

**BILSHAM FARM SOLAR PARK
DESIGN AND ACCESS STATEMENT
for
BNRG RENEWABLES LTD
October 2013**



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1.0 INTRODUCTION

- 1.1 This Design and Access Statement has been prepared on behalf of BNRG Renewables Limited (BNRG) and Landlink Estates via BL 2 Solar Limited (hereafter 'the applicants') to support the submission of a planning application for the development of a solar park at Bilsham Farm, off Drove Lane, Main Road, Yapton, BN18 0EB, which lies approximately 0.6 km west of the village of Bilsham and 0.6 km north of the village of Flansham.
- 1.2 Section 42 of the Planning & Compulsory Purchase Act 2004 requires a statement covering design concepts, principles and access issues to be submitted with an application for planning permission and listed building consent. It also inserts a new section 327A into the Town & Country Planning Act 1990 which prohibits, among other things, a Local Planning Authority from validating an application unless it is accompanied by a Design and Access Statement.
- 1.3 The requirement for a Design and Access Statement is set out in article 8(2) of the Town and Country Planning (Development Management Procedure) (England) Order 2010 and in the Department for Communities and Local Government Circular 01/06 – Guidance on Changes to the Development Control System.
- 1.4 This Design and Access Statement describes the site and explains the background to the scheme, the design principles and concepts that have informed the development, and how access issues have been dealt with. All figures within the document are submitted for illustrative purposes only.
- 1.5 The Design and Access Statement should be read in conjunction with the accompanying Planning Statement which covers, in particular, the planning policy issues relating to the site.

2.0 THE SITE AND PROPOSAL

Site Location

- 2.1 The proposed development involves the installation and operation of a solar park with associated infrastructure and equipment at Bilsham Farm, off Drove Lane, Main Road, Yapton, BN18 0EB (**Figure 1** refers). It will have an installed capacity of approximately 14.5 MW. The site comprises a field that is traversed by three drainage ditches and an access track. A small stone barn is centrally located within the site. It is surrounded by hedgerows, ditches and the watercourses of Ryebank and Lidsey Rife.



Figure 1: Site location

- 2.2 The site comprises agricultural land, which is primarily used for agricultural activities including crop production.
- 2.3 The application site (36 hectares) represents 1.48% of The Langmead Group's total landholding (2,428 hectares) and it lies within the recognised landscape of the West Sussex Coastal Plain. Whilst the site is located within the countryside it is well related to Bognor Regis and the surrounding villages of Yapton, Barnham, Woodgate and Shripney, as illustrated in **Figure 2**.

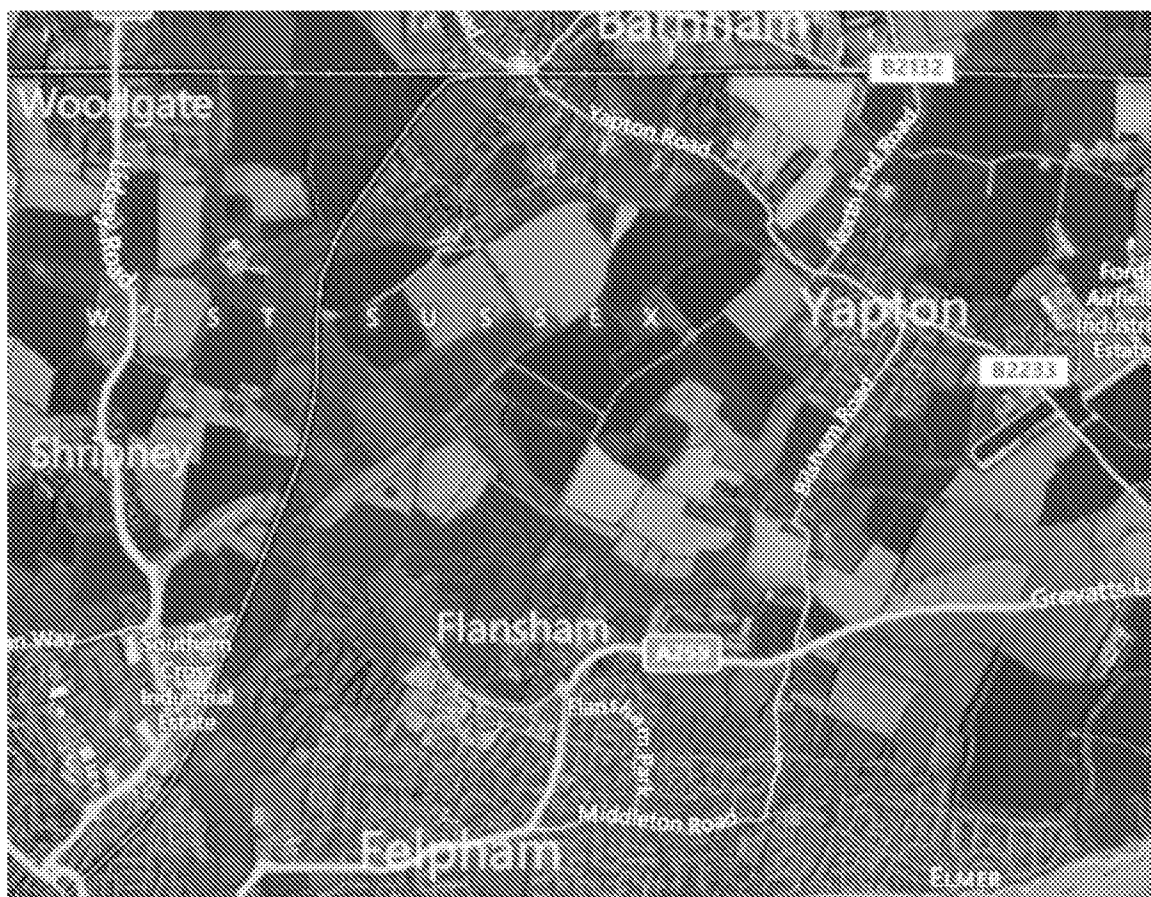


Figure 2: Site context

3.0 DESIGN PRINCIPLES

Solar Panel Specification

- 3.1 The proposal is to establish a solar park of approximately 36 hectares in area. This will comprise solar photovoltaic cells located in groups and rows, which are called arrays.
- 3.2 The solar panels are fixed and will have no moving parts. There will therefore be no noise emitted by the arrays. Similarly the supporting electrical equipment will not emit noise above the ambient level and certainly would not be audible from outside the confines of the site boundaries.

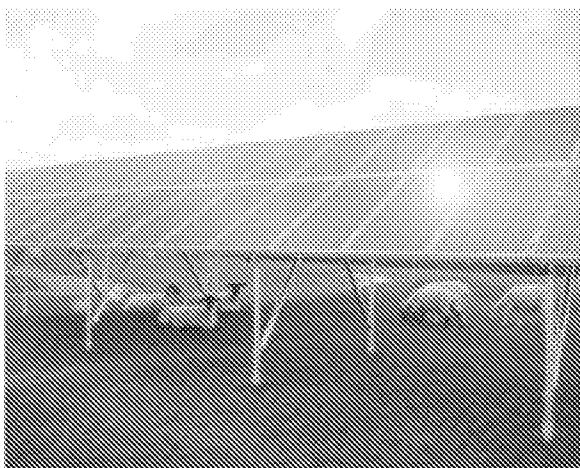


Figure 3: Example of arrays and grazing areas

- 3.3 With no moving parts to the solar arrays there is little risk of mechanical failure. The panels are designed with an expected lifetime of 30 years with only a marginal loss of efficiency. This ensures that any long-term impacts of the development remain small-scale.
- 3.4 The panels will be bolt anchored to a metal frame (table), which will be mounted on steel posts driven or secured into the ground (the pile driven sub-construction method). No substantial areas of concrete construction will be required, with the possible exception of foundations for the inverter and transformer stations.
- 3.5 The solar panels will be connected to inverters by cabling which are necessary to convert the DC current generated by the PV modules into AC current. The AC current is then fed into transformers where the voltage is changed (usually from 340 to 11,000 volts) for transmission of the energy with minimum losses to the point of connection to the grid. The inverters and transformers will be housed in buildings (referred to as 'stations') that have a small footprint of 28 m² each.
- 3.6 There is also a requirement for a primary substation compound of circa 10m x 10m to be placed on site. This compound will be located within the centre of the site, where it will be easily accessible.

Layout

- 3.7 The solar array has been laid out to maximise the production of electricity, with the panels being angled and orientated in a landscape view to optimise their exposure to direct sunlight. The gentle sloping, south facing nature of the site makes it appropriate to accommodate the arrays with minimal wastage of space. Existing boundary planting has been retained, with the development kept away from these features to ensure their protection and to avoid areas where the existing vegetation could potentially cast a shadow onto the panels, which would reduce their efficiency, or create pressure for removal of vegetation in the future.
- 3.8 The supports for the arrays will be driven into the ground to depths of between 1-2 m. The arrays are set apart by approximately three times their overall height in order to avoid shadowing, giving open aisles of about 6–10 m in width between them, although the exact distance will depend on the topography of the site and will be designed to ensure optimum energy generation.
- 3.9 There will be a fence sited around the perimeter of the array to protect it from theft, vandalism or damage (**Figure 4** refers). It is also necessary to protect any potential intruders from being harmed. The perimeter fencing will be a deer fence of up to 2.4m, which is considered to be more sympathetic to the rural location. It will be erected on the inside of the boundary hedgerows and vegetation. The fence line will be set at least 8 m from any boundary hedges.

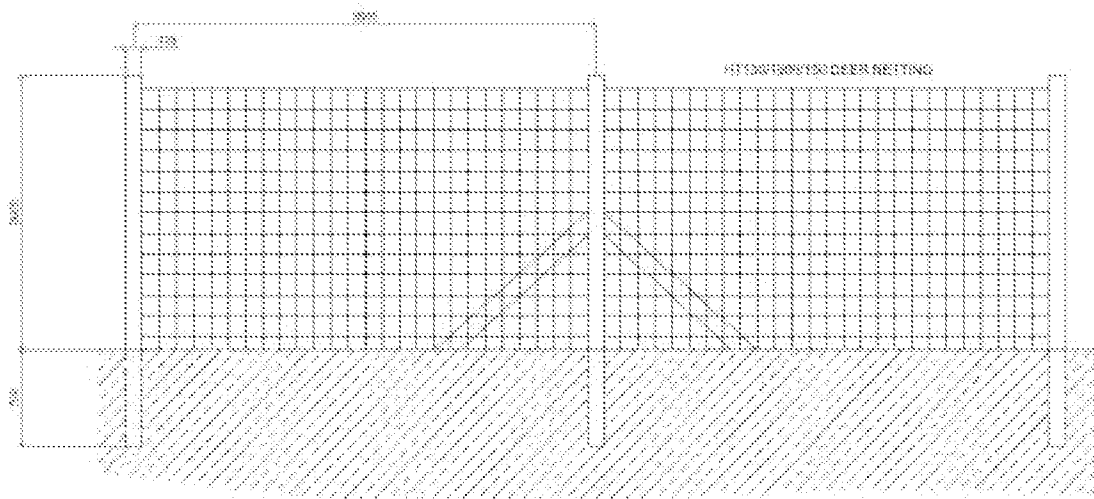


Figure 4: Indicative image of perimeter deer fence

- 3.10 To facilitate the movement of small mammals through the site, small gaps will be left at the bottom of the perimeter fencing at regular intervals.

Scale

- 3.11 The scale of the development is appropriate to the existing field size and the technical requirements for a solar park.
- 3.12 The layout and orientation of the arrays will leave ample space between panels and boundaries. This will avoid both overshadowing and any risk of compromising the continued growth and future maintenance of the boundary hedgerows.

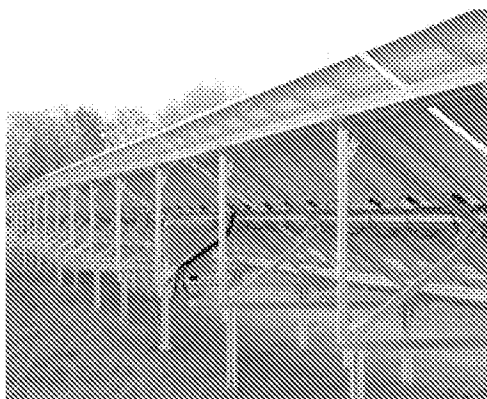


Figure 5: Panels clustered together



Figure 6: Appearance of panels

- 3.13 The proposed PV panels and mounting frames will be up to 2.85 m in height and sited in rows. The panels will normally be set at a minimum of 1 metres above ground allowing light to penetrate and air to circulate so as to retain a healthy sward of grass beneath them. The angled nature of the racks ensures the best solar absorption and the variation in the height will enable the scheme to allow for any ground undulations. The panels will be clustered together to minimise the ground footprint, but will be adequately spaced to avoid shadowing from panel to panel, as illustrated in **Figure 5**.

Landscaping

- 3.14 The majority of the existing hedgerows around the boundary of the site are substantial but the assessment has identified a few gaps and it is proposed to close these off with new planting of native hedgerow species. Hedgerow trees such as oak (for long term landscape and biodiversity benefit) and field maple (for rapid screening) will also be planted as standards at the back of the existing boundary hedgerows to provide higher level screening. The new planting will make a beneficial contribution to the landscape long after the temporary use of the field as a solar park has ceased.

Appearance

- 3.15 The arrays are of a simple form and construction, with the panels of a glass construction with outer metal framework. The panels are likely to be of Crystalline Silicon or a material called 'Thin-Film' and consist of semiconductors and photovoltaic cells protected by a thin layer of cover glass. To keep the solar panel cool they are elevated above the ground to allow airflow underneath as well as above.
- 3.16 The panels have a black/blue appearance (**Figure 6** refers) and, because they are designed to absorb the sunlight, they produce no discernible reflection or glare.
- 3.17 Solar parks are a relatively new feature within the landscape, but due to the nature of the development, the topography of the area and the existing boundary features, the overall impact will be minimised and the solar arrays will have little visual impact from outside the confines of the site. It is considered that they will not be demonstrably harmful to the character and appearance of the surrounding landscape.

Access

- 3.18 It is proposed that the site will be accessed via the existing field access, which is located off Drove Lane and which will be upgraded if required for construction purposes.
- 3.19 Virtually all of the vehicular activity at the site will be generated during the construction phase, at which point it is likely to generate circa 100 x 40ft truck movements over a period of approximately three months. Following construction, minimal access will be required to the site (envisaged monthly), only for periodic maintenance and washing of the PV panels.
- 3.20 It is proposed to create a construction compound within the site which will be used for the storage of all plant and equipment and the provision of the necessary welfare facilities. Upon completion of development the area will be restored. Sufficient forward visibility can be achieved at the site access to satisfy highway requirements. It may, however, be necessary to remove a small area of hedgerow which, if required, will be fully re-instated upon completion of construction activities.
- 3.21 Once operational there will be minimal onsite activity. There will be regular (envisaged monthly) access to the array for maintenance works, usually carried out by a road going van, such as a Ford Transit. Vehicular access will be via the existing field access which is located off Drove Lane, with the only internal roads being those providing access to the inverters. Access to the panels themselves will be available between the arrays.
- 3.22 It is therefore considered that the existing access provision is satisfactory and that the proposal will not create traffic or environmental problems or requires any transport improvements which will harm the character of the locality. The proposal is therefore in conformity with policy.
- 3.23 During its operation, the proposed development will therefore not result in any discernible increase in traffic on surrounding roads.

Sustainability

- 3.24 It is considered that the proposed solar park performs an economic role because it represents a major new investment in the area and the provision of a solar park will help support:
- the viability of existing business;
 - direct and indirect local employment opportunities;
 - provide a reliable, indigenous electricity supply that helps address the need for UK generating capacity;
 - reduces reliance on traditional energy supplies and imported gas; and
 - lessens exposure to remote and unstable European energy markets.

3.25 It is also considered that the proposed solar park performs a social role because it will:

- maintain and improve access to local job diversity and opportunities such as training, research, installation, servicing and maintenance of solar panels;
- support local business and suppliers;
- provide a demonstration project for sustainable energy generation that further develops the educational resource, thereby allowing academic institutions and innovators to develop expertise in renewable energy manufacturing and research and development; and,
- increase security and reliability of supply through more distributed generation close to the point of use and across more diverse sources and technology types.

3.26 Furthermore, it is considered that the proposed solar park performs an environmental role in several respects, namely:

- the proposal has been rigorously assessed and informed by a number of key environmental considerations, including potential landscape and visual effects, ecology, archaeology, and flood risk, such that it would not give rise to significant adverse environmental impacts that would outweigh the need for the development;
- the solar panels and supports are constructed from materials that are recyclable. They have a prospective lifetime use of between 25 years without the need for replacement. At the end of their productive lifespan the panels will be collected by the manufacturer for recycling;
- the installation will generate electricity from a renewable source and will be of a zero-carbon output due to the nature of solar power and will therefore offset CO₂ that would otherwise be generated as a result of the use of fossil fuels. The site produces no pollutants, either airborne or ground infiltration; and,
- it provides for a net improvement in air quality through the reduction in fossil fuel emissions.

3.27 On this basis the proposed solar park is considered to be in accordance with the economic, social and environmental principles of sustainability.

4.0 CONCLUSION

- 4.1 Solar electricity systems are, in many cases, economically superior to conventional power systems. The operating costs are low because solar electricity generation needs very little maintenance, very few spare parts, and no fuel. Solar electricity is fully automatic and therefore suitable for unmanned operation. There are no moving parts, so the system has a relatively long lifetime, and is virtually maintenance-free.
- 4.2 The Government is keen to encourage greater deployment of such technologies which offer many benefits. They can help to tackle climate change, reduce reliance on centrally generated electricity and increase security of energy supplies.
- 4.3 The Bilsham Farm site is considered to be favourable for accommodating a solar park development for the following reasons. Firstly, the site enjoys high sun hours per year and thus has a natural advantage for harnessing this type of renewable energy. Secondly, it is not within a designated landscape. Thirdly, it is in a countryside location yet it is well related to Bognor Regis and the surrounding villages of Yapton, Barnham, Woodgate and Shripney. Fourthly, it is a viable option because the electricity grid in the immediate locality of the site has available capacity (which has been confirmed through a grid connection offer from the local DNO). It is also located in proximity to an existing electricity line meaning a solar park could be connected to the National Grid without the need for a significant amount of new infrastructure.
- 4.4 The supporting reports and technical assessments also demonstrate that the development also offers the opportunity to environmentally enhance the site and its overall effect will not have a demonstrable visual impact on either the wider countryside or upon the visual amenities of local residents. Furthermore the site could be shared with agricultural activities and provide a valuable contribution to the rural economy.
- 4.5 The supporting Planning Statement demonstrates that the proposed solar park development is in accordance with planning policy at the national and local level. It will provide a reliable energy source which is not dependant on the use of fossil fuels.