Stonestreet Green Solar

Environmental Statement
Volume 4: Appendices
Chapter 5: Alternatives and Design Evolution
Appendix 5.2: Site Selection Influencing Factors

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APFP Regulation 5(2)(a)
Planning Act 2008
The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Appendix 5.2: Site Selection Influencing Factors

1.1.1 The Site is described in **ES Volume 2, Chapter 2: Site and Context (Doc Ref. 5.2)**. The Site was selected by the Applicant based on a series of influencing factors which included:

- Solar irradiance and site topography;
- Available electricity grid connection;
- Proximity to residential dwellings;
- Agricultural land classification ('ALC') and land type;
- Accessibility;
- PRoW network;
- Landscape; Ecological and geological designations;
- Visual amenity;
- Flood risk;
- Cultural heritage; and
- Availability of land.

1.1.2 A description of the Applicant's process for selecting the Site and the main reasons for the option chosen with regard to these influencing factors is described below. The **Planning Statement, Appendix 2: Sequential and Exception Test Report (Doc Ref. 7.6**) sets out further details on the site selection process.

Solar Irradiance and Site Topography

1.1.3 As identified in NPS EN-3 at paragraph 2.10.19, solar irradiation (sunlight) levels is a key consideration when determining the location of solar development. The efficiency of any solar development, and thereby the amount of land for a given generation capacity and the carbon savings that can be realised, is determined by the levels of irradiation at the site's location.

1.1.4 The south-east of England was identified by the Applicant as a suitable area for the Project for two key reasons:

- It has higher levels of solar irradiation relative to other parts of the UK, resulting in the amount of land required for the same renewable energy generation being less than other parts of the UK. According to the European Commission Photovoltaic Geographical Information System[1] yearly PV energy production in the south-east of England can be up to 1.3 times higher compared to other parts of England; and
- There are higher levels of local energy demand. The generation of additional renewable power within the same regional electrical zones limits national

imbalance, curtailment and transmission losses. Transmission losses occur when electrical currents travel in the network and some energy is dissipated (or lost) in heat form due to electrical resistance. Solar projects in this region therefore can provide much needed additional capacity and address shortfalls across the wider region.

1.1.5 A large part of the Site area is within a 'bowl' in the landscape which will aid in screening long range views. There are limited/no views from the central areas of nearby villages due to topography and existing developed vegetation which screens views. The elevation changes within the Site area are gentle enough that there will be limited landscape shading to PV Arrays. This limits the spacing distance required between panel rows and ensures land is used efficiently for renewable energy generation.

Network Connection

1.1.6 NPS EN-3 (paragraphs 2.10.22 – 2.10.25) states that:

'Many solar farms are connected into the local distribution network. The capacity of the local grid network to accept the likely output from a proposed solar farm is critical to the technical and commercial feasibility of a development proposal.

Larger developments may seek connection to the transmission network if there is available network capacity and/or supportive infrastructure.

In either case the connection voltage, availability of network capacity, and the distance from the solar farm to the existing network can have a significant effect on the commercial feasibility of a development proposal.

To maximise existing grid infrastructure, minimise disruption to existing local community infrastructure or biodiversity and reduce overall costs, applicants may choose a site based on nearby available grid export capacity.'

1.1.7 Connection can be to a viable point of connection ('POC') either on the national grid infrastructure or to a local energy user. Securing a viable POC is a critical factor when developing renewable energy schemes.

1.1.8 The national grid is highly constrained in terms of its ability to connect new generation projects. Distribution network operator heatmaps[2] confirm that large areas of the Kent network are unable to accept any further grid connections for a project of the scale of that proposed by the Applicant without significant reinforcement works. Reinforcement works are required to upgrade the UK's legacy infrastructure as it was not designed to meet the UK's current and future clean energy requirements. These works would take a number of years which would not meet the UK's urgent need for renewable energy.

1.1.9 The Applicant identified available capacity at the Sellindge Substation and has secured an agreement that provides a suitable POC for the scale of solar generation and storage proposed by the Project.

1.1.10 No alternative network connection locations were therefore considered by the Applicant.

1.1.11 The Applicant determined that a maximum distance of 5km from the POC at Sellindge Substation is likely to be at, or beyond, the limit of feasibility for a POC to the national grid for the scale of the Project. Beyond the 5km distance, the environmental and social effects are likely to increase. More land (which may necessitate the use of compulsory acquisition powers) would be required and the Project would become less economically viable.

1.1.12 Considering the above, a distance of 5km from the POC was used as the area of search for potential alternative sites that would meet the requirements of the Project, with the ability to connect to existing infrastructure at the Sellindge Substation. No alternative distances for the POC to achieve the network connection were considered.

Proximity of the Site to Residential Dwellings

1.1.13 NPS EN-3 at paragraph 2.10.27 states *'Utility-scale solar farms are large sites that may have a significant zone of visual influence. The two main impact issues that determine distances to sensitive receptors are therefore likely to be visual amenity and glint and glare.'*

1.1.14 The proximity of a site to dwellings is a key consideration if visual amenity, glint and glare, and other impacts on local residents are to be minimised. There are no dwellings within the Site but there are individual dwellings within the immediate surrounding area. Efforts have been undertaken to seek feedback from nearby local residents on the Project and regard has been had to this feedback in the design evolution of the Project (as outlined in the **Consultation Report, Appendix A-3: Regard had to 2022 Non-Statutory Consultation feedback (Doc Ref. 6.2), Appendix F-6: Regard had to S47 and 48 Responses (Doc Ref. 6.2) and Appendix G-5: Regard had to section 47 and section 48 consultee responses (Doc Ref. 6.2)**).

1.1.15 Landscape and visual assessment has determined that there are close range views of the Site from a limited number of residential properties that lie adjacent to the Site; however, there are no views from the cores of local settlements. Visibility of the Site diminishes rapidly to the south, east and west of the Site due to a combination of landform and vegetation and to the north of the Site there is existing development including HS1 and the M20. Further details are provided in **ES Volume 2, Chapter 8: Landscape and Views (Doc Ref. 5.2)**.

1.1.16 The Applicant's analysis has determined that due to the characteristics of the Project, including its limited height, retention of field boundary vegetation and visually permeable appearance, it is not considered that the threshold for a Residential Visual Amenity Assessment ('RVAA') would be met as a result of the Project.

1.1.17 PV panels are designed to absorb, not reflect, irradiation. However, PV panels may reflect the sun's rays at certain angles, which can cause glint and glare effects.

Effects can occur when the PV panel is stationed between or at an angle of the sun and the receptor. An assessment of glint and glare of the Project has been undertaken and is provided as **ES Volume 4, Appendix 16.2: Solar Photovoltaic Glint and Glare Study (Doc. Ref. 5.4)**. The assessment confirms that the Project would not give rise to significant glint and glare effects on (road, residential, railway or aviation) receptors. This is principally due to the topography of the Site, siting and orientation of PV panels and embedded mitigation, including landscape planting.

1.1.18 The Project Substation is located adjacent to the HS1 railway. A railway line, operated by Network Rail, is located immediately adjacent to the HS1 railway line. The Project Substation is located at a sufficient distance from residential properties to avoid significant adverse visual effects with embedded mitigation in place. This location of the Project Substation in this area of the Site was also selected as it benefits from trees and vegetation which provide existing visual screening.

1.1.19 There are no other alternative sites within the 5km POC radius study area that could fulfil the Project requirements that would be more suitable overall.

Agricultural Land Classification and Land Type

1.1.20 NPS EN-3 (paragraph 2.10.29) states *'While land type should not be a predominating factor in determining the suitability of the site location applicants should, where possible, utilise suitable previously developed land, brownfield land, contaminated land and industrial land. Where the proposed use of any agricultural land has been shown to be necessary, poorer quality land should be preferred to higher quality land avoiding the use of 'Best and Most Versatile' agricultural land where possible.'* The development of ground mounted solar arrays is however not prohibited on Best and Most Versatile agricultural land (classified as Grade 1, 2 and 3a under the ALC system), as stated in NPS EN-3 at paragraph 2.10.30.

1.1.21 The **Planning Statement, Appendix 2: Sequential and Exception Test Report (Doc Ref: 7.6)** confirms that there is no previously developed land within the 5km search area which could offer a suitable alternative site that would meet the Project requirements.

1.1.22 Field surveys have been undertaken at the Site to establish the ALC grades in accordance with the current grading criteria. An ALC report which includes details of the survey methodology and provides ALC gradings across the Site is provided as **ES Volume 4, Appendix 16.1: Soils and Agricultural Land Report (Doc Ref. 5.4)**. The detailed ALC survey confirmed the actual grading of the agricultural land within the Site to be predominantly non-BMV quality land (143.47 ha, 74.90%) comprising ALC Subgrade 3b; with smaller areas of BMV quality land (38.64 ha or 20.18%) comprising ALC Grade 2 and Subgrade 3a. The BMV agricultural land within the Site (i.e., 38.64 ha) represents 0.12% of all BMV agricultural land in ABC.

1.1.23 The remaining land within the Site boundary is non-agricultural land (9.43 ha, 4.92%). No part of the Site is Grade 1.

1.1.24 There are no other alternative sites within the search area (5km from the POC) that that are reasonably available which could fulfil the Project requirements and which could have a lesser effect on agricultural land.

1.1.25 The layout of the Project has minimised the permanent loss of BMV where possible. The Project Substation for example is sited on Grade 3b land.

1.1.26 The Project is anticipated to lead to some permanent loss of agricultural land as it is assumed that retention of landscape and habitat mitigation would be retained on decommissioning of the Project. Based on the **Illustrative Landscape Drawings (Doc Ref. 2.7)** and **Outline LEMP (Doc Ref. 7.10)** it is anticipated that the retained landscape and habitat mitigation would lead to a permanent loss of 11.43ha of agricultural land, of which 5.58ha is BMV. This represents a loss of 14.4% of the BMV within the Site and 0.017% of the BMV within the Ashford Borough.

1.1.27 Measures to manage soil resources sustainably within the Site during construction and decommissioning are secured through relevant management plans, including the **Outline CEMP (Doc Ref. 7.8)** and **Outline DEMP (Doc Ref. 7.12)**.

Accessibility

1.1.28 Accessibility for the delivery of PV panels and associated infrastructure during construction/decommissioning and for operational maintenance purposes was a key factor in the Applicant's selection of the Site.

1.1.29 The Site is located close to the M20 motorway and A20 and therefore benefits from good accessibility. The majority of the Project infrastructure, including the transformer units, is expected to be transported from overseas. The port of entry for these components has yet to be determined, but the Site is within accessible distances from the Port of Folkestone (29km) and Port of Dover (37km) via the M20.

1.1.30 The strategic road network would be used during the construction, operation and decommissioning phases. Construction and decommissioning HGVs will access the Site from the north, via the M20, A20 Hythe Road and from C609/Station Road with the primary construction compounds located at Field 25 and Field 26. The location of the primary construction compounds enables abnormal loads, other deliveries and construction workers to avoid local settlements.

1.1.31 An **Outline CTMP (Doc Ref. 7.9)** and **Outline DTMP (Doc Ref. 7.13)** will be in place to avoid HGVs being routing through local settlements, minimise movements and ensure appropriate safety measures are in place.

1.1.32 The location and nature of the Site allows an internal (off-road) haulage road to be provided to ensure there would be only limited use of the local highway network for construction and decommissioning. Further details of the location of the primary construction compounds and temporary internal haulage road are provided in **ES Volume 2, Chapter 3: Project Description, Section 3.11 (Doc Ref. 5.2)** and **Outline CTMP (Doc Ref. 7.9)**.

1.1.33 Areas within 5km of the POC that are also outside of the Kent Downs NL (see **Planning Statement, Appendix 2: Sequential and Exception Test Report (Doc Ref. 7.6)**) would typically require further distances to be travelled off main roads (i.e. A roads), and likely have a greater impact on sensitive receptors during construction/decommissioning of the Project.

Public Rights of Way ('PRoW') Network

1.1.34 The Project will affect the PRoW networks within the Site. However, the proposals have been designed to minimise adverse impact, where possible, and this is not a constraint to the proposals.

1.1.35 The nature of the Site provides the opportunity to introduce new and diverted PRoW and routes to improve the connectivity of the existing network. This includes new links within the north of the Site to help facilitate a route from the approved Otterpool Park Development (Cumulative Scheme ID No. 10) to the east through to Ashford to the west, providing more off-highway options. The relevant local authorities have confirmed that such a route is a key objective.

1.1.36 The Applicant has also indicated that, if agreement can be reached between the relevant local authorities and the third party landowner, it will finance the installation of a new cycle link (in part outside of the Site on third party land) between Aldington and Mersham to enable local residents to travel off-road and improve connectivity and public safety.

1.1.37 There will be some temporary non-significant adverse effects during construction and decommissioning of the Project on users of the existing PRoW network, see **ES Volume 2, Chapter 12: Socio-economics (Doc Ref. 5.2)** for further details. However, these effects will be effectively controlled through measures included in the **Outline CEMP (Doc Ref. 7.8)**, **Outline DEMP (Doc Ref. 7.12)** and the **Outline RoWAS (Doc Ref. 7.16)**. There are no other alternative sites within the search area that could fulfil the requirements of the Project.

Landscape, Ecological and Geological Designations

1.1.38 The Site is not within a landscape designation area, for example National Park, National Landscape ('NL'), Country Park, or Special Landscape Areas. No national or international nature or ecological designations are found on the Site, for example SACs, SPAs, SSSIs, Ramsar sites or NNRs.

1.1.39 There are four SSSI located within 5km of the POC, including Hatch Park SSSI to the north of the Site; Gibbin's Brook to the north-east of the Site; Otterpool Quarry to the east of the Site (geological); and Lympne Escarpment to the south-east of the Site. The **ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)** does not identify any significant effects on these sites from the Project.

1.1.40 The Kent Downs NL is located to the north, east and south of the POC covering an area of 879km^2. Development of the scale proposed closer to the Kent Downs NL is likely to have a greater impact than the selected location. The assessment within **ES Volume 2, Chapter 8: Landscape and Views (Doc Ref. 5.2)** does not identify

any significant effects on any landscape and visual receptors within the Kent Downs NL at any stage of the Project. Kent Downs AONB Unit noted in their response to the 2022 Statutory Consultation that the impact on the North Downs escarpment element of the NL would be minimal. Users of PRoW within/adjacent to the Site with open panoramic views towards the Kent Downs NL will experience moderate adverse effects during the construction phase, major to moderate adverse effects at Year 1 of operation and minor / moderate adverse effects at Year 15 **(ES Volume 2, Chapter 8: Landscape and Views (Doc Ref. 5.2)**).

1.1.41 The presence of the Kent Downs NL in the area surrounding the POC limits the alternative potential development sites for the scale of development proposed.

1.1.42 The Site is not located within the Green Belt and there are no land use planning allocations or designations within the Site, aside from mineral safeguarding. These were factors that the Applicant took into account when identifying the Site. **ES Volume 4, Appendix 16.3: Mineral Safeguarding Assessment (Doc Ref. 5.4)** concludes that with the exception of some minor permanent works (which will not result in any new areas of mineral sterilisation), the Project is of a temporary nature that will be removed during the decommissioning stage and the land returned to a condition that will not constrain future mineral extraction. The mineral resources indicated as being present beneath the Site are already significantly constrained to the point that their extraction would be unlikely to occur over the 40-year operational lifespan of the Project compared to other potentially less constrained sites elsewhere within Kent which may come forward over the lifespan of the Project.

Visual Amenity

1.1.43 The Site benefits from existing substantial hedgerows that help to minimise the visual impact of the Project from Aldington and other local viewpoints. There are also limited long distance views of the Site due to its topography.

1.1.44 Other land areas within 5km of the POC have increased visibility from local settlements and also are likely to have greater long-distance impacts. Land within 5km of the POC and to the north of the M20 motorway would also be likely to have increased visibility from the Kent Downs NL.

Flood Risk

1.1.45 The majority of the Site is located in Flood Zone 1 (1 in 1,000 probability of river flooding, defined as ‘low’ probability) but there are areas of the Site that are in Flood Zone 2 (‘medium’ probability) and Flood Zone 3 (‘high’ probability). **ES Volume 2, Chapter 5: Alternatives and Design Evolution** sets out how the Project has responded to flood risk within the Site and sought to avoid areas of higher flood risk.

1.1.46 The **Planning Statement, Appendix 2: Sequential and Exception Test Report (Doc Ref: 7.6)** concludes that the Project passes both the Sequential and Exception Tests.

Cultural Heritage

1.1.47 There are no designated built heritage assets within the Site and a limited number adjacent or outside the Site (within 1km). The assessment within **ES Volume 2, Chapter 7: Cultural Heritage (Doc Ref. 5.2)** concludes that the residual effects of the Project on designated heritage assets would not be significant.

1.1.48 Within 5km of the POC, there are several Conservation Areas including:

- Aldington Church Area Conservation Area;
- Aldington Clap Hill Conservation Area;
- Bislington Conservation Area;
- Mersham Conservation Area; and
- Smeeth Conservation Area.

1.1.49 Within 5km of the Site there are a number of Grade I, Grade II and Grade II* listed buildings and within 5km of the Site, there are 30 scheduled monuments.

1.1.50 The above features limit the ability to develop a solar project of the scale proposed on alternative sites within the search area due to the potential for adverse environmental effects on those features. No alternative locations have been identified that would meet the Project requirements.

Availability of Land

1.1.51 The Applicant is seeking to obtain all land and interests in land within the Site through private acquisition. However, to the extent that this is not possible, the Applicant will seek powers of compulsory acquisition in the DCO.

1.1.52 When carrying out the site selection process, the Applicant had regard to the availability of land, including whether compulsory acquisition powers may be required in connection with the land, and if so the potential for the exercise of those powers to interfere with human rights. In selecting the Site, the Applicant has carefully considered the balance to be struck between individual rights and the wider public interest.

1.1.53 The Applicant has acquired the necessary land interests in respect of the majority of the Site through option agreements and is in advanced negotiations with the remaining landowners of the Site. The Site is currently owned by only a small number of landowners. Other potential alternative sites could require contracting with a greater number of landowners to achieve a suitably sized site for the proposals including the grid connection, which would increase risks to the successful, urgent delivery of the Project.

1.1.54 Further information on the status of land negotiations is provided in the **Statement of Reasons (Doc. Ref. 4.2)** that has been submitted with the DCO Application.

Conclusions

1.1.55 The Site is considered the most suitable within 5km of the POC, principally because:

- The Site is not subject to any international, national, ecological or geological designations;
- The Site is not within a nationally designated landscape. Areas to the south or east of Sellindge are either within the Kent Downs NL or closer to this area (on elevated land) which would have a greater potential impact on the setting of the Kent Downs NL;
- There are no designated built heritage assets within the Site and a limited number outside the Site (within 1km) where the potential impact on the setting is not significant;
- The Site is not subject to any allocations for housing or other planned development which would impede delivery;
- There is a significant amount of existing developed vegetation surrounding large areas of the Site which limit close views;
- There are a low number of residential dwellings that could potentially be impacted for a project of this scale in the South-East of England;
- Approximately 80% of the Site has an ALC of Grade 3b or non-agricultural, being land that is not classified as BMV. Large areas of land within 5km of the POC is provisionally classified by Natural England as Grade 2 and therefore BMV;
- A large portion of the Site sits within a ‘bowl’ in the landscape which will aid in screening long range views; and
- The elevation changes within the Site are gentle enough that there will be limited landscape shading of PV Arrays within the Site.

References

[1] European Commission, (2022). Photovoltaic Geographical Information System. Available [redacted] August 2023.

[2] Department for Business, Energy & Industrial Strategy, (2022). Energy Consumption in the UK 2021. Available from: https://www.gov.uk/government/statistics/energy-consumption-in-the-uk-2021. Accessed August 2023.