# Botley West Solar Farm

Environmental Statement

## Volume 1

## Chapter 5: Alternatives Considered

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# Glossary

| Term | Meaning |
|---|---|
| The Applicant | SolarFive Ltd |
| The Project | The Botley West Solar Farm |
| The Site or Order Limits | The area of land encompassing the Project development and shown on the Site Location and Order Limits Overview (Volume 2, Figure 1.1 of the ES) |

# Abbreviations

| Abbreviation | Meaning |
|---|---|
| BESS | Battery Energy Storage System |
| CCUS | Carbon Capture, Utilization and Storage |
| DCO | Development Consent Order |
| DESNZ | Department for Energy Security and Net Zero |
| EIA | Environmental Impact Assessment |
| EDF | Électricité de France S.A. |
| ESO | Electric System Operator |
| HDD | Horizontal Directional Drilling |
| NETS | National Electricity Transmission System |
| NGET | National Grid Electricity Transmission plc |
| NPS | National Policy Statement |
| POC | Point of Connection |
| SoS | Secretary of State |
| TNUoS | Transmission Network Use of System |

# Units

| Term | Description |
|---|---|
| GW | Gigawatt |
| ha | Hectares |
| Kv | Kilovolt |
| MW | Megawatt |

# 5 Alternatives Considered

## 5.1 Introduction

5.1.1 The chapter sets out the main alternatives considered by the Applicant during the project development and EIA process as well as addressing comments raised during the Scoping Process. It includes a summary of the process that the Applicant went through leading up to the selection of the Site, its scale, together with a description of the alternative design and layout options that have been considered as part of the design evolution, having regard to relevant environmental effects amongst other considerations such as land negotiations, and technical and commercial feasibility.

5.1.2 A full contents, glossary and reference list is available as part of the ES [**EN010147/APP/6.1**]

## 5.2 Policy context

5.2.1 Regulation 14(2) of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the "EIA Regulations") sets out what an ES should include and cross-refers to Schedule 4 of the EIA Regulations. Paragraph 2 of Schedule 4 provides for inclusion of the following:

*"A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects'.*

5.2.2 This requirement is also reflected in national planning policy. NPS EN-1 at paragraph 4.3.15 states that ".. *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...*".

5.2.3 NPS EN-1 also states at paragraph 4.3.24 that ".. *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 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'*.

5.2.4 At paragraph 4.3.25 NPS EN-1 states "*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.*.".

5.2.5 At paragraph 4.3.27 NPS EN-1 also states that *"..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…".*

5.2.6 NPS EN-1 paragraph 4.3.28 continues to state: *'..Alternative proposals which are vague or immature can be excluded..'.*

5.2.7 NPS EN-1 paragraph 4.3.29 states: *"It is intended that 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".*

5.2.8 In policy terms, therefore, the Applicant should set out the reasonable alternatives studied. This is dealt with primarily throughout this Chapter 5 of the ES [**EN010147/APP/6.3**] and is summarised at section 5.10 and Table 5-1 and Table 5-2. The Applicant need not include alternatives that are not commercially viable or physically suitable. Alternatives not studied by the Applicant, including those put forward by third parties, should only be considered to the extent that the SoS thinks they are both important and relevant to the decision (in respect of this latter point the Applicant will rely upon the Scoping Opinion from PINs in respect of their opinion on approach to alternatives – see 5.4.1 to 5.4.4 below).

5.2.9 When reporting on alternatives, the Applicant 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. This is dealt with in detail below, in respect of key elements of the Project including Site Location and Scale (**Section 5.6**); Site Layout and Design (**Section 5.7**); Choice of Solar Array – Type and Height (**Section 5.8**); and Cable Corridor route and laying system (**Section 5.9**).

5.2.10 Lastly, there is no prohibition on alternatives being available. When making a decision the SoS should not refuse an application for development on one site simply because fewer adverse impacts would result from developing similar infrastructure on another suitable site, and 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.

## 5.3 Other Legislation and Alternatives

5.3.1 The Applicant is also aware that other legislation may require that 'alternatives' are considered and presented as part of an application for consent, depending on the particular circumstances of the project. For example, there are legal requirements to consider alternatives that may apply under the Habitats Directive (Council Directive (Council Directive 92/43/EEC and associated UK Regulations), or where the SoS is invited to exercise compulsory acquisition powers (ss 120 and 122-134 Planning Act 2008). NPS EN-1 states at paragraph 4.3.17 that "... *where there is a policy or legal requirement to consider alternatives, the applicant should describe the alternatives considered in compliance with these requirements...*".

5.3.2 In the case of this Project, there is no Habitat Regulations issue that would otherwise trigger a need to consider alternatives. This is dealt with in more detail in the Habitats Regulations Assessment Report ('HRAR') at Appendix 9.14 of the ES **[EN010147/APP/6.5]** which confirms that no derogation case is required for the Project. However, the draft DCO **[EN010147/APP/3.1]** seeks powers of compulsory acquisition, as set out in the Land Plans **[EN010147/APP/2.4]** and Book of Reference **[EN010147/APP/4.3]**. To that extent a study of alternatives is relevant. The justification for the inclusion of compulsory acquisition powers is set out in section 8 of the Statement of Reasons **[EN010147/APP/4.1]** which accompanies this application. This includes a consideration of alternatives to the use of compulsory acquisition powers and alternatives to the Project.

5.3.3 There are four areas within the Site where there is a need for flexibility along the Cable Corridor whilst the Applicant continues to balance the ongoing design, environmental, technical and engineering considerations in order to establish a preferred route. In these four areas, the Applicant sets out the alternative routes considered and reports on the environmental effects of each. The four areas where this necessary optionality is retained are shown in Figures 5.1 to 5.5 of Volume 2 of the ES **[EN010147/APP/6.4]**.

## 5.4 Scoping Opinion and Alternatives

5.4.1 The Scoping Opinion issued by PINs in respect of the Botley West Solar Farm (24th July 2023), also addressed the issue of alternatives. This noted that the ES should demonstrate how environmental baseline information, such as ecological value and agricultural land classification has informed site selection, consideration of alternatives, and subsequently project refinement. The Scoping Opinion is provided as Appendix 4.1 of Volume 3 of the ES **[EN010147/APP/6.5]**.

5.4.2 The Applicant notes that in the appendix to the Scoping Opinion, a variety of consultees also made reference to alternatives. Whilst these specific references were not carried forward into the Scoping Opinion by PINs, the Applicant has had regard to them nonetheless. Table 2 of this Chapter sets out the comments from PINs and the consultees and explains how the Applicant has addressed these.

5.4.3 In light of the above, this Chapter sets out the reasonable alternatives considered by the Applicant as well as issues raised by third parties where they have raised matters in connection with alternatives. Specifically, the Applicant considers alternatives using the following main headings:

1. The implications if the Project does not proceed in terms of National Policy and targets – the 'Do-Nothing Scenario';
2. Site Location and Scale;
3. Site Layout Design;
4. Choice of Solar Array – Type and Overall Height; and
5. Cable Corridor Route and Laying Methods.

5.4.4 Under each heading, the Applicant explains how they have considered alternatives and the reasons, where relevant, for the choices they have made having regard to environmental, social and economic considerations, and how these have influenced the evolution of the design, layout and other characteristics of the Project. A summary to the alternatives considered and the reasons for the developers choice is also summarised in Table 1 below. Table 2 also explains how the Applicant has addressed comments relating to the issue of alternatives made by PINs and other consultees.

## 5.5 Do Nothing

5.5.1 Whilst the Applicant has considered the 'do nothing' scenario for completeness and in response to consultee comments, the Applicant does not consider this to be a reasonable alternative to the Project as it would not deliver the proposed renewable electricity generation capacity, a key principle for consideration of alternatives as set out in NPS EN-1.

5.5.2 The consequence of a do-nothing scenario, i.e. not to develop the type of project in principle, is that the need for renewable energy, to provide the UK with energy security, and to achieve net zero by 2050, will not be met without the Project and others like it. Nationally policy (NPS EN-1 and EN-3) supports renewable energy developments and low carbon infrastructure as 'critical national priority' (CNP) as the need for them is urgent. A do-nothing strategy would materially undermine the Government's strategy and ability to meet its legally binding obligations and to deliver the target 70GW of solar by 2035.

5.5.3 According to the Research Briefing Paper on 'Planning for Solar Farms', published by the House of Commons on 20 May 2024, it states that:

*"..As of March 2024, the cumulative installed capacity of solar power in the UK was 15.8 GW. The government aims to achieve 70 GW of solar power by 2035.*

*The Environmental Audit Committee, a Commons Select Committee, said meeting this target would be "challenging given existing barriers and current rates of deployment". The government's advisory Climate Change Committee also said current deployment rates were "significantly off track".*

*Two of the main barriers to the expansion of solar power they identified were grid capacity and delays in securing grid connections. The Environmental Audit Committee said "upgrading the electricity grid is a crucial prerequisite to the achievement of net zero...".*

5.5.4 It is acknowledged by the Applicant that there are many schemes currently in the consenting process. The largest schemes are listed on the PINs website and an analysis of their capacity and status can be found at Annex A: NSIP Solar DCO Capacity Analysis. However, even if all of these are consented, built and connected before 2035, this would only add approximately 15.2GW to the 15.8GW of installed capacity reported in the House of Commons briefing paper from May 2024 i.e. a total potential capacity of 31GW. This includes the potential contribution of the Project with an anticipated 840MW, and which has the benefit of a confirmed grid connection offer.

5.5.5 At this point therefore, there is still a significant shortfall in the 70GW Government target, of approximately 39GW.

5.5.6 This reinforces the Applicant's assertion, and the House of Commons conclusion, that a do-nothing scenario would further threaten the ability of Government to deliver 70GW of solar by 2035 and net zero by 2050. The Applicant considers that any potential adverse effect of the Project would be more than outweighed by the significant benefits that the Project will bring in environmental, social and economic terms (as set out in relevant Chapters of this Environmental Statement).

5.5.7 Further, as set out in the Overarching National Policy Statement for Energy, EN-1, the Government has committed to fully decarbonising the power system by 2035. At paragraph 4.2.2 to 4.2.4, it states that:

*"...Ensuring the UK is more energy independent, resilient and secure requires the smooth transition to abundant, low-carbon energy. The UK's strategy to increase the supply of low carbon energy is dependent on deployment of renewable and nuclear power generation, alongside hydrogen and CCUS. Our energy security and net zero ambitions will only be delivered if we can enable the development of new low carbon sources of energy at speed and scale...".*

*"With smart and strategic planning, the UK can maintain high environmental standards and minimise impacts while increasing the levels of deployment at the scale and pace needed to meet our energy security and net zero ambitions.*

*Government has therefore concluded that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure".*

5.5.8 The CNP status of the Project reinforces the pressing need to deliver such projects at pace.

## 5.6 Site Location and Scale

5.6.1 NPS EN-3 includes matters that are likely to influence site selection and design, how assessments should be undertaken and how mitigation should be provided.

5.6.2 In terms of site selection and design, paragraph 2.10.18 to 2.10.48 of NPS EN-3 provides that the key considerations involved in the development of a solar farm include, amongst others:

- Irradiance and site topography;
- Network Connection;
- Proximity of a site to dwellings;
- Agriculture land classification and land type;
- Accessibility;
- Public rights of ways; and
- Security and lighting.

5.6.3 The site selection for the Project and the proposed design and layout of the Project has been influenced by the above factors, as set out in further detail below.

5.6.4 The Project site evolved over a period of several years, beginning in July 2019. From the outset, the general location, overall size, and then the precise project boundaries, have been influenced by the availability of a suitable grid connection, voluntary landowner negotiations, commercial viability, national planning policy, and environmental constraints.

5.6.5 In 2019, as part of the Applicants general site search exercise, discussions were held with National Grid to identify where their priorities lay in order to meet demand and manage the UK electricity supply network. Following a review of the Transmission Network Usage System (TNUoS), managed by National Grid as the Electricity System Operator (ESO), and regulated by Ofgem, it was clear that the South East remained an area where demand was greatest.

5.6.6 The Applicant's focus was to then look for suitable and available land in the South East to develop a solar farm. At this point, whilst scale was not a determinative factor, the scale of all solar farms determines their viability, and generally the larger the solar farm the more viable it becomes. The next stage in the site selection process was to find a substation into which a connection could be made – one which had capacity to accept a connection for a new generating station. The connection of a proposed electricity generation plant to the electricity network is an important consideration for applicants wanting to construct or extend a generation plant (NPE EN-1, paragraph 4.11.1). Generally, land close to a suitable substation costs less to connect to than one further away. Power loss also drops away the greater the distance involved – the connection infrastructure, which is funded by the developer, is also expensive and so the desire is to locate a site in close proximity to a substation wherever possible.

5.6.7 A review of substations commenced in October 2019. The Applicant looked at approximately 19 substations to establish their ability to accept new connections, as well as whether land might be available next to or close to relevant substations to construct a solar farm. Their investigations revealed that several substations had capacity. Figure 5.6: Substation Locations in Volume 2 of the ES **[EN010147/APP/6.4]** shows the locations of the 19 substations examined by the Applicant as well as indicating those with capacity as well as their location in proximity to Green Belt and National Landscape designations.

5.6.8 There was one substation in particular where the Applicant considered that it offered good potential to deliver a solar farm at scale. This was at Cowley in South Oxfordshire District. National Grid confirmed there was space at the substation to accommodate a new connection, were supportive of the Applicant to pursue the connection, and this was also relatively close to landowners who were also willing to offer land to build a solar farm. The substation at Northfleet in East London, just outside the Green Belt, also had grid capacity but was not taken forward by the Applicant as the site was land-locked with no reasonable prospect of securing land in close proximity for a solar development at scale.

5.6.9 Whilst the Cowley substation is located within the Green Belt, all other substations examined with headroom capacity, were also located within the Green Belt, meaning that development of a project in the vicinity of any of the

four substations with capacity, would also fall within the Green Belt. A site without any impact on Green Belt therefore, was not available to the Applicant.

5.6.10 The Applicant then focused on securing land in the Cowley substation location.

5.6.11 Initially, to commence the land search, the Applicant sought sufficient land to provide a 'hub' around which other land might then also be conjoined to allow a solar farm to be developed at scale. The search began to find at least 250ha of land, ideally in a single ownership. A larger area of land would not be ruled out if suitable and available.

5.6.12 The search began within a 5km radius of the Cowley substation. No land was available within the immediate vicinity of the substation.

5.6.13 Ongoing discussions with NGET regarding connection then led the Applicant towards searching for suitable land under or in close proximity to the 400kV line to the west of Cowley. NGET confirmed there was capacity if a connection could be made under those lines. Given expressions of interests for connections by the Applicant and other renewable developers in the area, NGET also began to investigate building a new substation somewhere beneath this 400kV line.

5.6.14 In February 2020 the Applicant began negotiations with a willing landowner, with significant land interests in the area; Blenheim Estate (Blenheim). Blenheim initially offered 200 ha, but that land was approximately 15km from the 400kV line. More land was needed closer to the 400kV line, which was eventually offered by Blenheim and by another landowner in the area that NGET were contemplating building a new substation. The land packages were relatively disjointed and required additional land areas to facilitate cabling to connect them.

5.6.15 After negotiations with many other landowners in the area, the Applicant secured land at Denman's Farm, immediately under the 400kV line to the west of Botley. Over the next year further land became available from willing landowners. However, in order to develop a scheme that was likely to be acceptable in environmental terms, the Applicant employed environmental consultants to assist in the feasibility of delivering a solar farm in this general location. Refinements in the land considered suitable began to be evaluated, and a series of design principles established (see Chapter 6: Project Description **[EN010147/APP/6.3]** and the Outline Layout and Design Principles **[EN010147/APP/7.7]** for more detail) to guide where the infrastructure could be accommodated.

5.6.16 This environmental assessment work was the start of an iterative process that has continued through to mid 2024. In February 2021, following the start of the feasibility and evaluation stage, a Point of Connection (PoC) application was made to National Grid for 840MW. This PoC was signed in June 2021.

5.6.17 Over this time, therefore, the general location, overall size, and then the precise project boundaries, have been influenced by the availability of a suitable grid connection, voluntary landowner negotiations, commercial viability, national planning policy, and environmental constraints.

5.6.18 The Site and its overall scale is considered to be suitable having regard to the following:

- Proximity to the Cowley Substation and the National Electricity Transmission System (NETS) with a confirmed connection offer;
- land availability;
- the ability to avoid or minimise planning and environmental constraints including:
  - the effect upon the Blenheim Palace World Heritage Site;
  - its visual effects, being located on relatively low-lying land with the development interspersed with existing trees, hedgerows, open land, and other features, with the opportunity to enhance existing planting to assist in screening the development;
  - its location avoiding where practicable permanent adverse effects upon best and most versatile agricultural land and to protect soil resource;
  - its ability to secure significant biodiversity gains on land that is relatively low in ecological value;
  - its location beyond key landscape and environmental designations e.g. National Landscapes, Conservation Areas, setting of heritage assets, SPA's, SAC's, SSSI's; and
  - its location in an area of low flood risk.

## 5.7 Site Layout & Design

5.7.1 At an early stage of the feasibility of the development of the Project, the Applicant produced a high-level constraints plan to understand site sensitivities in planning and environmental terms. This included plotting on a suitable OS plan base:

- National and local environmental designations e.g. National Landscapes, ecological designations;
- Blenheim Palace World Heritage Site and all listed buildings, registered gardens and Conservation Areas;
- Landscape designations including protected trees and Ancient Woodland and all existing lines of trees/hedgerow;
- Watercourses and areas at a high risk of flooding;
- Engineering constraints such as roads, railway lines and overhead power lines; and
- Other major infrastructure, existing or planned, including Oxford Airport and local plan allocations for major residential development.

5.7.2 This provided a framework within which the Applicant could start to consider ways in which the site could be designed and laid out that minimised or avoided conflict with these assets and other environmental factors.

5.7.3 Various iterations of the evolution of the design of the solar farm have included decisions to:

- Remove solar arrays on land that might adversely affect the setting of the Blenheim Palace World Heritage Site e.g. areas of land south of Bladon village, or other listed buildings.
- Remove solar arrays on land within or close to Conservation Areas e.g. Church Hanborough Conservation Area, where the environmental consultants advised against placement of panels or other electrical infrastructure within the Conservation Area.
- Create a buffer free from development adjacent to areas of ancient woodland and veteran trees.
- Creating a buffer away from residential areas of a minimum of 25m from the curtilage of such property.
- Removing panels from beyond the southern edge of the Oxford Airport runway, to allow for extra margins of safety and the opportunity for the airport to install further landing lights.
- Removing solar arrays and other electrical infrastructure where the Applicant discovered potentially significant underground archaeology as a result of aerial photography, desk top research and comprehensive geophysical surveys across all of the site proposed to be developed.
- To move development components, where practicable, to avoid permanent loss of best and most versatile agricultural land, and to protect soil resource.
- To position noise generating infrastructure, where possible, away from sensitive receptors; and
- To choose cable corridors and cable laying techniques to minimise adverse environmental effects. This meant using the existing road network where possible, and where routes were required to cross agricultural or other land or features, to use open cut or Horizontal Directional Drilling (HDD) where appropriate. For example, HDD is proposed to be used extensively to avoid trees, hedgerows, sensitive ecology, roads and the railway. In targeted areas of important archaeology, cables will be laid on the surface, suitable protected.

5.7.4 The evaluation of site constraints and constant evolution of the design and layout presented opportunities to provide the following:

- areas for habitat enhancement, including planting of native species and opportunity to enhance existing habitat;
- ability to enhance the existing landscape structure and character and provide screening for the Project from public vantage points;
- retention of agricultural use beneath the solar arrays, and for areas of land made available for community-based food growing initiatives;
- enhance the existing network of public rights of way, creating greenways with new landscaping; and
- the provision of new permissive footpaths and cycleways to improve pedestrian access in the area.

5.7.5 The EIA and consultation processes (see Consultation Report **[EN010147/APP/5.1]**) have also formed an integral part of this iterative design process through the identification of environmental constraints and identifying opportunities for mitigation and enhancement.

5.7.6 In relation to the four cable corridor option areas within the Project site, the Applicant continues to undertake further environmental assessment work and analysis and undertake landowner negotiations and technical assessments to allow a preferred cable route to be identified. The four areas where this necessary optionality is retained are shown in Figures 5.1 to 5.5 of Volume 2 of the ES **[EN010147/APP/6.4]**.

## 5.8 Choice of Solar Array - Type and Height.

5.8.1 The Project does not incorporate any battery storage. Energy generated by the Project will be despatched to the grid but stored, as required, by Battery Energy Storage Systems (BESS) that are connected to the Grid elsewhere, including the EDF 50MW BESS located at Cowley substation.

5.8.2 The Applicant has considered the type of solar arrays to be used in terms of scale as well as whether to use fixed or rotating frames. The Applicant had originally chosen to adopt a flexible approach to the overall height above ground of the solar arrays, ranging from 1.8 to 2.5m above ground level. This was to allow for the possibility of allowing sheep farming beneath the panels – the higher panel giving greater ground clearance to allow sheep to graze beneath. The landscape and visual assessment had assumed the worst case scenario of a maximum height of 2.5m as part of their modelling and assessment process.

5.8.3 Following further consideration by the Applicant, however, having regard to feedback from the consultation into the Project where some had expressed concern over setting issues and general visual impact concerns, has now reduced the maximum height of the panels across the site to 2.2m (in respect of flat land, 2.3m when the land is not flat). This is committed to as part of the Outline Layout and Design Principles **[EN010147/APP/7.7].**

5.8.4 Some consultation feedback also expressed concern over loss of agricultural land. The Applicant responded by further analysis and on advice from Savills and the Blenheim Estate, it was decided to retain the land in agricultural use in the form of low-density sheep grazing. This method of farming also complimented the proposed land management regime to ensure the biodiversity value of the land was enhanced and managed in the long term (see the Outline Landscape and Ecology Management Plan **[EN010147/APP/7.6.3]**).

5.8.5 The Applicant has also decided upon fixed arrays rather than rotating systems. It was considered that fixed arrays would avoid or reduce the potential for adverse glint and glare effects. A Glint and Glare Study is provided as Appendix 4.4 in Volume 3 of the ES **[EN010147/APP/6.5].**

## 5.9 Cable Corridor Route and Laying System

5.9.1 The cable system has also been the subject of evaluation in terms of its optimum route and method of laying the cables but with a clear view from the outset that it should avoid or minimise its impact upon the environment. In light of this it was decided that where possible the cable corridor should be located within the existing highway (with suitable highway management measures in place during construction), but where it needed to cross agricultural land or cross other features, then alternative corridor options have been selected which avoid impact on archaeologically sensitive areas, away from sensitive receptors where possible.

5.9.2 The cable laying system will predominantly use the cut and cover technique; trenches would be cut into the ground, soil placed to one side, the cable laid, then covered over. However, where features are encountered along the route which were considered sensitive, or where cut and cover would otherwise be inappropriate, the Applicant has selected a horizontal directional drilling (HDD) method of cable laying or pipe ramming. This will apply where the cable crosses the Thames in the vicinity of Swinford Bridge, the railway line, any tree hedgerow boundary and in the vicinity of several roads.

5.9.3 The cable routes between the Site Areas will be laid within the defined Cable Corridors. The sections of the Cable Corridor between the Site Areas are shown in Figures 2.4A, 2.4B, 2.4C and 2.4D of the Illustrative Masterplan, Volume 2 of the ES, [EN010147/APP/6.4].

5.9.4 Within the Cable Corridor shown, there are four locations where alternative cable routes are possible within the wider Cable Corridor. These four locations are shown on Figures 5.1 to 5.5 of Volume 2 of the ES **[EN010147/APP/6.4]**. For the purposes of this ES, the potential cable routes within the Cable Corridor as identified on Figures 5.1 to 5.5 have been environmentally assessed in the relevant specialist topic chapters.

5.9.5 The four locations in question are:

- Northern Site between the Oxfordshire Way, and B4027, south east of Wootton;
- Area between the Northern and Central Sites on land to the east of Woodstock and in the vicinity of the Bladon roundabout on the A44;
- Central Site on land east of Burleigh Wood and around Bladon Heath; and
- Land between the Central and Southern Sites east and south of Eynsham around the Swinford Bridge.

5.9.6 Within these four areas the Applicant will, in due course, identify a preferred route within a narrower corridor for the cables once further legal, design and engineering investigations have been undertaken by the Applicant. It is anticipated that the results of the engineering work will be available after submission and the preferred cable route corridor will be selected at that time along with an update of relevant environmental information in relation to that cable route option.

## 5.10 Summary of Alternatives Considered

5.10.1 A summary of the alternatives considered by the Applicant and the choices made, having regard to environmental effects is shown in **Table 5.1** below. This reflects the Applicant's decision making with respect to the key components of the Project discussed above. **Table 5.2** below also sets out in views expressed by PINs and consultees in respect of alternatives, and how the Applicant has addressed these.

## Table 5.1: Main Alternatives Studied and Reason for Choice having Regard to Environmental Effects

| Attribute | Alternatives Considered | Choice selected | Commentary on Environmental Social and Economic effects including, where relevant, technical and commercial feasibility |
|---|---|---|---|
| Do-Nothing | Applicant explored scenario if project not pursed or not granted consent | To pursue the Project as 'critical national priority'as UK significantly adrift of solar target of 70MW by 2030. | Any potential adverse environmental effects are considered to be outweighed by the social, economic and environmental benefits accruing from the project. See section 5.5. |
| Site Location and Scale | Various substation locations and nearby land for a solar farm. | Site substation location and land for solar farm emerged following a site search exercise. The current site was selected having regard to factors in paragraph 5.6.2 above. | Environmental effects avoided or minimised as set above. On balance, the Project is temporary, has limited adverse effects but will produce significant benefits in its contribution to meet an urgent need for renewable energy and by creating a permanent beneficial landscape and biodiversity net gain. See paragraphs 5.6.2 to 5.6.18. |
| | Scale influenced by an iterative process of evaluation of planning, environmental, commercial and engineering considerations. | The current scale was selected having regard to national policy and the urgent need for delivery of Critical National Infrastructure. The scale was influenced by factors listed in Paragraph 5.6.18 above. | Environmental effects avoided or minimised as set out above. On balance, the site is temporary, has limited adverse effects and is of a scale to make an important and necessary contribution to the urgent need to renewable energy, and introduce significant and permanent contributions to biodiversity net gain and landscape enhancements. See paragraphs 5.6.2 to 5.6.18. |
| | Siting of development within Green Belt | A site selection exercise was undertaken, including land outside the Oxfordshire Green Belt. Current site selected having regard to suitability of substation with capacity to accept a new connection, the temporary nature of the development, land availability, NGET willingness to invest in new substation near Cowley, national policy support and the urgent need for renewable energy, as well as factors set out in Paragraph 5.6.18 above. | Applicant considers that on balance the harm to Green Belt is outweighed by the VSC case as set out in the Planning Supporting Statement **[EN010147/APP/7.1]**. including the temporary nature of the development, the significant and necessary contribution to renewable energy targets, increased access to land within the Green Belt, careful landscape screening, and permanent and significant beneficial effects to the landscape and biodiversity net gain. See paragraphs 5.6.7 to 5.6.9 and Planning Supporting Statement **[EN010147/APP/7.1]**. |

| Attribute | Alternatives Considered | Choice selected | Commentary on Environmental Social and Economic effects including, where relevant, technical and commercial feasibility |
|---|---|---|---|
| Site Layout & Design | Proximity of installation to sensitive receptors. | To impose a buffer to residential property and other sensitive receptors, including footpaths/rights of way, watercourses, ancient woodland, veteran trees and other landscape features. | By imposing a buffer at the outset of the design and layout process immediately has the effect of avoiding or reducing the potential for adverse effects. See paragraphs 5.7.1 to 5.7.6. |
| | Landscape design strategy | Whilst not in a protected landscape, the Applicant sought to avoid or reduce as far as practicable, the landscape and visual effects of the solar array and other electrical equipment within the existing landscape. Considerable effort was therefore taken to work with the existing landscape features, to enhance these (woodland and planting new hedgerows), with the dual goal of either screening or filtering views of the installation from public viewpoints, and at the same time enhancing the biodiversity of the area. It was also decided to reduce the maximum height of the panels across the site from 2.5m to 2.2m (in respect of flat land, 2.3m when the land is not flat). | Reducing or avoiding the potential for significant adverse visual effects of the development and at the same time enhancing the landscape and ecological value of the site. See paragraphs 5.7.1 to 5.7.6. |
| | Development layout in respect of Best and Most Versatile (BMV) agricultural land, and management of soil resource. | Regard has been had to avoiding the permanent loss of BMV land. Retain the quality of agricultural land that may be temporarily affected by disturbance during the construction phase, as far as possible, through the implementation of a Soil Management Plan to control the soil stripping, appropriate soil storage, management and reinstatement. The implementation of conservation grazing during the operational period in accordance with the Landscape and Ecological Management Plan, will promote the development of soil health, including benefits to soil structure and soil carbon content in | Where possible the layout has been designed to avoid or minimise permanent loss of BMV and to protect soil resource. See paragraphs 5.7.1 to 5.7.6. |

| Attribute | Alternatives Considered | Choice selected | Commentary on Environmental Social and Economic effects including, where relevant, technical and commercial feasibility |
|---|---|---|---|
| | | previously intensively cultivated arable soils within the Site. | |
| | Cultural heritage effects | In consultation with the County Archaeologist a no-dig policy was adopted where potentially significant underground archaeology would be identified and protected from any solar installation. Where possible development with a concrete foundation or which requires soils removal e.g. permanent vehicular access tracks, has avoided potentially significant archaeology and generally disturbing existing ground levels. Cabling in the vicinity of significant archaeology will also be laid on the surface.<br>Consideration of setting of other heritage assets was assessed according to best practise and where necessary the siting of development adjusted to protect settings. The impact of the development upon the Blenheim Palace World Heritage site was also carefully considered and was also the subject of the WHS guidelines for assessment which was discussed and agreed with Historic England. | Site layout has been designed to avoid or minimise adverse effects upon heritage assets. See paragraphs 5.7.1 to 5.7.6 and Volume 1 Chapter 7: Historic Environment of the ES [**EN010147/APP/6.3]**. |
| | Location of Noise Generating Equipment | The siting and noise generating equipment has been the subject of assessment upon sensitive receptors. As a result, either noise generating equipment has been re-sited where adverse effects were detected, or in-situ mitigation measure employed to avoid significant adverse effects. | Reducing or avoiding significant adverse effects upon sensitive receptors. See paragraphs 5.7.1 to 5.7.6 and Volume 1 Chapter 13: Noise and Vibration of the ES [**EN010147/APP/6.3]**. |
| | Ecological effects | The site has been extensively surveyed to understand the nature, importance and extent of ecological features within and adjoining the site. | The layout has been designed to avoid minimise direct or indirect effects on valuable flora and fauna. It has also been designed and is to be managed in a way that |

| Attribute | Alternatives Considered | Choice selected | Commentary on Environmental Social and Economic effects including, where relevant, technical and commercial feasibility |
|---|---|---|---|
| | | The layout and design of the solar farm has sought to avoid or minimise adverse environmental effects | will significantly enhance its biodiversity value. See paragraphs 5.7.1 to 5.7.6 and Volume 1 Chapter 9: Ecology and Nature Conservation of the ES [**EN010147/APP/6.3**]. |
| Choice of Solar Array – Type and Height | Fixed or rotating systems, and overall height | The Applicant has considered a variety of types and sizes of solar arrays and mounting structures. They have selected a fixed system, a four leg table, and an overall height above ground of 2.2m (reduced from 2.5m). | The choice made will reduce glint and glare effects, reduce disturbance to ground (compared to six leg table) and reduce the overall visual impact by reducing the overall height of the panels to 2.2m. See paragraphs 5.8.1 to 5.8.5 |
| Cable Routes and laying methods | Choice of cable corridor routes within which the cables will be laid, and then the method of laying them – cut and cover, HDD or pipe-ramming | The applicant decided to lay cables underground rather than overground and to use the highway network where possible to link the three main Project site areas. This was considered to lead to less adverse environmental effects compared to laying the cable through undeveloped land where archaeology and ecology considerations may be adversely affected. Where cables cross undeveloped land the cables avoid impacting landscape features by using HDD or pipe ramming techniques. There are also four areas where a preferred route has yet to be selected (see Paragraph 5.9.1 to 5.9.6). Within these areas likely cable route corridors have been identified and each environmentally assessed within each specialist chapter. | The cable corridors and laying systems have been selected to reduce or avoid adverse effects. Where alternative cable route corridors have been identified these have been environmentally assessed and a preferred route corridor will be selected by the Applicant once further engineering feasibility work has been undertaken. See paragraphs 5.9.1 to 5.9.6. |

## Table 5.2: Alternatives – PINs & Consultee Comments and How they have been Addressed

| PINs/Consultee | Main Matters Raised | How they have been Addressed |
|---|---|---|
| PINs | The ES should demonstrate how environmental baseline information, such as ecological value and agricultural land classification has informed site selection, consideration of alternatives, and subsequently project refinement [Scoping Opinion ID 2.2.3] **[EN010147/APP/6.5].** | This chapter addresses these issues. |
| Bladon Parish Council | Applicant should explain how a 'do-nothing' scenario would materially undermine the Governments strategy (Scoping Opinion, Appendix 2, Bladon Parish Council Report, Section 5.4, paragraphs 12) and 13)); Need to consider reduced size as an alternative (paragraph 10)); why UK's electricity needs will not be met by rooftop and brownfield sites (Paragraph 11)); the Applicant should include details of other projects with connections before 2032 in more suitable locations as alternatives (Paragraph 18) and 19) | See section 5.5 above which deals with the do-nothing scenario. In respect of alternative sites the Applicant has explored alternative substations and land that might be suitable for use as a solar farm. The explanation which led to the selection of the current site is provided. |
| Cassington Parish Council | Should be an SEA to ensure relevant alternatives are identified and considered (Scoping Opinion Appendix 2, Cassington Parish Council Report, Page 5); evidence why 'utility' scale solar power station is required in this area (page 13); demonstrate why mix of renewables schemes not viable e.g. a mix of wind and solar (Section 5.2.3, page 13); consideration of continued agricultural use and whether co-location with other functions (on-shore wind and storage) possible (section 5.4, page 13); | As SEA is not required as part of the EIA or DCO consenting process. The Applicant is not required to justify the scale of the development; there is no policy limitation as to the scale of renewable energy projects, but the Government has set targets and currently The Government is currently unable to meet those targets. The Project will help meet this urgent need. The Applicant is not required to demonstrate viability. Colocation with other forms of renewable energy is not proposed; there is BESS elsewhere on the network which NGET is responsible for managing. Wind Turbines in the location, particularly around and within the setting of Blenheim Palace WHS are unlikely to be acceptable. The Applicant has now decided to retain an agricultural use of the land beneath the solar arrays. |
| Cherwell District Council | 'Reasonable alternatives' should be considered, including sites outside Green Belt (Scoping Opinion, Appendix 2, Cherwell District Council Report, Section 5.4, Page 2) | See paragraphs 5.6.7 to 5.6.9. |

| PINs/Consultee | Main Matters Raised | How they have been Addressed |
|---|---|---|
| Natural England | Guidance, asked for detail of alternative layouts, where appropriate, with justification of selected option in landscape and visual terms (Scoping Opinion, Appendix 2, Natural England Letter, Annex A, Sub-Section) | See para 5.1.47 above and the Landscape and Visual Impacts Chapter within the ES **[EN010147/APP/6.3]**. |
| Oxfordshire County Council | Ask for reasonable alternatives to be covered in ES (Scoping Opinion, Appendix 2, OCC Cover Letter); alternative cable routes near wildlife corridors should be considered (page 6) | See section 5.9. |
| Shipton-on Cherwell and Thrupp Parish Council | Scoping should be carried out at a stage when alternatives are still being considered – this is missing or only briefly addressed (Scoping Opinion, Appendix 2, Shipton-on Cherwell & Thrupp Parish Council Letter, first page (no numbering)) ; should expressly assess alternative brownfield/industrial locations before using Green Belt, ( fourth page) | The issue of potential alternative cable option corridors was the subject of consultation before and during the Scoping phase. The Applicant has assessed alternative substation locations and alternatives sites in the vicinity of substations to accommodate a solar farm. The explanation for the selection of the current site is set out above. The Applicant is not obliged to assess brownfield/industrial sites. If Council has specific brownfield/industrial locations in mind that are suitable and available they could have brought these to the Applicants attention. |
| Vale of the White Horse | Reasonable alternatives should be considered (p193), including sites outside Green Belt (Scoping Opinion, Appendix 2, VoWH Letter, page 2) | See paragraphs 5.6.7 to 5.6.9 |
| West Oxfordshire District Council | Reasonable alternatives sites should be considered including areas outside of Green Belt and outside areas at risk of flood (Scoping Opinion Appendix 2, third page (no numbering)) | See paragraphs 5.6.7. to 5.6.9 |
| Woodstock Town Council | 250MW i.e. smaller size should be considered; prove do-nothing would undermine net zero (Scoping Opinion, Appendix 2, Woodstock Town Council Report, page 2); other areas with viable electrical grid connections should be examined as a better alternative (page 3). | See section 5.5. |

## 5.11 References


Department for Energy Security and Net Zero (DESNZ) (2023a) Overarching National Policy Statements for Energy (NPS EN-1), Available at: https://assets.publishing.service.gov.uk/media/65a7864e96a5ec0013731a93/overarching-nps-for-energy-en1.pdf

Department for Energy Security and Net Zero (DESNZ) (2023b) National Policy Statement for Renewable Energy Infrastructure (NPS EN-3), Available at: https://assets.publishing.service.gov.uk/media/65a7889996a5ec000d731aba/nps-renewable-energy-infrastructure-en3.pdf

HMSO (2008), The Planning Act 2008, Available at: https://www.legislation.gov.uk/ukpga/2008/29/pdfs/ukpga_20080029_en.pdf.

HMSO (2017), The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, Available at: The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

The Habitats Directive (1992), Council Directive 92/43/EEC, Available at: [redacted]

UK Parliament (2024), Planning for Solar Farms, Available at: [redacted]

# Annex A: NSIP Solar DCO Capacity Analysis

## Table 5.3: NSIP Solar DCO Capacity Analysis

| Project name | Applicant | Application Stage and Capacity |
|---|---|---|
| **Botley West Solar Farm** | Photovolt Development Partners (PVDP) on behalf of SolarFive Ltd | Pre-application<br>840MW |
| **Byers Gill Solar** | RWE Renewables UK Solar and Storage Limited | Pre-examination<br>180MW<br>70,000 homes |
| **Cleve Hill Solar Park** | Cleve Hill Solar Park Ltd | Decided<br>350MW (inc BESS) |
| **Cottam Solar Project** | Cottam Solar Project Limited | Decided<br>600MW (grid connection) |
| **Dean Moor Solar Farm** | FVS Dean Moor | Pre-application<br>150MW |
| **East Yorkshire Solar Farm** | East Yorkshire Solar Farm Limited | Examination<br>400MW<br>100,000 homes |
| **Fenwick Solar Farm** | Fenwick Solar Project Limited | Pre-application<br>237.5MW |
| **Frodsham Solar Project** | Frodsham Solar Ltd | Pre-application<br>150MW anticpated<br>Grid connection only 100MW<br>100Mw = 34,000 homes |
| **Future Energy Llanwern Solar Project** | Future Energy Llanwern Limited | Pre-application<br>400 MW installed capacity<br>108,000 homes |
| **Great North Road Solar Park** | Elements Green Trent Limited | Pre-application<br>800MW |
| **Green Hill Solar Farm** | Green Hill Solar Farm Limited | Pre-application<br>500MW |
| **Heckington Fen Solar Park** | Ecotricity (Heck Fen Solar) Limited | Decision stage<br>500MW |
| **High Grove Solar** | RWE Renewables UK Solar and Storage Ltd | Pre-application<br>720MW and storage facilities |
| **Kingsway Solar Farm** | Kingsway Solar Farm Limited | Pre-application<br>500MW |
| **Light Valley Solar** | Light Valley Solar Limited | Pre-application<br>500MW output<br>115,000 Houses<br>500MW Grid Connection |
| **Lime Down Solar Project** | Lime Down Solar Park Limited | Pre-application<br>500MW |
| **Little Crow Solar Park** | INRG SOLAR (Little Crow) Ltd | Decided<br>Not stated<br>64,500 to 86,000 homes<br>Assume 200MW |
| **Longfield Solar Farm** | Longfield Solar Energy Farm Limited | Decided<br>500MW |
| **Maen Hir Solar and Energy Storage Project** | Lightsource bp | Pre-application<br>Over 350 MW Output and energy storage |
| **Lostrigg Solar** | RWE | Pre-application<br>100MW approx.<br>45,000 homes |

| Project name | Applicant | Application Stage and Capacity |
|---|---|---|
| **Mallard Pass Solar Project** | Mallard Pass Solar Farm Limited | Decided<br>350MW<br>90,000 homes |
| **Meridian Solar Farm** | Meridian Solar Farm Ltd | Pre-application<br>750MW |
| **Mylen Leah Solar Farm** | Mylen Leah Solar Limited | Pre-application<br>500MW Output |
| **Oaklands Farm Solar Park** | Oaklands Farm Solar Limited | Pre-examination<br>138MW |
| **One Earth Solar Farm** | One Earth Solar Farm | Pre-application<br>740MW (Grid connection) |
| **Peartree Hill Solar Farm** | RWE Renewables UK Solar and Storage Limited | Pre-application<br>320MW |
| **Rosefield Solar Farm** | Rosefield Energy Farm Limited | Pre-application<br>Not stated<br>57,000 homes<br>Assume 190MW |
| **Springwell Solar Farm** | Springwell Energy Farm Limited | Pre-application<br>180,000 homes<br>800MW |
| **Stonestreet Green Solar** | EPL 001 Limited | Acceptance (review of the application)<br>42,000 homes<br>99.9MW |
| **The Droves Solar Farm** | The Droves Solar Farm Limited | Pe-application<br>500MW Output<br>115,000 Houses |
| **Tillbridge Solar Project** | Tillbridge Solar Limited | Pre-examination<br>Not stated but main site cover 1350ha (exc corridor)<br>Assume 400MW |
| **Tween Bridge Solar Farm** | RWE Renewables Limited | Pre-application<br>240,000 homes<br>Assumes 3509 kwh per household average<br>Approx 840MW |
| **West Burton Solar Farm** | West Burton Solar Project Limited | Recommendation<br>480MW<br>144,000 homes |
| **White Elm Solar Farm** | ELMYA RPC UK Grange Road Limited | Pre-application<br>200MW<br>60,000 homes |
| **Sunnica Energy Farm** | Sunnica Ltd | 500MW Anticipated |
| **Total Capacity of NSIP Solar Farms** | | **15,285.4 MW**<br>**15.2854 GW** |