



Pearmtree Hill Solar Farm

Environmental Statement

Volume 1

Chapter 4: Alternatives and Design Iteration

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4 Alternatives and Design Iteration

4.1 Introduction

- 4.1.1 This chapter provides a summary of the consideration of alternative options and design development process that has taken place for the Proposed Development. It sets out the process from the point of the initial site selection, focussing on the design development process following the identification of the location of the Proposed Development.
- 4.1.2 This chapter provides details on the evolution of the design of the Proposed Development and sets out the main reasons for changes to the layout from the launch of the Proposed Development to the point of submission, including why areas of the Order Limits were discounted from solar PV development. It also details the assessment of alternatives that has been undertaken, the factors that have been considered in assessing those alternatives and the main reasons for discounting alternative design options.
- 4.1.3 The **Design Approach Document [EN010157/APP/5.7]** demonstrates how the good design has been taken into account and embedded in the Proposed Development, and should be read alongside this chapter.
- 4.1.4 A **Site Selection Assessment** at Appendix 2 to the **Planning Statement [EN010157/APP/5.5]** provides an overview of the site selection process undertaken by the Applicant. This covers the site selection process from the time of the grid connection offer from Northern Powergrid to the identification of the location of the Proposed Development.
- 4.1.5 The **Statement of Need**, at Appendix 3 to the **Planning Statement [EN010157/APP/5.5]** sets out why the Proposed Development is urgently required and at the proposed scale. This assessment of alternatives is set in the context of the clear and urgent need for the Proposed Development.

4.2 What is the legislative and policy context?

- 4.2.1 Regulation 14(2)(d) of the EIA Regulations **[Ref. 4-1]** requires “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 option chosen, taking into account the effects of the development on the environment”.

- 4.2.2 Schedule 4 of the EIA Regulations [Ref. 4-1] requires “a description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects”.
- 4.2.3 **ES Volume 1, Chapter 1: Background and Context [EN010157/APP/6.1]**, sets out the overarching planning policy relevant to the Proposed Development, comprising the Overarching National Policy Statement for Energy (NPS EN-1) [Ref. 4-2], the NPS for Renewable Energy Infrastructure (NPS EN-3) [Ref. 4-3] and the NPS for Electricity Networks Infrastructure (NPS EN-5) [Ref. 4-4]. These have been considered during the options appraisal process for the Proposed Development. Regarding the consideration of alternatives, paragraph 4.3.9 of the NPS EN-1 states that:
- “...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.”*
- 4.2.4 It goes on to state that “This NPS does not contain any general requirement to consider alternatives or to establish whether the proposed project represents the best option from a policy perspective. Although there are specific requirements in relation to compulsory acquisition and habitats sites, the NPS does not change requirements in relation to compulsory acquisition and habitats sites”. Regarding the consideration of alternatives, paragraph 4.3.15 of NPS EN-1 states that:
- 4.2.5 “Applicants are obliged to include in their ES, information about the reasonable alternatives they have studied. This should include an indication of the main reasons for the applicant’s choice, taking into account the environmental, social and economic effects and including, where relevant, technical and commercial feasibility”. It goes on to say at paragraph 4.3.17 “Further, “Where there is a policy or legal requirement to consider alternatives, the applicant should describe the alternatives considered in compliance with these requirements.”
- 4.2.6 Paragraph 4.3.22 of NPS EN-1 states that “given the level and urgency of need for new energy infrastructure, the Secretary of State should, subject to any relevant legal requirements (e.g under the Habitats Regulations) which indicate otherwise, be guided by the following principles set out in the NPS EN-1 when deciding what weight should be given to alternatives:
- the consideration of alternatives in order to comply with policy requirements should be carried out in a proportionate manner;
 - only alternatives that can meet the objectives of the proposed development need to be considered; (see **paragraph 4.3.2** below)

4.2.7 Paragraphs 4.3.23 to 4.3.29 of NPS EN-1 go on to explain:

- *“the Secretary of State should be guided in considering alternative proposals by whether there is a realistic prospect of the alternative delivering the same infrastructure capacity (including energy security, climate change, and other environmental benefits) in the same timescale as the proposed development;*
- *the Secretary of State should not refuse an application for development on one site simply because fewer adverse impacts would result from developing similar infrastructure on another suitable site, and it should have regard as appropriate to the possibility that all suitable sites for energy infrastructure of the type proposed may be needed for future proposals;*
- *alternatives not among the main alternatives studied by the applicant (as reflected in the ES) should only be considered to the extent that the Secretary of State thinks they are both important and relevant to the decision;*
- *the Secretary of State must assess an application in accordance with the relevant NPS (subject to the exceptions set out in Section 104 of the Planning Act 2008), if the Secretary of State concludes that a decision to grant consent to a hypothetical alternative proposal would not be in accordance with the policies set out in the relevant NPS, the existence of that alternative is unlikely to be important and relevant to the Secretary of State’s decision;*
- *alternative proposals, which mean the necessary development could not proceed, for example, because the alternative proposals are not commercially viable or alternative proposals for sites would not be physically suitable, can be excluded on the grounds that they are not important and relevant to the Secretary of State’s decision;*
- *alternative proposals which are vague or immature can be excluded on the grounds that they are not important and relevant to the Secretary of State’s decision; and*
- *potential alternatives to a proposed development should, wherever possible, be identified before an application is made to the Secretary of State (so as to allow appropriate consultation and the development of a suitable evidence base in relation to any alternatives which are particularly relevant). Therefore, where an alternative is first put forward by a third party after an application has been made, the Secretary of State may place the onus on the person proposing the alternative to provide the evidence for its suitability as such, and the*

Secretary of State should not necessarily expect the applicant to have assessed it.

- 4.2.8 Considering the planning policy and legal requirements as well as the iterative approach to the design to date, the following alternatives have been considered for the Proposed Development and are discussed in this chapter:
- Alternative sites;
 - Alternative renewable technologies;
 - Alternative solar technologies; and,
 - Alternative development design, size and scale.
- 4.2.9 NPS EN-3 [Ref. 4-3] Section 2.10 describes the key considerations involved in the siting of a solar farm and how they are likely to be influenced by a range of factors in addition to considerations specific to individual projects. The consideration of 'no development' as an alternative to the Proposed Development has not been considered a reasonable alternative as it would not deliver the proposed renewable electricity generation capacity required to meet the UK's net zero greenhouse gas emissions target by 2050, which was passed into law by Government in June 2019.

4.3 What alternative sites have been considered?

- 4.3.1 The Applicant undertook a systematic process to determine suitable sites. A range of technical, environmental, and economic factors are considered when investigating and assessing any potential site for large-scale solar developments. A **Site Selection Assessment** at Appendix 2 to the **Planning Statement [EN010157/APP/5.5]**, provides a more detailed overview of the site selection process undertaken by the Applicant to identify the location of the Proposed Development.
- 4.3.2 The Applicant sought to develop a single new solar Nationally Significant Infrastructure Project (NSIP) which:
- Would contribute to meeting the UK's urgent need for low carbon energy generation;
 - Would be in close proximity to an available grid connection or part of the transmission network in which capacity exists;
 - Would reduce impacts on sensitive landscapes and environments as far as practicable;
 - Would be readily accessible from the existing strategic road network to facilitate construction; and,

- Would be delivered on land which could be secured voluntarily thereby avoiding the need for large scale compulsory acquisition.

4.3.3 A summary of the key factors in the Site Selection Assessment and why the Order Limits are considered a suitable location for a large-scale solar farm, in accordance with NPS EN-3 [Ref. 4-3], are as follows:

- **Irradiance and site topography** – preference was given to sites with a south facing aspect and flatter topography. Irradiance is sufficiently high in East Riding of Yorkshire to support solar development and the topography of the Order Limits is generally flat and therefore suitable for solar;
- **Network connection** – the site selection focused on a 12km radius around the National Grid Creyke Beck Substation where there was an available point of connection. This radius was restricted by the cable length distance, with a 12 km radius being the commercially viable cable distance for a project of this capacity. Within this radius preference was given to sites in close proximity to the point of connection;
- **Proximity of site to dwellings** – the site selection sought to avoid sites in close proximity to residential dwellings or where it would not be possible, to appropriately mitigate visual amenity and glint and glare. The Order Limits are located away from major settlements such as Hull and Beverley. Where residential dwellings are in close proximity to the Order Limits, screening and set backs of infrastructure have been designed to mitigate potential effects;
- **Agricultural land classification and land type** – the site selection sought to minimise the impact on best and most versatile agricultural land (land classified as Grade 3a and above). The Order Limits are located on land that is predominantly Grade 3b and lower;
- **Accessibility** – the site selection considered the suitability of the access routes to the proposed sites, during construction, operation (including maintenance) and decommissioning. The Order Limits are well serviced by the local road network and benefits from access to the A1035, which runs from Beverley to Bridlington, the A165 which runs from Hull to just south of Leven, and the A1079 which runs from Hull to York.

4.3.4 The **Site Selection Assessment** at Appendix 2 to the **Planning Statement [EN010157/APP/5.5]**, sets out in more detail the consideration of the above factors and provides further assessment on the balancing of the impacts of each.

- 4.3.5 Given the urgent need for renewable energy to address the climate crisis, following consideration of the above factors, the Site location has been chosen as it is considered to have good potential for a large-scale solar site. The availability of significant capacity at the National Grid Creyke Beck Substation was the primary driver in identifying a site in this part of East Riding of Yorkshire.
- 4.3.6 As reported in the **Site Selection Assessment** at Appendix 2 to the **Planning Statement [EN010157/APP/5.5]**, following a review to identify which of the land in proximity to the National Grid Creyke Beck Substation may be appropriate for solar PV development from a technical, environmental and community perspective, the Applicant commenced discussions with landowners to identify where there was a willingness to enter into lease agreements. The Site is considered to be preferable due to a number of reasons, including the lack of availability of suitable previously developed land, relative distance from environmental designations, distance to residential properties, and seeking to minimise additional land that would otherwise be required to create a longer cable connection route to the National Grid Creyke Beck Substation.

4.4 What alternative renewable technologies have been considered?

- 4.4.1 Alternative types of renewable energy generation technologies, such as wind and hydrogen, were not considered viable for this Site by the Applicant. The Site is not considered to be well suited for onshore wind energy generation due to the low, flat topography of the local area, which would likely give rise to significant landscape and visual effects due to the height of the turbines. In addition, the proximity to residential dwellings may result in adverse effects associated with shadow flicker and wind turbine noise.
- 4.4.2 In terms of hydrogen, the project objectives are to deliver a NSIP scale solar project to export directly to National Grid, not to generate electricity to deliver something different, for example, hydrogen (which is not a generation technology in its own right). Equally, it was not considered suitable due to the construction and commercial viability for this type of energy generation in comparison to solar energy generation. It was therefore never considered to be a realistic alternative to the Proposed Development.
- 4.4.3 It is also important to frame the consideration of alternative technologies in the context of Government policy around future energy generation. While very recent policy changes to the NPPF have opened the door to potential onshore wind development, for example, that does not place a higher policy emphasis on the delivery of a specific type of generating station. Indeed, during the development of the Proposed Development, there was no realistic possibility of a proposal for

onshore wind having sufficient support in policy terms to be considered a viable alternative technology.

- 4.4.4 In addition, offshore/marine based alternative technologies such as offshore wind and/or tidal power have not been considered because of the proximity to where capacity in the transmission networks exists.
- 4.4.5 As set out in the **Planning Statement [EN010157/APP/5.5]**, the British Energy Security Strategy **[Ref. 4-5]** and Net Zero Strategy **[Ref. 4-6]** commit to delivering up to a fivefold increase in solar capacity in the UK by 2035 and, in its 2024 Manifesto, the new Labour government has set out that it will work with the private sector to triple solar power by 2030. Further to this, the Clean Power 2030 Action Plan **[Ref. 4-7]**, published in December 2024, emphasises the need to accelerate the pace and scale of renewable energy development and outlines DESNZ's ambition for 45-47 GW of solar power by 2030 as well as onshore and offshore wind.
- 4.4.6 Therefore, while there is a requirement to bring forward multiple renewable technologies, it should be considered in the context of the infrastructure being delivered concurrently rather than as an alternative to another form of generation.
- 4.4.7 It is therefore considered that solar technology is the best renewable energy generating solution for the Site.

4.5 What alternative solar technologies have been considered?

- 4.5.1 The parameters of the Development Consent Order (DCO) Application will seek to maintain a degree of flexibility under the Rochdale Envelope to allow for the latest solar technology to be utilised at the time of construction; further information can be found in **ES Volume 1, Chapter 3: Proposed Development Description [EN010157/APP/6.1]**. Notwithstanding this, several alternative solar technologies and design options have been considered throughout the design process to date.
- 4.5.2 Throughout the design process, the primary options under consideration have been a fixed panel or tracking panel system and the need to preserve a flexibility of choice remains in terms of the DCO Application. Therefore, each environmental factor assessment presented in this ES assesses the worst-case scenario in terms of fixed or tracker panels, the choice of which is clearly stated within each of the environmental factor assessment chapters (**ES Volume 2, Chapters 6 to 14 [EN010157/APP/6.2]**).

4.6 What alternative development design, size and scale has been considered?

- 4.6.1 The design and layout of the Proposed Development has formed part of an iterative process which has been informed by the ongoing environmental assessment process, site selection assessment and taking into consideration the design principles and controls and engagement with stakeholders and consultees. The evolution of the design has informed the determination of the proposed Order Limits.
- 4.6.2 The layout and extents of the Proposed Development has been through three stages of design iterations. The first stage of design (Stage 1) was held prior to the public launch of the Proposed Development for non-statutory consultation and is presented in **ES Volume 3, Figure 4.1: Stage 1 Layout Masterplan [EN010157/APP/6.3]**. The second stage of design (Stage 2) relates to the design that was presented within the PEIR and informed statutory consultation and is shown on **ES Volume 3, Figure 4.2: Stage 2 Layout Masterplan [EN010157/APP/6.3]**. The third stage of design (Stage 3) is presented in support of the DCO Application, as shown in **ES Volume 3, Figure 3.1: Indicative Operational Layout Plan [EN010157/APP/6.3]**.

Design Stage 1

- 4.6.3 Following identification of the Proposed Development area, as outlined above and within the **Site Selection Assessment**, at Appendix 2 to the **Planning Statement [EN010157/APP/5.5]**, the land was subject to an initial assessment to identify land suitable for solar PV development and potentially suitable locations for the Battery Energy Storage System (BESS) and on-site substations. The initial assessment focussed on the suitability of land parcels based on environmental, social and economic factors. Minimum offsets to environmental features and sensitive human receptors informed the design process.

Solar PV development

- 4.6.4 Following the initial assessment, which included desktop assessments and visits to the Proposed Development area, the design team identified fields that were considered unsuitable for accommodating solar PV development and were therefore discounted. The reasoning for discounting these fields during Design Stage 1 is detailed within **Table 4-1**, below.

Table 4-1: Reasons for discounting fields from solar PV development at Design Stage 1

Location	Reason for discounting
Fields A1, A2 and A4 (Land Area A)	Solar PV development was discounted from the western extent of Fields A1 and A2 and to the north of Field A4 due to the proximity to the River Hull.
Fields E6, E7 and E9 (Land Area E)	Solar PV development was discounted on Field E6 and the northern extends of Fields E7 and E9 due to the proximity to the Meaux duck decoy Scheduled Monument.
Field F17 (Land Area F)	Solar PV development was discounted on land to the south of Field F17 due to proximity to residential developments and a public right of way.

- 4.6.5 It should be noted that at Design Stage 1, the areas discounted from solar PV development (cited in **Table 4-1** above) were retained within the Proposed Development for potential mitigation, enhancement or retained agricultural use.

Battery energy storage system and on-site substations

- 4.6.6 At Design Stage 1, locations for the BESS and the on-site substations were still under consideration, with the following factors informing the potential locations of this infrastructure:
- Proximity and visual impact on residential settlements;
 - Impacts on nearby environmental features;
 - Located outside of Flood Zones 2 or 3 as reasonably possible; and
 - Proximity and location of public rights of way.
- 4.6.7 At Design Stage 1, it was determined that the Proposed Development would include two on-site substations and that these would not be located within 250m of residential properties or designated environmental features. It was further determined that the proposed locations of these would be informed by further environmental assessment and technical requirements.
- 4.6.8 Locations for BESS at Design Stage 1 were not specified. As set out above, a number of factors were being considered to inform the potential location of the BESS, and further environmental assessment was required before appropriate locations for this infrastructure could be set.

Grid connection cable route options

- 4.6.9 During Design Stage 1, the Applicant carried out an assessment to identify potential underground cabling corridors to the National Grid Creyke Beck

Substation. This assessment considered potential appropriate routes which provided the most direct route between the Land Areas and the National Grid Creyke Beck Substation, seeking to avoid options that went through residential properties and gardens, as well as international and national statutory environmental designations.

- 4.6.10 **ES Volume 3, Figure 4.1: Stage 1 Layout Masterplan [EN010157/APP/6.3]** shows the indicative cable route options that were under consideration at Design Stage 1. These routes were at a preliminary design phase and underwent careful planning and assessment.
- 4.6.11 More detail on the grid connection cable route selection process is provided within the **Cable Route Selection Assessment**, appended to the **Site Selection Assessment** at Appendix 2 to the **Planning Statement [EN010157/APP/5.5]**.

Design Stage 2

Solar PV development

- 4.6.12 Following the Design Stage 2 process, a number of additional fields and partial fields were removed from the area of solar PV development. Additionally, a number of changes were made to parameters set out within the **ES Volume 4, Appendix 5.1: Scoping Report [EN010157/APP/6.4]** produced at Design Stage 1. **Table 4-2** below, provides a summary of the fields that were discounted, the reasons for removal and the changes to parameters. **ES Volume 3, Figure 4.2: Stage 2 Layout Masterplan [EN010157/APP/6.3]** shows the Proposed Development at Design Stage 2.

Table 4-2: Changes to the layout and design of the Proposed Development in Design Stage 2

Location	Reason for discounting
Fields A4 and A6 (Land Area A)	Solar PV development was further pulled back in the north of this Land Area, in Fields A4 and A6, to provide a buffer between residential properties and the Proposed Development.
Fields A7 and A8 (Land Area A)	Areas of solar PV development in Fields A7 and A8 were removed to minimise potential impacts on identified below-ground archaeology.
Field B2 (Land Area B)	Field B2 to the north of this Land Area was discounted from solar PV development to provide a mitigation area for ground nesting birds.
Field B3 (Land Area B)	Field B3 was discounted from solar PV development to minimise potential impacts on identified below-ground archaeology.

Location	Reason for discounting
Field B4 and B8 (Land Area B)	Areas of solar PV development in the south of this Land Area, in Fields B4 and B8, was discounted in order to minimise potential visual impacts on nearby properties and potential impacts on identified below-ground archaeology.
Field C8 (Land Area C)	Solar PV development in Field C8 was discounted in order to provide a buffer between nearby public rights of way (particularly public right of way Riston No. 2 to the west and the Proposed Development).
Fields C6 and C9 (Land Area C)	Solar PV development on the edge of Fields C6 and C9 was further set back to minimise potential visual impacts on nearby properties.
Field D16 (Land Area D)	Solar PV development in Field D16 was set back to minimise potential visual and amenity impacts on the property at the southern edge of the field.
Field D18 (Land Area D)	Solar PV development was discounted in Field D18 to minimise potential impacts to the setting of the Meaux Deserted Medieval Village and potential visual impacts on nearby properties.
Fields E13 and E14 (Land Area E)	Solar PV development was discounted in Fields E13 and E14 to minimise potential impacts on nearby properties.
Field E16 (Land Area E)	Solar PV development was further set back in Field E16 to minimise potential visual and amenity impacts on the property at the southern edge of the field.
Fields F6, F9, F10 and F11 (Land Area F)	Solar PV development was discounted in Fields F9 and F10 and partially removed from Fields F6 and F11 to minimise potential impacts on identified below-ground archaeology.
Fields F1, F4, F5, F6 (Land Area F)	Solar PV development was discounted from northern sections of Fields F1 and F4-F6 to minimise potential impacts to the setting of the Meaux Abbey.
Tickton Bridleway No.5	Solar PV development on either side of the Tickton Bridleway No. 5 was further set back to minimise potential impacts on users.
Hybrid Pack parameters	Dimension of the hybrid pack increased from a footprint of 54m by 2.5m, to a footprint of 12m by 20m.
Interconnecting cabling trench depth parameter	The maximum trench depth for the interconnecting cabling decreased from 1.6m to 1.5m. A maximum construction working width of 10m was also introduced.
Grid connection cable route parameters	The maximum construction working width decreased from 50m width to 30m width. The maximum trench depth also increased from 1.2m to 1.5m.
On-site substation parameters	The dimensions of the on-site substation footprint increased from 70m by 70m to 60m by 110m.

- 4.6.13 As with Design Stage 1 at Design Stage 2 the areas discounted from solar PV development (cited in **Table 4-2** above) were retained within the Proposed Development for potential mitigation, enhancement or retained agricultural use.

Battery energy storage system and on-site substations

- 4.6.14 Following Design Stage 1 and further survey work, a review was carried out at Design Stage 2 to identify suitable locations for the BESS and the on-site substations.
- 4.6.15 Design Stage 2 proposed locations for BESS as shown in **ES Volume 3, Figure 4.2: Stage 2 Layout Masterplan [EN010157/APP/6.3]**. BESS were proposed to be distributed across each Land Area, with the exception of Land Area A, which was proposed to have BESS located in two separate areas that sit outside of flood breach modelling levels.
- 4.6.16 The locations of the on-site substations were further refined at Design Stage 2, following additional assessment work. As shown in **ES Volume 3: Figure 4.2: Stage 2 Layout Masterplan [EN010157/APP/6.3]**, the two on-site substations were proposed to be located within Field C3 and Field E8. The siting of these were influenced by flood breach modelling and existing woodland within the Proposed Development area, taking advantage of the existing screening from the surrounding area.

Grid connection cable route options

- 4.6.17 Following further design work, the options considered at Design Stage 2 for the underground grid connection cable route to connect the Proposed Development to the National Grid Creyke Beck Substation are shown in **ES Volume 3: Figure 4.2: Stage 2 Layout Masterplan [EN010157/APP/6.3]**. The options presented included the removal of the full highway option, previously included at Design Stage 1, and a refinement of the other options, including reduced corridor widths in a number of areas.
- 4.6.18 More detail on the cable route selection process is provided within the **Cable Route Selection Assessment**, appended to the **Site Selection Assessment** at Appendix 2 to the **Planning Statement [EN010157/APP/5.5]**.

Design Stage 3

- 4.6.19 The design of the Proposed Development submitted in support of the DCO Application, as shown in **ES Volume 3, Figure 3.1: Indicative Operational Layout Plan [EN010157/APP/6.3]**, includes a number of changes since the Design Stage 2 layout that was presented in support of the PEIR and statutory

consultation, held May – June 2024. The design development since statutory consultation has been informed by consultation feedback, the emerging results from further environmental surveys, targeted engagement with statutory consultees and stakeholders and further internal technical design workshops. The changes to the location, design elements and parameters are set out in **Table 4-3**. More detail on consultation feedback that informed the further design development is contained with the **Consultation Report [EN010157/APP/5.1]**.

Table 4-3: Changes to the layout and design of the Proposed Development in Design Stage 3

Location/Design Element	Design change	Reason for change
Land Area A and Cable A-B	Land Area A, and therefore Cable A-B, have been removed from the Order Limits.	Land Area A has been removed from the Order Limits following feedback on ecological receptors risk in the area from statutory parties and the community, as well as the results of flooding and transport assessments. Hydraulic modelling of the Site showed partial flooding of Area A associated with the Hull and Holderness Drain in the west and the Monk Dike, Meaux and Routh East Drain and Arnold and Riston Drain in the east. Drainage through the Holderness Drain was heavily restricted by high tide levels which results in flooding in the eastern part of Land Area A. Flooding was generally modelled at less than 0.5m but in some places it was up to 1m deep. As such, the decision was made to remove this area from solar PV Development and the Order Limits.
Land Area C	The indicative location for the eastern on-site substation, located in Field C3, was moved slightly within the same field for Design Stage 3. This was to ensure that the infrastructure was outside of an area of flood risk posed by the Arnold and Riston Drain.	This refinement is a result of further technical surveys and assessments, including flood risk surveys.

Location/Design Element	Design change	Reason for change
	It also provided an opportunity for additional screening to the east of the substation. There was no change proposed to the indicative location of the western on-site substation, located in Field E8	
Land Area C access route	Removal of access route (south of Land Area C)	In response to several local resident statutory consultation responses raising concerns about the proposed access route using Black Tup Lane, the Applicant reviewed technical information and surveys carried out regarding consultation, operational and decommissioning transport needs. Following this review, it was determined that the southernmost access point at Land Area C, which would utilise Black Tup Lane and Woodhouse Lane could be removed from the proposed development.
Land Areas D and E	The permissive paths in Land Area D and E are proposed to include horse riding rights.	Request from local residents that bridleways are provided for horse riders.
Land Area F	A new permissive path has been added to the Proposed Development, running along the eastern boundary of Field F6, through the area set aside for ecological enhancement in F9, F10 and F14, connecting with the existing Wawne Footpath No. 1 to the south of Field F16.	Suggestions from local residents to include new cycle and footpath routes. The new permissive path route will join others set out at the stage 2 design to provide over 12 km of new permissive paths across the Proposed Development.
Solar development area	The indicative locations for BESS have been further refined for the Stage 3 design. These are still distributed across each Land Area.	This refinement is a result of further technical surveys and assessments

Location/Design Element	Design change	Reason for change
Solar PV module height	Maximum solar PV module height was reduced from 3.5m to 3m	Responses to statutory consultation raised concerns regarding the height of the solar modules, and whether landscape and visual mitigation could effectively mitigate any adverse effects from these. Following further design refinement and engagement with the Environment Agency, the maximum height of the solar PV modules was reduced to 3m.
BESS parameters	The height of the BESS unit increased from a maximum of 3m to a maximum of 3.5m. The length of the BESS unit increased from a maximum of 6m to a maximum of 6.5m.	These changes are as a result of further understanding of BESS units that may be used within the Proposed Development.
Hybrid pack parameters	Dimension of the hybrid pack increased from a footprint of 12m by 20m to a footprint of 13m by 22m.	These changes are as a result of further understanding of the Hybrid pack that may be used within the Proposed Development and their likely parameters.
Grid connection cable route	Cable Route Option 1 has been selected as the preferred route linking the Proposed Development to the National Grid Creyke Beck Substation.	In response to statutory consultation feedback and the ongoing design and assessment work, the Applicant has selected Cable Route Option 1 as the preferred route. Cable Route Option 2 is no longer within the Order Limits.
Grid connection cable route	The area of Figham Common within the Order Limits has decreased by 35%.	This reduction is in response to the consultation response from the Figham Pasture Masters, alongside further development of the cable route constraints.

Grid connection options

4.6.20 At Design Stage 2 a number of options were presented for the cable route connecting the Proposed Development to the existing National Grid Creyke Beck Substation, only one cable route has been taken forward in support of the DCO Application.

- 4.6.21 The DCO Application grid connection cable route runs south-west from Fields E16 and E17 in Land Area E to the north of Woodmansey and then south to the National Grid Creyke Beck Substation, as shown in **ES Volume 3, Figure 3.1: Indicative Operational Layout Plan [EN010157/APP/6.3]**. The final cable route has been designed to avoid residential properties and gardens and has been informed by further environmental assessments and engagement with relevant landowners and stakeholders.
- 4.6.22 A more comprehensive description of the grid connection cable route options considered between the Proposed Development and the National Grid Creyke Beck Substation, and the reasons for discounting each, is presented within the **Cable Route Selection Assessment**, Appendix 1 to the **Site Selection Assessment** at Appendix 2 to the **Planning Statement [EN010157/APP/5.5]**.

Design Stage 3a

- 4.6.23 A number of minor additions to the Order Limits were also made at Design Stage 3 as a result of the confirmation of the final grid connection cable route. As these involved changes to the Order Limits, a targeted consultation was held from 8 October 2024 to 8 November 2024 to present these.
- 4.6.24 The changes to the Order Limits, and the reasons for these changes are set out in **Table 4-4** below.

Table 4-4: Changes to the layout and design of the Proposed Development in Design Stage 3a

Location	Reason for change
Land Area B – Monk Dike	To include the length of Monk Dike that runs through the middle of Land Area B to the Order Limits to allow for the installation of cables underneath the dike using horizontal directional drilling. These cables connect the different sectors of solar panels within Land Area B. No physical work will occur within of the banks the dike or within the watercourse.
B-B cable – Stonleygoat Dike	To realign part of the cable corridor between sections of Land Area B to the north of Stonleygoat Dike. Additionally, the western section has been adjusted to establish a buffer of at least 30m from nearby trees, avoiding disturbance to habitats.
Land Area B – A165 access point	To increase the Order Limits to enable the construction of a new site entrance from the A165 into the southern extent of Land Area B to ensure adequate visibility and manoeuvring for vehicles entering and exiting the site.

Location	Reason for change
Land Area B – Carr Lane (Long Riston) access point and adjacent fields	To increase the Order Limits to enable the widening of the existing carriageway and access at Carr Lane (Long Riston) to facilitate access into Land Area B for vehicles and to include an additional area of land within the adjoining fields to ensure sufficient space for the installation of passing places.
Land Area C – Carr Lane (Arnold) access road and adjacent fields	To amend the Order Limits to include an additional area of land within the fields adjoining the highway to ensure there is sufficient space to facilitate the installation of passing places.
Land Area C – D – cable corridor	To amend the Order Limits for the inclusion of a 76-metre-wide strip to provide for a cable connection between Land Area C and Land Area D. The cable will be horizontal directional drilled underneath the Monk Dike and Meaux and Routh East Drain. No physical work will occur within the dike banks or within the watercourse
Land Area D – Meaux Lane highways works (part 1)	To amend the Order Limits to ensure that the site access on Meaux Lane can provide adequate visibility and manoeuvring for vehicles entering and exiting the site and extends the Order Limits to include an additional area of land within the adjoining fields to facilitate the installation of passing places.
Land Area D – Meaux Lane highways works (part 2)	To amend the Order Limits to include a section of public highway and verge along Meaux Lane to enable the installation of vehicle passing places and ensure adequate visibility for vehicles entering and exiting the site. The use of temporary traffic signals and signage to control traffic management will also be needed during construction.
Land Area E – access track	To amend the Order Limits to include a section of the existing track between two fields within Land Area E to support construction and for ongoing operational access.
Land Area E – additional mitigation land	This added land to the Order Limits within Land Area E to provide additional environmental mitigation for breeding bird species. No solar panels will be included in the additional area.
Land Area E – Carr Lane (Weel) access point	To amend the Order Limits to include a section of existing private access track to provide access to Land Area E during the operational stage of the development.
Cable E-F – Holderness Drain	To amend the Order Limits to include additional land required to provide the necessary space for horizontal directional drilling of cables underneath the Holderness Drain in order to provide the necessary connections between Land Area E and Land Area F. No physical works

Location	Reason for change
	will take place within the banks of the drain or within the watercourse.
Land Area F – Meaux Road access point	To amend the Order Limits to include the existing private access track off Meaux Road to provide the necessary access to solar panels in Land Area F.
North cable route – Hull Road access point	To amend the Order Limits to incorporate a short section of existing private track and adjacent field to provide the necessary access for vehicles.
North cable route – Figham Common	To amend the Order Limits to accommodate the installation of the grid connection cable works and associated construction access within Figham Common.
North cable route (west of Woodmansey)	To amend the Order Limits to enable the installation of the grid connection cable works.
Cable route south – Long Lane	To amend the Order Limits to include a section of private track from Long Lane to provide temporary access during the construction of the grid connection cable works. No widening of the private track is necessary. Minor realignment of the cable corridor is also proposed to provide the necessary flexibility to support cable installation
Cable route south – railway crossing	To amend the Order Limits to enable the installation of the grid connection cable works. As originally proposed, horizontal directional drilling of the cable under the existing railway line will be required.
Cable route south – Creyke Beck Substation access	To amend the Order Limits to include the existing access route via Park Lane (a section of private track), to provide access for the grid connection cable works.

4.6.25 Following targeted consultation, all the above changes have been carried through into the Order Limits for submission, see **ES Volume 3, Figure 3.1: Indicative Operational Layout Plan [EN010157/APP/6.3]**, with the exception of the change at Land Area C – Carr Lane (Arnold) access road and adjacent fields. In the final Order Limits the width of land take at that location has been reduced to avoid taking land from adjacent fields while still being able to provide an acceptable minimum distance for passing places.

4.7 Summary

4.7.1 In accordance with the EIA regulations, this chapter has set out the reasonable alternatives studied by the Applicant in both the site selection process and in the design iteration process carried out in preparing this DCO Application. It has set out the main reasons for selecting the chosen option and how the effects of the development on the environment have been taken into account. This chapter identifies how flexibility in the detailed design of the Proposed Development is

secured through the DCO to ensure that any further design iterations remain in accordance with the design principles and parameters.

4.8 References

- **Ref. 4-1:** The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. Available online:
<https://www.legislation.gov.uk/ukxi/2017/572/contents/made>
- **Ref. 4-2:** Department for Energy Security and Net Zero (2023) (designated in January 2024). Overarching National Policy Statement for Energy (EN-1). Available online:
<https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1>
- **Ref. 4-3:** Department for Energy Security and Net Zero (2023) (designated in January 2024). National Policy Statement for Renewable Energy Infrastructure (EN-3). Available online:
<https://www.gov.uk/government/publications/national-policy-statement-for-renewable-energy-infrastructure-en-3>
- **Ref. 4-4:** Department for Energy Security and Net Zero (2023) (designated in January 2024). National Policy Statement for Electricity Networks Infrastructure (EN-5). Available online:
<https://www.gov.uk/government/publications/national-policy-statement-for-electricity-networks-infrastructure-en-5>
- **Ref. 4-5:** Department for Energy Security and Net Zero, Prime Minister's Office, 10 Downing Street and Department for Business, Energy & Industrial Strategy. The British Energy Security Strategy (2022). Available online:
<https://www.gov.uk/government/publications/british-energy-security-strategy/british-energy-security-strategy>
- **Ref. 4-6:** Department for Energy Security and Net Zero and Department for Business, Energy & Industrial Strategy. Net Zero Strategy: Build Back Greener (2021). Available online:
<https://www.gov.uk/government/publications/net-zero-strategy>
- **Ref. 4-7:** Department for Energy Security and Net Zero. Clean Power 2030 Action Plan: A new era of clean electricity (2024). Available online:
<https://assets.publishing.service.gov.uk/media/677bc80399c93b7286a396d6/clean-power-2030-action-plan-main-report.pdf>

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