and will be assessed as appropriate in the ES.

Site Reinstatement

- 4.5.21 The land within the Sites will be returned to its original use after decommissioning. This will include the substations, converter units/inverters and energy storage.

- 4.5.22 As noted above, underground ducting within the Cable Corridor will be decommissioned but left in-situ to avoid unnecessary impacts. It is possible to remove the cable itself by extracting it at the joint bays from within the ducting, so that the cable can be recycled.
- 4.5.23 It is anticipated that some of the areas of habitat and biodiversity mitigation and enhancement will potentially be left in situ given that they could contain protected species. The need for any relevant protected species licenses will be considered at that time if reinstatement activities are likely to have an impact.

4.6 Ecology and Landscaping

Ecological Mitigation and Enhancement

- 4.6.1 The Sites currently comprise of arable and pastoral fields with the majority of the land considered to be of low ecological value due to intensive agricultural practices... There are features within the Sites such as hedgerows, field margins and ditches/watercourses which are considered to have some ecological value.
- 4.6.2 To date Preliminary Ecological Appraisals (PEA) have been undertaken on the Sites along with protected species surveys which have been seasonally appropriate to carry out (please refer to accompanying PEA's at **Appendix 9.1**). There will be further surveys carried out in the 2022 survey window. Once the full suite of species surveys have been carried out any new habitat land and/or mitigation that is appropriate will be identified and included in the DCO application.
- 4.6.3 A number of the Sites fall within the Central Lincolnshire Local Plan ecological enhancement and opportunity areas. The Scheme will be looking to contribute towards this opportunity and connect up networks where practical and appropriate. The Scheme includes proposals for significant areas of new lengths of native hedgerow and sympathetic management of adjacent road verges. This is set out further in **Chapter 9 Ecology**. Further detail will be provided within the DCO submission.
- 4.6.4 As a general principle the following ecological mitigation and enhancement measures are used on solar projects:
- Land between and under the arrays to be sown as grassland and meadow management with limited cutting and a mix of some areas being grazed and others not;
 - Gaps within existing hedgerows will be filled with additional native species to increase diversity, and hedgerows will be managed on a rotational basis to enable wildlife to benefit from them year-round;

- Appropriate vegetated buffers will be maintained comprising native planting; and
- Installation of bird nest and bat boxes on trees will be retained around the Site to provide opportunities for a range of species recorded within the local area.

4.6.5 Mitigation land will be provided for skylark plots. The exact quantity of this will be based on the final total area that is covered by built infrastructure.

4.6.6 Prior to the commencement of any phase of development a Landscape and Ecological Management Plan (LEMP) will be prepared and submitted to and approved by the relevant planning authority, and this will be secured by the Requirements in the DCO. This will ensure the potential construction and operational impacts are minimised. The LEMP will be in accordance with the Outline LEMP which will be submitted as part of the DCO application. A draft Outline LEMP is submitted as part of the PEIR and can be found in **Appendix 4.5**. This will be updated and progressed alongside the design evolution process.

Surface Water Drainage

4.6.7 Flood Risk Assessments and a Drainage Strategy are being developed as part of the design process. The assessments identify how the Scheme will manage surface water across the Sites and not increase flood risk. The drainage strategy will detail the measures to manage the surface water drainage from the Scheme and any required changes needed to existing land drainage.

Landscaping

4.6.8 Given the scale of the Scheme, the impact on the landscape context and the visual impact is a prime consideration. As part of the PEIR the Sites have been assessed to establish where the key viewpoints are into and out of the Sites and to identify where potential mitigation planting would be needed.

4.6.9 As a general principle the following landscape enhancements and mitigation are used on solar projects:

- The creation of new woodland blocks and belts;
- Planting new hedgerows;
- Reinforcing existing boundary hedgerows; and
- New tree planting.

- 4.6.10 The proposed landscape strategy will also be seeking to increase the green infrastructure and link up ecological networks (as noted above). This may include enhancing Public Rights of Way or providing improved connectivity of them.

5 Alternatives and Design Evolution

5.1 Introduction

- 5.1.1 This chapter of the PEIR describes the consideration of alternatives and design evolution in relation to the Scheme.
- 5.1.2 This chapter has been provided to demonstrate *“[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”* as required under Paragraph 2 of Schedule 4 of the EIA Regulations.
- 5.1.3 National Policy Statement (NPS) EN-1 confirms that there is no general requirement to consider alternatives or to establish whether a development represents the best option, stating (at paragraph 4.4.1) 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”*. This position is carried forward into the draft NPS EN-1.
- 5.1.4 Whilst specifically identifying the legal requirement as set out in the EIA Regulations, the NPS recognises other specific legislative requirements and policy areas which require the consideration of alternatives. Paragraph 4.4.3 of 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”*.
- 5.1.5 To ensure compliance with the policy and legal requirements as identified above, this chapter describes the iterative approach to the Scheme’s development undertaken to date, as well as identifying the following alternatives considered:
- Alternative sites;
 - Alternative technologies;
 - Alternative site layouts;
 - Alternative cable routing.
- 5.1.6 The consideration of “no development” as an alternative to the Scheme has not been explored within this Chapter. This is due to the consideration of “no development” being unreasonable as it would not deliver the generation of renewable electrical power and energy storage proposed.
- 5.1.7 The overarching ‘need’ for the development is set out in Section 6.2 of the PEIR.

5.2 Scheme Definition and Site Search

5.2.1 There is no standard methodology for the selection of sites for solar energy generating stations. The process that has evolved and been adopted for the Scheme is described below.

Stage 1 – Identification of the Area of Search

5.2.2 Irradiation (sunlight) levels and topography are key factors when determining the location of solar development. Solar developments are currently found across the UK; however, their efficiency is determined by the levels of irradiation at their location. The whole of England is well located geographically for solar gains. The Applicant had no restrictions on where developments should be, located in relation to irradiation levels.

5.2.3 The preference is for a site with a southerly aspect; however, sites with other aspects cannot be dismissed. If a site with another aspect is pursued there is likely to be a need to increase the overall development footprint as there would be an operational need to increase the distance between arrays in order to avoid overshadowing.

5.2.4 A viable grid connection is an essential material consideration for proceeding with a development and is instrumental in defining the search area. During discussions with National Grid in 2019, the Applicant was notified of grid capacity at West Burton, Cottam, and High Marnham Power Stations. This capacity was available at these locations due to the closures of the coal fired elements of those sites. Due to the immediate availability of these Points of Connection (POCs), the Applicant did not consider any further alternative grid connection points. Through further discussion with National Grid on the Cottam POC, National Grid advised that connection at Cottam would be preferred over connection at High Marnham. The Applicant therefore made a grid connection application to National Grid for connection at Cottam Power Station and an offer was made for 600MW.

5.2.5 IGP also made an application for a grid connection at West Burton Power Station for 480MW and as noted previously in this PEIR, this is the subject of a separate DCO application, including its associated land parcels. Subsequently, and through further discussion with National Grid on the Cottam POC, they advised that connection at Cottam would be preferred over connection at High Marnham.

5.2.6 As the grid connection offer was not site-specific IGP proceeded to look at sites that could accommodate a solar project to support the grid capacity available at both Cottam and West Burton. In respect of Cottam and a grid connection of 600MW, a site size of approximately 1,300 ha was considered to be needed. The Applicant generally seeks to find a site which is around 10% larger than is needed for the grid connection offer. This larger site size allows for a scheme to accommodate mitigation measures and environmental constraints that will become known

through the design development process. It was considered that it would be highly unlikely that a single site of this size would be available.

- 5.2.7 Opportunities for solar arrays on previously developed land (PDL)/brownfield land, commercial rooftops, and lower grade agricultural land were explored. To be suitable as an NSIP a Scheme needs to be generating a minimum of 50MW of energy production. A site needs to be at least 75ha in size to meet the required 50MW energy production minimum.
- 5.2.8 An assessment of PDL/brownfield land in the host authorities of West Lindsey and Bassetlaw Districts identified no land of an adequate area to facilitate a large-scale solar project. In 2017, it became a requirement for each Local Planning Authority to keep a register of PDL suitable for residential development. The latest data for the two District Councils in the search area is from 2020 (Bassetlaw) and 2021 (West Lindsey). In the host authority areas, all sites smaller than 75ha have been discounted due to their inability to provide capacity for a 50MW solar project. No sites were found over 62ha and therefore no individual brownfield site from the register provides an adequate area to facilitate a large-scale solar project. The three sites summarised in Table 5.1 below are the only listed sites on the two registers above 10ha. All three are within Bassetlaw District with planning permission for a range of residential and commercial uses which attract significantly higher land values than agricultural land and therefore would be unviable for solar development.
- 5.2.9 Of the remaining registered 72 sites across both districts, there are 16 sites which are more than 1ha in area. A full assessment of PDL sites will be set out in the DCO application.

Table 5.1: PDL sites from Brownfield Registers of Bassetlaw and West Lindsey

Location	Site Size (ha)	Comments
Harworth Colliery, Scrooby Road, Harworth and Bircotes	62	Site has outline planning permission for redevelopment for up to 966 dwellings, 2,044sqm of A1 retail space and 76,645sqm of B1, B2 and B8 uses and community uses. Since the approval in 2009 various applications have been submitted for reserved matters and discharge of conditions. Therefore, given the site size falling below the minimum threshold and the extant planning permission the site was not considered any further.
Welbeck Colliery, Budby Road, Welbeck	33.63	Site has planning permission for a hybrid application for a mixed use development consisting of residential dwellings, country park, Use Classes B8, B1, B2, A1 and A3. Since the approval in 2015 various applications have been submitted to discharge conditions. The construction of the

		development commenced in 2016 according to the application forms submitted. Therefore, given the site size falling below the minimum threshold and the extant planning permission the site was not considered any further.
Firbeck Colliery, Doncaster Road, Carlton in Lindrick	13.77	Site has planning permission for a hybrid application for a residential development of up to 400 dwellings. Since the approval in 2019 various applications for reserved matters, discharge of conditions and amendments have been submitted and approved. According to the most recent discharge of condition application the development has not commenced. Therefore, given the site size falling below the minimum threshold and the extant planning permission the site was not considered any further.

- 5.2.10 An assessment of commercial rooftops in the host authorities of West Lindsey and Bassetlaw Districts identified no rooftops or combined premises of an adequate area to facilitate a large-scale solar project.
- 5.2.11 A high-level review of lower grade agricultural land was undertaken to identify areas of lower likelihood of containing best and most versatile (BMV) agricultural land. Based on the Natural England agricultural land classification maps, notably, much of the land along the valleys of the Rivers Till, Trent, and Idle is likely to be of lower agricultural land quality (in planning terms). Notwithstanding, these areas are at a high risk of flooding, with some identified areas acting as flood storage areas. Other areas identified are of much greater distance from the point of connection than the chosen sites.
- 5.2.12 In addition to the broad considerations set out above, an initial search area was identified at a 5km radius from the POC, however this was later expanded with the clear preference of identifying land as close to the POC as possible, the search area was then enlarged incrementally until suitable options were found.

Stage 2 – Identifying Environmental Constraints

- 5.2.13 Stage 2 of the site selection process was to map the search area and identify the initial environmental constraints within it using sources including MAGIC Map, Natural England Agricultural Land Classification maps and any other publicly accessible records.
- 5.2.14 Table 5.2 below sets out the constraints that were mapped and considered.

Table 5.2: Environmental Constraints Considerations

Consideration	Discussion
Topography and site orientation	<p>The site should be either level or have a gentle sloping topography. It is important to note the following:</p> <p>Where potential sites are subject of physical obstructions which cannot be removed (such as Public Rights of Way, field boundaries, woodlands, rivers, highways and topography) the site area will need to be increased.</p> <p>The preference is for a site with a southerly aspect; however, sites with other aspects cannot be dismissed. If a site with another aspect is pursued there is likely to be a need to increase the overall development footprint as there would be an operational need to increase the distance between arrays in order to avoid overshadowing.</p>
Agricultural Land Classification and Land type	<p>Solar farms are temporary structures and unlike most built development and other renewable energy proposals (such as energy from waste plants) they do not constitute significant permanent development resulting in the loss of agricultural land.</p> <p>Planning policy seeks to minimise impacts on the best and most versatile agricultural land (defined as grades 1, 2 and 3a). and preferably use land that is not classified as best and most versatile (grades 3b, 4 and 5) and where possible utilise previously developed land, brownfield land, contaminated land or industrial land (see Table 5.1 for previously developed land sites considered).</p> <p>The Schemes location has been determined through the exclusion of land that the best available data identifies as being within an agricultural land classification category that is, or includes, best and most versatile land.</p>
Designated international and national ecological and geological sites	<p>The following designations were identified and any land that included any were excluded: Sites of Special Scientific Importance (SSSI), Special Areas of Conservation (SAC), Special Protection Areas (SPA), SPA protection buffer, Ramsar sites and National Nature Reserves (NNR)</p>
Nationally designated landscapes	<p>The presence of any areas of Outstanding Natural Beauty or National Parks were considered in the area of search.</p>
Proximity to sensitive human receptors	<p>Consideration of the proximity of nearby sensitive human receptors which include residential dwellings, populated areas/villages and Public Rights of Way (PRoW).</p>

5.2.15 Following the initial assessment of the 5km search area using the above constraints, it became clear that sites outside of this area would need to be assessed as insufficient land was available. As noted above, the Applicants preference is for the

land to be as close to the POC as possible, so the search area was enlarged incrementally until suitable options were found.

Stage 3– Identifying Landowners within the Search Area

- 5.2.16 Stage 3 runs alongside Stage 2 and is the process of identifying landowners within the search area. Enquiries were made with landowners and their agents on sites which had been identified as being suitable for solar arrays from a technical and constraints perspective. Whilst planning policies and environmental constraints are significant factors in site selection, a willing landowner is also a key consideration.
- 5.2.17 Once a landowner had indicated they would be willing for their land to be included within the Scheme, the Applicant and relevant environmental consultants undertook site visits and further desktop assessments to continue to assess site suitability.

Stage 4 Further Evaluation of Potential Solar Development Areas

- 5.2.18 Stage 4 continues the assessment work that is undertaken in the earlier stages to establish particular field parcels suitability to accommodate a solar development, taking into consideration planning and environmental factors derived from national and local planning and environmental policy objectives contained in National Policy Statement EN-1: Overarching National Policy Statement for Energy; National Policy Statement for Electricity Networks Infrastructure EN-5, draft National Policy Statements EN-1; EN3 and EN5, National Planning Policy Framework and relevant local planning policy. The factors which are considered include biodiversity, landscape and visual amenity, cultural heritage, flood risk, access and other technical matters relating to grid connection.
- 5.2.19 Table 5.3 below sets out the matters that have been considered.

Table 5.3: Constraints Considerations

Consideration	Discussion
Biodiversity	Outside of the designations identified as sensitive in the EIA Regulations, there are local and regional designations of ecological significance such as a County Wildlife Sites, Local Nature Reserves and Local Wildlife Sites.
Landscape and Visual	<p>Outside of the designations identified as sensitive in the EIA Regulations, there are local and regional designations of landscape significance such as Areas Great of Landscape Value.</p> <p>The landscape and visual effects of energy projects will vary on a case by case basis but the applicant seeks to find well contained sites which have a good level of existing screening in the form of boundary hedgerows and trees without having to rely heavily on new planting.</p>

Cultural Heritage	Consideration is given to whether the proposals would give rise to harm to heritage assets. This includes built heritage and below ground archaeology.
Flood Risk	Having a site in a flood risk zone is not unacceptable as solar panels are water resistant but some of the associated infrastructure is not compatible. Therefore, entire sites which are located within flood zone 2, 3a or 3b should be avoided.
Access	Appropriate highway infrastructure is a material consideration as there needs to be appropriate provision to allow for the HGV's to access the sites during the construction process.

Stage 5 Additional Land Presented to the Applicant Following Publication of the Scheme

- 5.2.20 Once the Applicant launched the Scheme publicly and carried out the non-statutory consultation during November 2021 other parcels of land were submitted from landowners or suggested through the consultation feedback. These were logged and considered following the same stages as noted above.

Alternative Sites and the Defined Scheme

- 5.2.21 The exercise carried out as described above identified a number of potential sites that could accommodate solar arrays. In addition to the early stage site selection process, a non-statutory consultation exercise was undertaken over a 6-week period in November-December 2021. Feedback from this resulted in a number of suggestions of alternative sites for the scheme. The sites considered and reasons for discounting them will be reported in the full site selection report included in the ES for the DCO application.
- 5.2.22 The land parcels that make up the Scheme described in PEIR represent the most appropriate and viable configuration of sites to take advantage of the POC at Cottam Power Station.

5.3 Alternative Technologies

- 5.3.1 The Applicant has taken into consideration (and continues to consider) alternative technologies within the development. Notwithstanding, the DCO application will maintain a degree of flexibility to allow different technologies to be included within the Scheme's Rochdale envelope to account for localised environmental considerations and constraints, whilst also allowing suitable flexibility for technological advances between the time of the DCO application and site construction.

Solar PV Arrangement

- 5.3.2 The predominantly favoured technology for the solar panels is double height (2P) portrait tracking panels, laid out in north-south rows. These are favoured due to their higher energy output and efficiency, as they are able to track the movement of the sun throughout the day to maximise energy production. However, where glint and glare or landscape and visual issues have been identified, an alternative single panel (1P) tracking module can be utilised due to its lower height.
- 5.3.3 The sites may alternatively require south-facing fixed panelling (laid out in east-west rows) due to site and environmental constraints. The type of site constraints that may require this configuration to be implemented are to mitigate glint and glare or landscape and visual impacts. However, fixed panels tend to have a greater ground cover ratio and therefore shading than tracker panels.
- 5.3.4 Where greater peak capacity is required, the use of bifacial solar panels has been indicatively explored to achieve a greater peak electrical output per hectare.
- 5.3.5 Fixed panels are also less susceptible to flooding and can be positioned in areas that can experience greater flooding depths than tracker panels. Furthermore, fixed panels are more flexibly designed to withstand greater flood depths by having more opportunity for raised panel frames and support structures.

Solar PV Array Foundations

- 5.3.6 There are two main options for fixing the solar panels to the ground. Primarily, the Site will use the industry-standard penetrative metal screw piles. These are anticipated to be used for most of the site due to their ease of installation, minimal size, and recyclability. The main alternative, to be used where screw piling would cause excessive damage to underground archaeological remains, would be shallow concrete foot pads.
- 5.3.7 The impacts of both types of foundation on ground conditions, particularly with regard to soil quality, are to be explored in greater detail in the DCO application.

Energy Storage System

- 5.3.8 The likely design for the energy storage system are container-type units which contain the batteries, and associated AC/DC inverters, heating, ventilation and cooling systems, to maximise efficiency and safety of the storage system. These units are expected to be a maximum size of 16m by 3m with a maximum height of 3.2m. The compound will be set out over a maximum of 15.4ha. The design has been chosen due to it being of an industry standard, and due to its layout flexibility and ability to be suitably screened by way of landscape mitigation planting.

Substations

- 5.3.9 Substation design has been primarily driven by electrical design requirements for the Scheme as a whole. Each of the constituent sites has an individual substation, from where energy generated by the solar panel arrays is transported to the connection point by underground cable. The substations have been sized on the basis of the anticipated peak output from the solar arrays.
- 5.3.10 Optionality between the use of standard air-insulated substations, or enclosed gas-insulated substations has been explored. The functionality of air and gas insulated substations is identical, however gas-insulated substations have the benefit of a smaller footprint and ability to be enclosed, thus given optionality for the substation to be regarded as an agricultural building, as well as having greater noise insulating properties. However, gas-insulated substations are more expensive, require higher safety measures, and can be taller, and thus more visible in the landscape, than air-insulated substations.

5.4 Alternative Layouts and Design Evolution

- 5.4.1 The design and extent of the solar array layouts and cable corridors have been subject to an iterative process involving the Applicant, the design team, the environmental consultant team and as informed by feedback from various forms of consultation including with stakeholders and statutory consultees, host authorities, local communities, local residents and through the scoping process. The various stages of iteration are set out in the table below:

Table 5.4: Scheme Design Iterations

Stage	Layout	Consultation	Considerations and Evolution
Phase 1 Consultation (Nov-Dec '21)	Outline site areas and initial cable routes	Non-statutory consultation events with the public, internal project team and landowners only National Grid offer for grid connection	Based on site option agreements and initial specification for cable route
EIA Scoping (Jan 2022)	Outline site areas and initial cable routes	First engagement event with statutory bodies, internal project team and landowners only	Based on site option agreements and initial specification for cable route Supporting survey information informed by stakeholder engagement
Version 1 site layout (Mar 2022)	Site areas populated with panel layout and	Public consultation from Phase 1 events	Full solar PV layout on CO1-3 based on

	indicative substation and energy storage layout	Ongoing focussed consultation with residents Statutory body consultation from EIA Scoping Ongoing stakeholder engagement Environmental surveys	consultation and initial survey data. Aimed as a capacity maximisation study. Key constraints regarding ecological, flooding, and landscape comments used to inform development parameters.
V2 / PEIR site layout (Jun 2022)	Site areas refined with panel layout and indicative substation and energy storage layout Refined cable route corridor	Ongoing stakeholder engagement Further environmental surveys	Full solar PV layout on CO1-3 based on refined survey data. Further input from technical consultants and key stakeholders to drive higher-precision development parameters. Substation and energy storage location and layout finalised. Cable route corridor refined based on landowner engagement, utilities providers, and stakeholder engagement regarding rail and river crossings
Future Stages			
Preparation for DCO Submission (Oct 2022)	Site areas panel layout completed Full substation and energy storage layout Defined cable route	Public and statutory consultee consultation Ongoing stakeholder engagement Further environmental surveys	Amendments to layout based on public and statutory body comments Full substation and energy storage layout provided by electrical design consultants Cable route agreed following geophysical surveys
Additional requirements (post-DCO consent)	Final site layout and detailed design Site technology confirmation	Statutory consultee consultation as part of the discharge of requirements. Required additional environmental surveys	Full site design ahead of construction taking into account any statutory consultee comments provided as part of the discharge of requirements

		Updates in technological advances	
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Solar Panel Areas

5.4.2 The layout of the solar panel areas has been informed by the matters set out in Table 5.5. below. These considerations were implemented as blanket parameters across the development site to ensure consistency of approach. Parameters such as offset distances were informed by the technical consultant team based on their professional judgement and previous experiences. Once applied, the remaining site area was designated the “developable area” for the solar array, inverters, substation, and access roads. Security fencing was able to be placed along the parameter boundary. Areas between the fencing and the development site boundary was made available for ecology and landscape mitigation or enhancement.

Table 5.5: Design Parameters for Site Panel Areas

Criteria	Consideration	Parameters
Planning, policy and legislation	Planning applications and allocations	Avoidance of any land subject to pending planning applications and site allocations.
Technical and engineering requirements	Access	Accessibility by vehicle to all field parcels for maintenance access Accessibility by vehicle to all inverters Accessibility by vehicle to site substation
	Electrical Design	Inverters to be positioned for every 1MW of solar panels
Environmental constraints	Landscape and Visual	Proximity of residential properties – minimum 50m offset to curtilage boundary Identification of key visual receptors and key views
	Ecology and Biodiversity	Avoidance of national ecological designations Proximity to local ecological designations and sensitive ecological receptor – minimum 20m offset to designated area Proximity to major watercourses – minimum 20m offset Proximity to minor watercourses and ditches – minimum 8m offset Proximity to badger setts – minimum 30m offset Proximity to GCN sites – minimum 50m offset Proximity to trees with low, medium or high bat roost potential – minimum 8m, 12m, 20m offset

	Hydrology, Flood Risk, and Drainage	Avoidance of flood storage areas Avoidance of areas of surface water flooding greater than 1m depth
	Cultural Heritage	Avoidance of national cultural heritage designations Areas of significant archaeology to be avoided Areas of moderate archaeology to be limited to restricted loading and non-penetrative foundations Context of cultural heritage assets to be considered
	Transport and Access	Sensitivity of watercourse crossings for construction traffic Consideration of existing access points and local highway network Accessibility by vehicle to all field parcels for maintenance access Accessibility by vehicle to all inverters Accessibility by vehicle to site substation
	Glint and Glare	Consideration of panel backtracking or additional mitigation to screen glint and glare
	Agricultural Land Classification	Consider avoidance of best and most versatile land
	Telecommunications, Utilities, and Television Receptors	Avoidance of underground utilities – subject to easement widths Avoidance of overhead power lines – subject to easement widths, 15m minimum to pylons
Land use and ownership constraints		Seeking to use land in the same ownership for each site Where possible reducing interaction on rail network, strategic road infrastructure, utilities and other infrastructure.

5.4.3 The key considerations made between site layout iterations have been shown in Table 5.6 below. The layouts included within PEIR are subject to on-going review and may change prior to submission of the DCO application. The areas referenced in Table 5.6 and Table 5.8 (e.g. D7) refer to the field numbering plans which can be found in **Appendix 3.1** Figures 3.7-3.9.

Table 5.6: Design Iterations for the Site Panel Areas

Site Area	Stage	Key Design Considerations
Cottam 1	EIA Scoping	Overall site area published.
	Version 1 site layout (Mar 2022)	Implementation of key parameters

		<p>Additional offsetting from the River Till due to flood risk and its designation as major watercourse.</p> <p>Offsets from telecoms and utilities have been introduced, which has impacted the layout of fields D7, D16-D20, D23, D26, D29, E4 and G1. Additional offsets to 132kV OHLs in M2 and M3</p> <p>Removal of fields A3, A4 (south), B1, C14-19 and D19 following resident consultation</p> <p>Fields D1, D7 (west end), D8, and E3 were removed at the request of Stow Parish Council and F1, F2, and F7 were removed upon request by Normanby by Stow Parish Council.</p>
	V2 / PEIR site layout (Jun 2022)	<p>Amendments to ecology offsets to hedgerows and trees</p> <p>Access tracks removed from ecology offset areas</p> <p>Panels reintroduced to fields A4 and C14-19, subject to landscape montages being produced to demonstrate level of visual impact on residences</p> <p>50m buffer from the property boundary to the panel area.</p> <p>Panels removed from C28, F1, F2 and F7 due to results of geophysical survey</p> <p>Noise barriers have been introduced to mitigate impacts on residential properties</p> <p>Two options on energy storage presented:</p> <ul style="list-style-type: none"> • Option A – located in the centre of field G1 • Option B – location as option A plus two small areas in G2 and G3
Cottam 2	EIA Scoping	Overall site area published.
	Version 1 site layout (Mar 2022)	<p>Implementation of key parameters</p> <p>50m offsets from residences</p> <p>Offsets from telecoms and utilities have been introduced, which has impacted the layout of fields H1, H4, H5, H8, H10 and H11</p>
	V2 / PEIR site layout (Jun 2022)	<p>Amendments to ecology offsets to hedgerows and trees</p> <p>Habitat areas in H5 and H8 were extended</p> <p>50m buffer has been introduced around field H2 for residences</p>

		Noise barriers have been introduced to mitigate impacts on residential properties
Cottam 3	EIA Scoping	Overall site area published.
	Version 1 site layout (Mar 2022)	Implementation of key parameters Offsets to 132kV OHL (K3-K6) and Fields K2, K5 and K6 are also impacted by underground power and telecoms lines. 20m Offsets to trees with high bat roosting potential along eastern edge of K14, K16 and K18 Offsetting from PRow crossing the site of Cottam 3b
	V2 / PEIR site layout (Jun 2022)	Amendments to ecology offsets to hedgerows and trees Security fencing moved to clear ecological offset areas Removal of K12 and SE corner of K18 for turtle dove mitigation and visual impact from B1205

Substations

5.4.4 The positioning of a substation within each of the Sites, and a main substation near to the point of connection, are requirements of the Scheme driven by electrical design. The considerations made by the Applicant and consultant team have been listed in Table 5.7 below. Most of these considerations were implemented as blanket parameters across the development site to ensure consistency of approach, however site-specific requirements – led by the substation size – were also included. Parameters such as offset distances were informed by the technical consultant team based on their professional judgement and previous experiences. Once applied, a RAG assessment was undertaken at each of the sites to determine the most suitable areas within the developable area for the positioning of the substations.

Table 5.7: Design Parameters for Substation Location

Criteria	Consideration	Parameters
Planning, policy and legislation	Planning applications and allocations	Avoidance of any land subject to pending planning applications and site allocations.
	Neighbouring land use	Avoidance of location within 300m of residential properties

Technical and engineering requirements	Access	Accessibility by vehicle to site for maintenance and construction Accessibility by oversized loads to substation site
	Site Area	Large enough size to accommodate substation design (site specific)
	Electrical Design	Proximity to cable exit point – no more than 500m
Environmental constraints	Landscape and Visual	Identification of key visual receptors and key views
	Ecology and Biodiversity	Avoidance of national ecological designations Proximity to local ecological designations and sensitive ecological receptor Avoidance of onsite species-rich habitat
	Hydrology, Flood Risk, and Drainage	Avoidance of Flood Zone 2 or 3 Avoidance of areas of medium or higher surface water flooding risk
	Cultural Heritage	Avoidance of national cultural heritage designations Areas of significant archaeology to be avoided Context of cultural heritage assets to be considered
	Agricultural Land Classification	Consider avoidance of best and most versatile land
	Telecommunications, Utilities, and Television Receptors	Avoidance of underground utilities – subject to easement widths Avoidance of overhead power lines – subject to easement widths
	Safety	Avoidance of location within 300m of residential properties
	Noise and Vibration	Avoidance of location within 300m of residential properties Allowance for noise mitigation where within 500m of residential properties
	Ground conditions	Avoidance of unstable ground Consideration of ground capacity for heavy infrastructure

5.4.5 The assessment of the substation locations using the above parameters was used for drafting the first iteration of the site layout plans. These were then amended further by site-specific constraints and recommendations from statutory consultees, key stakeholders, and members of the public. The substation designs have been determined by the potential site export capacity and are therefore subject to further refinement by the consultant team ahead of DCO application where site layout amendments are taken into account. The locations of the substations within each

Site and their detailed design will therefore be open to review following statutory consultation, and as such should be viewed as indicative for the purpose of commentary.

Table 5.8: Design Iterations for the Substation Locations

Site Area	Stage	Key Design Considerations
Cottam 1	RAG Rating (Nov 2021)	Implementation of key parameters for 2.68ha 400kV/132kV air insulated substation F3-5, east of G1, G2 and G3 were identified as most suitable.
	Version 1 site layout (Mar 2022)	Substation located in SE corner of G1
	V2 / PEIR site layout (Jun 2022)	Substation location unchanged Bunding is proposed for mitigation from noise and residences
Cottam 2	RAG Rating (Nov 2021)	Implementation of key parameters for 0.35ha 132kV/33kV air insulated substation Fields H4, H5 and H8 deemed most suitable
	Version 1 site layout (Mar 2022)	Implementation of key parameters Substation located in centre-north of H5
	V2 / PEIR site layout (Jun 2022)	Substation location unchanged
Cottam 3a	RAG Rating (Nov 2021)	Implementation of key parameters for 0.35ha 132kV/33kV air insulated substation Fields K4, K7, K10-12 and SW of K17 and K18 deemed most suitable
	Version 1 site layout (Mar 2022)	Implementation of key parameters Substation located in NE corner of field K7
	V2 / PEIR site layout (Jun 2022)	Substation location unchanged
Cottam 3b	RAG Rating (Nov 2021)	Implementation of key parameters for 0.35ha 132kV/33kV air insulated substation NW corner of field J4 deemed as most suitable
	Version 1 site layout (Mar 2022)	Implementation of key parameters Substation location unchanged
	V2 / PEIR site layout (Jun 2022)	Parameters based design only No changes from V1 to V2/PEIR layout

5.5 Alternative Cable Routes

5.5.1 The proposed cable route corridor set out at the PEIR stage has been refined / reduced from that set out at the scoping stage (see **Appendix 5.1**). The guiding design parameters for definition of the cable corridors are set out in Table 5.9 below.

Table 5.9: Design Parameters for Cable Route Corridors

Criteria	Consideration	Parameters
Planning, policy and legislation	Planning applications and allocations	Avoidance of any land subject to pending planning applications and site allocations.
Technical and engineering requirements	Electrical design	Seek to achieve the shortest route between Sites
Environmental constraints	Ecology and Biodiversity	Avoidance of national ecological designations Proximity to local ecological designations and sensitive ecological receptor Minimisation of crossings of major watercourses
	Cultural Heritage	Avoidance of national cultural heritage designations
Land use and ownership constraints		Avoidance of residential properties and curtilage Affecting a minimum number of landowners. Where possible reducing interaction on rail network, strategic road infrastructure, utilities and other infrastructure.

5.5.2 The main area of refinement of the cable route between the scoping and PEIR stages has taken place around the crossing of the River Trent, with a preferred location chosen to the southwest of Marton. The Applicant and the West Burton Solar Project have been actively collaborating with the Gate Burton Energy Park Project to seek to establish a combined route in this area where all three projects need to cross the River Trent. This approach will have the benefit of reducing the environmental impact of all three projects with regard to land use, ecology, heritage, and reduced construction works. The preferred river crossing route has been determined based on avoidance of ecological constraints and notable historic environment features, such as the Roman Town at Littleborough, and the Viking Camp at Torksey.

5.5.3 Further refinement of the wider cable corridor has helped to produce a more focussed route to be presented for PEIR. This has been led primarily by landowner consultation. This consultation has been used to identify which landowners would be most supportive of the use of their land for the cable route. Alongside this, a desk-based parameters approach (as set out in Table 5.9) has identified land with extant planning permissions or ongoing planning application, so that these can be avoided. Considerations have also been made to ensure the routing avoids

ecological designations, residential properties, and avoids areas of cultural heritage identified through Historic Environment Records.

- 5.5.4 As has been identified previously, the cable corridor presented for PEIR is still indicative and is to be refined following statutory consultation. Upon selection of a preferred route, geophysical and ecology surveys will be carried out to explore micro-siting options ahead of DCO application.

6 Energy Need, Legislative Context and Energy Policy

6.1 Introduction

- 6.1.1 This chapter of the PEIR sets the legislative and policy framework for the proposals. Regard is had to primary legislation, national energy policy, national planning policies and guidance, and local planning policies, when undertaking the EIA.
- 6.1.2 A summary of the key legislative and policy provisions is provided below and considered in more detail in **Appendix 6**.
- 6.1.3 Each technical chapter in the PEIR will set out the relevant policy applicable to that environmental topic.

6.2 Energy Need

- 6.2.1 Decarbonisation is a UK legal requirement and is of global significance. In June 2019, Government passed law to end the UK's contribution to global warming by 2050: Net Zero.
- 6.2.2 Carbon Budgets set the trajectory for decarbonisation actions required to meet this commitment. They recognise that atmospheric carbon has a cumulative global heating effect and therefore that urgent action is necessary. The Sixth Carbon Budget (enshrined in law in June 2021) runs from 2033 to 2037 and requires a 78% reduction in UK territorial emissions between 1990 and 2035.
- 6.2.3 UK electricity demand is expected to double by 2050. Decarbonisation requires the electrification of energy which is currently generated by burning fossil fuels and the UK's pathway to achieving Net Zero by 2050 must involve wider transitions outside of the power sector, including transport, industry, agriculture and homes. Extensive electrification requires support from a major expansion of renewable and other low-carbon power generation to ensure that the UK is capable of securely meeting future electricity demand, with a significantly lower carbon intensity. The decarbonisation of the UK's electricity generation sector is therefore vitally important to meet the UK's legal obligations on carbon emissions.
- 6.2.4 The decommissioning of existing generation assets increases the requirement to develop new low-carbon generation with urgency in order to "keep the lights on". Nuclear power has historically met circa 20% of GB demand, but existing nuclear stations began to close in 2021. Only one will remain beyond 2028. One new nuclear project is scheduled to commission in the late 2020s, any others will not be commissioned before the mid-2030s. Only one UK coal station is still in operation and in 2021, Government brought forward the final closure date for coal to 2024. Carbon Capture, Utilization and Storage (CCUS) is being developed to support Net Zero by facilitating the decarbonisation of the UK's thermal (carbon emitting) fleet,

currently circa 40GW, decarbonising industry, producing low-emissions hydrogen and delivering greenhouse gas removal technologies. Recent progress has been made towards bringing CCUS clusters forward by the end of the decade however Government recognises that *“the technology has not been delivered at scale and significant risks remain”*.

- 6.2.5 The UK has substantial renewable energy resources, including 40% of Europe’s wind resource, and Government is targeting 50GW of offshore wind to be operational by 2030 to harness that resource and protect consumers from volatile international energy markets. But wind on its own is not sufficient. In April 2022, HM Government published the British Energy Security Strategy. In it, the Prime Minister wrote that *“if we’re going to get prices down and keep them there for the long term, we need a flow of energy that is affordable, clean and above all, secure. We need a power supply that’s made in Britain, for Britain.”* The strategy also recognises the critical role of renewables in accelerating the transition away from fossil fuels, and notes that renewable capacity in the UK is currently set to increase by a further 15% by the end of 2023. The strategy notes, that further and faster actions are required to increase UK national energy security and reduce dependency on fossil fuels, and the exposure consumers currently have to volatile prices. It sets an ambition for solar of up to 70GW by 2035.
- 6.2.6 Solar generation is a critical element of the plan to decarbonise the UK electricity sector with urgency and is already a leading low-cost generation technology in the UK. The national need for solar generation is urgent and the capacity required is significantly greater than the capacity of projects currently understood to be in development.
- 6.2.7 Solar addresses all important aspects of existing and emerging government policy. It will make a critical and timely contribution to decarbonisation and security of supply in the UK, will help shield consumer bills from volatile energy prices, and provides the potential to deliver biodiversity net gains through its development.

6.3 Primary Legislation

- 6.3.1 The Act sets out the process for the consenting of major infrastructure projects and is the principal legislation governing an application for development consent for a NSIP. The Act therefore forms the basis for the decision to grant a DCO.
- 6.3.2 Under the Act the Scheme constitutes an NSIP if:
- it consists of “the construction or extension of a generating station” (Section 14(1)(a) of the Act);
 - “it is in England” (Section 15(2)(a) of the Act);

- “its capacity is more than 50 megawatts” (Section 15(2)(c) of the Act)

6.3.3 If a National Policy Statement (NPS) has effect in relation to the type of development to which the DCO relates then the Secretary of State must decide the DCO application in accordance with the relevant NPS (unless an exception applies) (Section 104 of the Act). If the DCO application relates to a type of development where no NPS has effect, then the Secretary of State must have regard to the local impact report and any other important and relevant matters (Section 105 of the Act).

6.4 Energy Policy

6.4.1 National Policy Statements (NPS) set out the policy basis for NSIPs. At present, there is no NPS which specifically deals with ground mounted solar developments, and therefore Section 105 of the Act applies. However, there are aspects of three Energy NPSs which are relevant to decision making and are important material considerations, in addition to other relevant and important national and local planning policies. The Secretary of State will therefore have regard to: -

- National Policy Statement for Energy (EN-1)
- National Policy Statement for Renewable Energy Infrastructure (EN-3); and,
- National Policy Statement for Electricity Networks (EN-5)

6.4.2 The Department for Business, Energy and Industrial Strategy is currently undertaking a review of the six NPSs for energy infrastructure. Consultation on the revised draft NPSs closed on 29 November 2021. As drafted NPS EN3 on renewable energy has been expanded to provide policy on solar development. Currently there is no timescale in place for when the draft NPS will be adopted. The transitional provisions in draft NPS EN-1 state that the 2011 NPSs will be the applicable national policy statements for any DCO application that is accepted for examination before the designation of the updated NPSs. However, the policies set out in the emerging draft NPSs (or those designated but not having effect) are potentially capable of being important and relevant considerations in the decision-making process. The extent to which they are relevant is a matter for the relevant Secretary of State (SoS) to consider within the framework of the Planning Act 2008 (PA2008) and with regard to the specific circumstances of each DCO application.

6.4.3 The revised EN3 addresses a range of matters including:

- Design Flexibility;
- Temporary nature of solar farms;
- Site Selection;

- Irradiance and site topography and capacity of site;
- Proximity of a site to dwellings;
- Grid Connection;
- Accessibility;
- Agricultural Land Quality;
- Site Layout and appearance;
- Landscape and Arboriculture;
- Ecology and Biodiversity;
- Built heritage and archaeology;
- Flood risk and drainage;
- Highways and Access; and
- Glint and Glare.

6.4.4 On the 7th April 2022, the Government announced its energy strategy which sets out how Britain's energy security will be boosted following rising global energy prices and volatility in international markets. The Government wants to accelerate the deployment of wind, new nuclear, solar and hydrogen whilst supporting the production of domestic oil and gas which would see 95% of electricity by 2030 being low carbon.

6.4.5 Specifically in reference to solar, the ambition is to look to increase the UK's current 14GW of solar capacity up to 5 times by 2035. The Government stated that it will continue supporting the effective use of land by encouraging large scale projects to locate on previously developed, or lower value land, where possible, and ensure projects are designed to avoid, mitigate, and where necessary, compensate for the impacts of using greenfield sites.

6.5 Other Planning Policies

6.5.1 The planning policies considered relevant to the Scheme are identified below and will be considered as part of the assessment.

- National Planning Policy Framework (NPPF) (as amended July 2021)
- Planning Practice Guidance (PPG) (as amended March 2015)

- Paragraph 013 Reference ID 5-013-20150327 – “What are the particular planning considerations that relate to large scale ground-mounted solar photovoltaic farms?”

6.5.2 Host Authority Planning Policies are drawn from the following documents:

- Central Lincolnshire Local Plan 2012 – 2036 (Adopted 2017)
- Emerging Draft Central Lincolnshire Local Plan (Proposed Submission) March 2022
- Neighbourhood Plans:
 - Saxilby with Ingleby Neighbourhood Plan
 - Sturton by Stow and Stow Neighbourhood Plan
 - Brattleby Neighbourhood Plan
 - Sturton Ward Neighbourhood Plan (Review)
- Bassetlaw District Council Core Strategy (Adopted 2011)
- Emerging Draft Bassetlaw Local Plan 2020-2037 (Publication Version) August 2021, Addendum January 2022 and Second Addendum May 2022
- Nottinghamshire Minerals Local Plan (2021)
- Lincolnshire Minerals and Waste Local Plan (Core Strategy & Development Management Policies (June 2016) and Site Locations (Dec 2017) documents.
- Greater Lincolnshire Enterprise Partnership Strategic Economic Plan
- Growth Strategy for Lincoln
- Lincolnshire Joint Health and Wellbeing strategy
- Lincolnshire Joint Strategic Needs Assessment.
- Corporate Plans for City of Lincoln, North Kesteven and West Lindsey
- Lincolnshire Biodiversity Action Plan
- Lincolnshire Local Transport Plan and local transport strategies
- Joint Lincolnshire Flood Risk and Drainage Management Strategy