



LIGHTSOURCE
RENEWABLE ENERGY LIMITED

PLANNING, DESIGN AND ACCESS STATEMENT

SOLAR PHOTOVOLTAIC INSTALLATION



LAND EAST OF YAPTON LANE,
WALBERTON, BN18 0DW

DOC REFERENCE: Lower Farm, Binsted

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EXECUTIVE SUMMARY

- The proposal is for a 5MW solar farm, capable of generating enough clean electricity to power 1,500 typical households.
- The solar farm would avoid 2,500 tonnes of carbon dioxide emissions associated with electricity generation each year, thus reducing the carbon footprint of Warburton. This is the equivalent of taking 550 cars off the road.
- The site is flat, and is well screened by existing hedgerows. As such, it presents a low visual profile, and any visibility into the site will be minimal. The proposed solar farm would only present a moderate adverse visual effect on the surrounding environment, which would reduce over time as mitigation planting take hold.
- The site is of low ecological value, however the wider area does form suitable habitat for a number of protected species. Targeted construction and site design measures will ensure that there are no adverse effects on these species, whilst the new planting proposed will improve net biodiversity on site.
- All development will be located away from flood risk areas, and the development would not increase flood risk on site.
- There will be no adverse impact on designated heritage assets. Assessments have identified the potential for buried archaeology onsite – investigations are continuing and the results will be submitted to the Council in due course.
- The site is a combination of Grade 2 and 3a land. The development represents a temporary use, and agricultural use will continue in the form of sheep grazing. As such, the proposal would not permanently remove this area from agricultural use.
- At the end of the solar farm's life, the site will be decommissioned, with all infrastructure removed from the site, and the site restored to its original condition for future agricultural use.
- The majority of the components of the solar farm can be recycled or reused at the end of the solar farms operational life.
- The proposed solar farm is consistent with national and local policy, and will contribute to the country's renewable energy generation targets.

1 INTRODUCTION

1.1 GENERAL

This planning and design and access statement has been prepared in support of a planning application for full temporary permission for the development of a ground mounted photovoltaic (PV) solar energy generation system (solar farm). The solar farm has been designed to accommodate sheep grazing on site, thus providing a dual productive function of renewable energy generation and agricultural production.

The site is located at Land East of Yaptan Lane, Walberton, BN18 0DW (referred to as Lower Farm, Binsted). The application area is 9.93 in size. It is proposed to install solar modules covering approximately 2.92ha. The proposed solar panels and associated infrastructure will cover only 29.55% of the site as sufficient gaps must be provided between the rows of panels, to avoid one row shading another, and sufficient setbacks need to be provided from boundary vegetation, particularly on the southern boundary to avoid shading. The design of the proposed Layout Plan has been prepared to maximise energy production within the available area of land, taking into account the site specific constraints. The grassy avenues between the rows of panels, and the grass growing beneath the panels, will be grazed by sheep.

The purpose of the development is to convert daylight into electricity. This solar development will have a generation capacity of approximately 5 megawatts (MW), which is enough to power 1,500 typical homes¹, and save approximately 2,500kg in CO₂ emissions per annum – the equivalent of removing 550 standard cars from the road each year.

1.2 APPLICATION STRUCTURE

This Planning and Design and Access Statement is accompanied by the following reports:

- Statement of Community Involvement
- Landscape and Visual Impact Assessment
- Ecological Assessment
- Archaeological Assessment
- Flood Risk Assessment
- Construction, Decommissioning and Traffic Management Method Statement
- Agricultural Land Classification Survey

The following plans are also enclosed:

¹The intensity and duration of daylight levels in any given location is steady and predictable when compared year on year (though obviously this fluctuates throughout the year). Therefore the annual daylight levels in a given location can be estimated relatively accurately without extensive prior monitoring (as required for wind turbines). Determining the number of typical households that a solar farm will generate electricity for is a simple calculation whereby the average yearly daylight yield is multiplied by the energy output capacity of the solar panels (minus expected losses, which varies around the country depending on the quality of the grid, but is typically around 10%). This number is then divided by 3,300kwh, which is the Ofgem stated national average for yearly electricity usage for a typical household in the UK.

We use the average number of households the solar farm is likely to generate power for annually as a representative figure to put the capacity in to perspective. Of course, the electricity will be used by a mix of residential dwellings, businesses, factories and farming operations depending on the demand from nearby energy users at any given time of day.

- Layout Plan
- Mounting Frame and Panel Elevation
- Fence Elevation
- Inverter Elevation
- Transformer Elevation
- Sunstation Elevations (Clientside and DNO)
- CCTV Camera Elevation
- Storage Building Elevation
- Communications Building Elevation
- Auxiliary Transformer Elevation
- Composting Toilet Elevation

1.3 THE NEED FOR RENEWABLE ENERGY IN THE UK

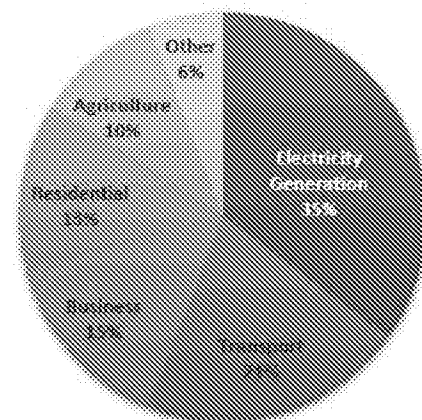
Energy generation is required to meet the electricity demands of households, businesses, factories and services in the UK. The availability of electricity is fundamental to supporting the modern way of life. Aside from the very few living off-grid, the majority of us require on-demand electricity both in our homes and businesses, and electricity black outs cause significant disruptions.

A significant proportion of UK electricity supply is generated from fossil fuels. Declining reserves of fossil fuels in the UK Continental Shelf are making the UK increasingly reliant on imports at a time of increased global demand.² Around a fifth of power stations in the UK are due to close within this decade as they come to the end of their operational lives or are deemed too polluting.³

With a large proportion of the UK's energy being generated from fossil fuels, we are exposed to potential energy security issues, including fluctuating international market prices and disruptions to fuel supplies through geopolitical conflicts.

Our reliance on fossil fuels also makes us one of the world's more prolific emitters of greenhouses gases and other pollutants. Based on 2013 figures, the UK is the 12th largest emitter of carbon dioxide in the world.⁴

In 2012, the single largest contributor to these emissions was the electricity generation sector which creates 35% of the UK's carbon emissions, with the transport sector in second place at 21%.⁵ The pie chart opposite shows the UK carbon emissions breakdown by sector.



The UK Government is committed to meeting its legally binding targets for reducing the country's carbon footprint, and a key component of this strategy is increasing the levels of renewable energy generation in the UK. This will also have the benefit of insulating the UK from volatility in the global fossil fuel markets, by increasing our energy self-sufficiency.

² Department of Energy and Climate Change (2012) *Energy Security Strategy*, www.decc.gov.uk

³ Department of Energy and Climate Change (2012) *Energy Security Strategy*, www.decc.gov.uk

⁴ European Joint Research Centre and Netherlands Environmental Assessment Agency (2015) *EDGAR – CO2 time series 1990 – 2013 per Region/Country*

⁵ Source: Department of Energy and Climate Change (2014) *Statistical Release: 2012 UK Greenhouse Gas Emissions, Final Figures*

These two key reasons (security of supply and carbon dioxide footprint reduction) for increasing our renewable electricity generation capacity are well recognised by the Government, and as discussed later in this report, the NPPF clearly states that applicants are not required to demonstrate the overall need for renewable or low carbon energy in the UK.

Solar PV is a proven technology⁶ – having been in commercial production since the 1950s – and it has a significant role to play in increasing the capacity of our electricity generation from renewable sources.

1.4 ABOUT LIGHTSOURCE

Lightsource Renewable Energy Ltd (Lightsource) is the United Kingdom's leading solar energy generator. We are primarily focused on utility scale ground and roof mounted photovoltaic installations, which we maintain and operate, selling the electricity generated either for use on the national grid network, or directly to a specific high energy user. We have also installed solar panels on the roofs of over 100 schools across the United Kingdom, providing them with clean energy as well as a learning resource kit.

Lightsource are committed to the long term maintenance of our solar farms, we have internal Asset Management and Operations and Maintenance teams, with regionally based staff who manage all of our built assets.

For more information on Lightsource and our existing portfolio of solar sites please visit our website: www.lightsource-re.co.uk.

⁶ It is sometimes quoted that solar panels have a low efficiency. What this is referring to is the ratio of actual energy produced versus potential energy generation if the sun stayed at the midday position 24 hours a day. Obviously daylight levels vary throughout the day, growing stronger toward midday, and weaker at sunrise and sunset – this does not mean that solar panels themselves are inefficient – it is just the natural limitation on the amount of energy they are realistically able to produce from natural daylight, compared to the amount they would be able to produce if daylight levels were always at their peak.

2 SITE DEVELOPMENT

2.1 SITE SELECTION

Site selection is critical to ensuring that an efficient, technically and economically viable solar farm can be developed without causing significant adverse environmental impacts.

Of the hundreds of potential sites we assess every year at Lightsource, we proceed to planning with less than 10% of these, with the other 90% either unviable technically, unable to achieve grid connection, or considered inappropriate from a planning policy and environmental impact point of view. The stages of our site selection process are detailed below.

2.1.1 PHASE 1: DESKTOP ASSESSMENT

Our site selection process begins with a detailed desktop assessment assessing the following four critical criteria:

1. Technical suitability of the site for operating a solar PV system
 - Site size (minimum of 20acres)
 - Irradiation (daylight) levels and potential energy yield
 - Orientation and topography
 - Access point
2. Grid connection feasibility
 - Availability of grid capacity
 - Proximity of nearest overhead line (11/33kV)
 - Likely ease/difficulty of accessing point of connection
3. Planning Issues
 - National and Local level designations (landscape, ecology, heritage)
 - Heritage assets
 - Flood risk
 - Agricultural land grading
 - Neighbouring land uses
 - Potential visual receptors
4. Site Availability
 - Landlord looking to diversify farm operations who is willing to rent/sell land for a solar farm development

At the desktop stage, the following areas were assessed:



It was considered that all identified areas merited further investigation through a site visit.

2.1.2 PHASE 2: SITE VISIT

A key focus for the site visit is assessing the potential a site has for unacceptable visual impact. Other criteria assessed on site include:

1. Technical suitability of the site for operating a solar PV system
 - Confirmation of site orientation and topography
 - On-site shading
 - Confirmation of appropriate access for construction traffic
2. Grid connection feasibility
 - Proximity of nearest overhead line (11/33kV)
3. Planning Issues
 - Actual visual receptors, and extent of site visibility
 - Potential for additional planting to screen views
 - Flora and fauna

Based on the site visit, it was decided to proceed with the western most field, as the remaining three, whilst still considered appropriate for solar development, were more visible from the surrounding footpath network.

An appraisal of the subject site taken forward in this planning application is provided in Section 3.

2.2 PRE-APPLICATION ENGAGEMENT WITH THE COUNCIL

We began our site specific pre-application engagement with an initial meeting with Arun District Council officers in July 2013. This meeting was held on site, and the proposal was discussed in detail. It was generally agreed that the site was considered appropriate for solar development, subject to the appropriate assessments being completed and submitted with any planning application.

Environmental Impact Assessment Screening Opinion was then submitted in September 2015. The Council's Screening Opinion determined that an Environmental Statement was not required for the proposal (Council ref: PE/00459/13).

Further feedback was sought from the Council in September 2014 on the same area, with two additional fields proposed to the south. Whilst the feedback remained largely the same, these two additional fields do not form part of this planning application.

This application is accompanied by a Statement of Community Involvement, which sets out the pre-application engagement undertaken with the local community and other stakeholders.

3 SITE CONTEXT

3.1 SITE DESCRIPTION

The 9.93ha field is currently used for growing crops. The site has the following characteristics:

- The site is generally flat, with a gentle south facing gradient.
- The site is within Agricultural Land Grading 2 and 3A
- The site is bounded in all directions by low hedgerows. The wider area is characterised by larger trees and woodland.
- A watercourse runs approximately 100m to the south, whilst to the east there is a drain network which links into this watercourse.

3.2 LOCAL CONTEXT

The site is located within agricultural setting. The local area has the following characteristics:

- Yapton Lane lies 180m west of the site; the nearest dwellings are 150m west, located on the site access. The village of North End lies 250m southwest, separated visually and physically from the site by a railway. The village of Walberton lies approximately 1.2km northwest.
- The adjoining fields are also under crops.
- The site does not fall within any national or local designations. The South Downs National Park lies 650m northeast of the site.
- The nearest Listed Building is located 430m east of the site, within the built farm complex of Manor Farm.
- The immediate area is generally flat, meaning that the site does not have any visual prominence when viewed from the wider area.

Detailed descriptions of the visual, ecological, and archaeological setting of the site are provided in the relevant reports accompanying this application.

4 PROPOSED DEVELOPMENT

4.1 PROPOSED USE

Lightsource proposes to install and operate an array of photovoltaic (PV) solar panels on the site, as shown in the accompanying Layout Plan, to convert daylight into electricity. The PV panels will have an energy generation capacity of approximately 5MW, and will output electricity equivalent to the power requirements of 1500 typical households per year. The energy generated will be fed directly into the local power grid network for use by the nearest points of demand.

The solar farm will be a temporary, medium term, use of the site. At the end of its operational life (approximately 30 to 35 years), all equipment associated with the solar farm will be removed from the site, and the land restored to its former condition.

The solar arrays will be a temporary, medium term, use of the site. At the end of their operational life (approximately 30 to 35 years), all equipment associated with the solar arrays will be removed from the site, and the land restored to its former condition.

4.2 AMOUNT, SCALE AND APPEARANCE

The solar farm will be comprised of the following components, shown in the Layout Plan and Elevations.

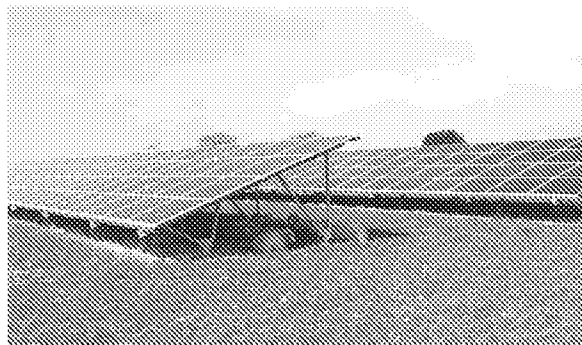
Solar Panels: Solar PV panels, with a combined energy generation capacity of approximately 5MW, will be installed. The panels will be approximately 1.959m x 0.995m x 0.05m.

The mounted solar panels will have a maximum height of 2.11m above ground level and at the lower end will be 800mm above the ground, allowing for sheep to graze the grass beneath the panels.

The glass surfaced panels are coated to maximise daylight absorption, and thus minimise glare potential.

Mounting Frames: The panels will be attached in a 3 in landscape configuration to mounting frames at an angle of 25 degrees, to optimise daylight capture. The panels are fixed in place and will not move to 'track' the sun. The mounting frames will be made of either galvanized aluminium or steel and will have a rough matt finish, rather than a polished finish.

The mounting frames are pile driven into the ground, and no concrete foundations are required. The base of the frame piles are thin 'H' or 'Z' shapes, thus they have very little impact on the ground and do not require any prior excavation. The frames are driven to a depth of approximately 1.5m. At the end of their operational life when the site is decommissioned, the frame piles are simply pulled out from the ground



Mounted panels with sheep resting beneath, Manor Solar Farm, Dorset



Frame structures prior to attachment of panels

causing minimal ground disturbance.

Inverters: The panels generate Direct Current (DC) electricity which must be converted into Alternating Current (AC) before being feed into the local electricity grid network.

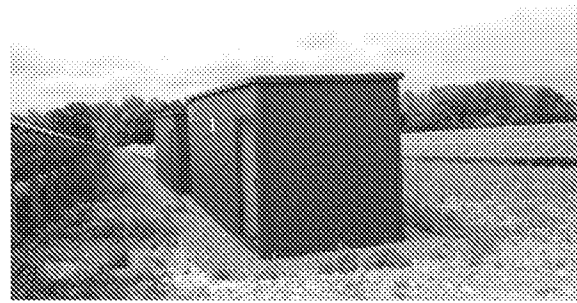
Central inverters are housed in a cabin like structure of approximately 2.9m high x X4.4m long x 1.5m wide and painted green. The Central Inverter is mounted on a concrete base. The proposed layout plan includes 4 inverters.

Transformers: The transformer transforms electrical energy from one circuit to another, and allows for the energy generated to be fed into the local grid network. The transformer will either be housed in a cabinet similar to the Inverter, or externally, surrounded by a fence and accompanied by a switchgear cabinet. The proposed layout plan includes 2 transformers.

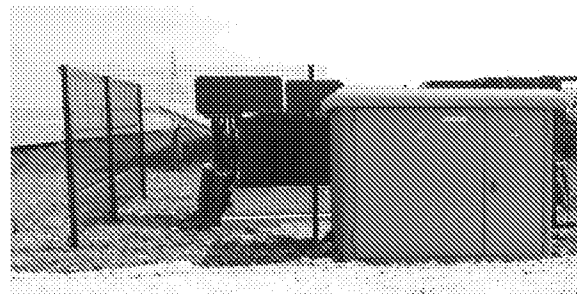
Substations: Substations are the onsite point of connection from where electricity flows into the grid network via the connection cable. The substations house the site switchgear which acts as a safety mechanism to protect the solar farm from any fault in the grid network and vice versa. It disconnects electrical circuits if there is a fault in the system, much like a household fuse box.

Two sets of switchgear are required, one to shut the grid off from the solar farm (referred to as the DNO Substation) and a second to shut the solar farm off from the grid (referred to as the Client Side or Customer Substation).

The DNO requires a security light to be affixed to the exterior of the DNO substation for health and safety reasons – if an emergency repair crew is required in hours of darkness the light allows them to safely access the substation to undertake the repair work. The motion sensor light only activates when the substation is approached; it will not be illuminated on a permanent basis. No other site lighting is required or proposed.



Inverter Building, Hatchlands Solar Farm, Devon



Transformer in background, switchgear in foreground.



DNO Substation, Little Trevease Cornwall



Customer Substation, Tavells Farm, Hampshire

Perimeter Fence: A 2m high agricultural timber and wire fence will be installed around the solar farm. This fence type has been selected for its appropriateness in a rural setting, and its visual permeability.

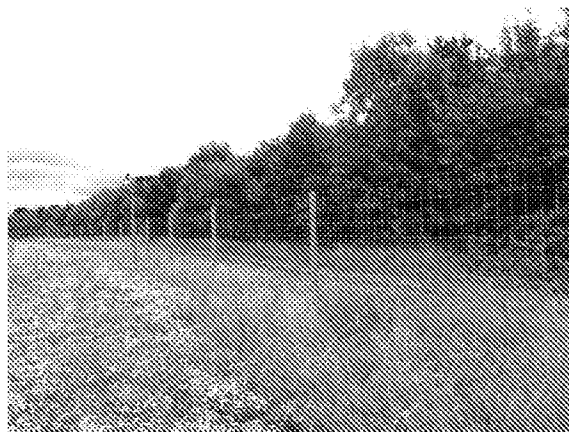
The purpose of the fence is to deter theft or vandalism, and prevent unauthorised access to the solar farm. The solar farm will be an unmanned site, and whilst solar farms are safe and we regularly take educational tours through our operational sites, it is important that unauthorised or unaccompanied access is prevented in case there is a fault in the system that presents a health or safety risk.

Security Cameras: In order to monitor the site and detect any unauthorised access, motion sensor CCTV cameras will be erected around the site perimeter on poles of approximately 2.4 metres in height as shown on the Layout Plan. The cameras are directed into the solar farm, avoiding impinging on the privacy of nearby properties, and employ infrared technology so no lighting is required.

Communications Building: A communications building is required to enable 24hour remote monitoring of performance and security. The monitoring equipment rapidly identifies any faults, as well as relaying security camera footage. The proposed building will measure approximately 3.66m in length x 3m in width and 2.5m in height. An aerial and/or satellite dish may be affixed to the cabinet if reception issues necessitate it.

Composting Toilet

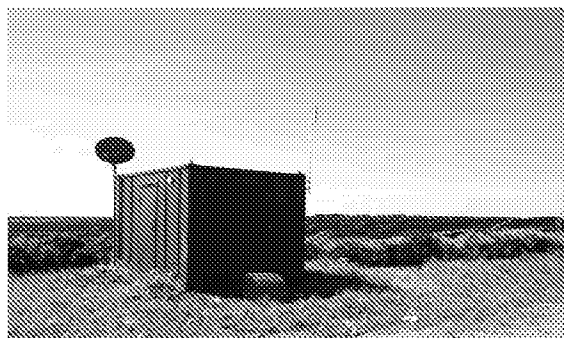
A composting toilet is provided on site for Operations and Maintenance staff, and for tours of the site by community groups, schools or councillors. The toilet is waterless, chemical free and self-composting, made from sustainably logged wood, thus it is compatible with the environmental aims of the development. The toilet uses a dehydration process resulting in an odour free compost which is collected annually for further processing off-site.



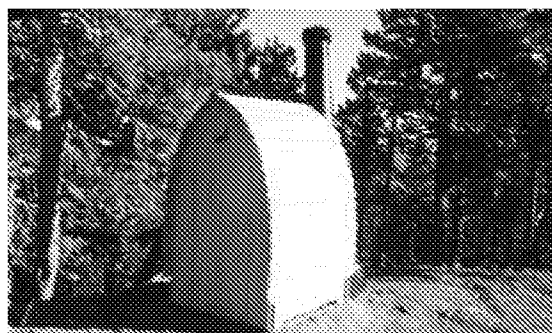
Fence at Tavells Solar Farm, Hampshire



CCTV camera in left hand corner of above photo.



Communications Building, Little Trevease, Cornwall



The rows of the panel arrays will form a regular pattern, and the grass growing beneath and between the rows of panels will help to green the appearance of the site. The intention is to minimise views of the scheme such that it blends into the landscape. Although solar farms consist of built infrastructure mixed with natural elements, they are not necessarily unattractive, and can form features of interest.

Visual montages showing “before” views and “after” visual simulations of what the proposed development will look like are included with the accompanying Landscape and Visual Impact Assessment. The below photos show examples of some of Lightsource’s operational solar farms, to show what solar farms look like. Lightsource is happy to take Council staff and Councillors to visit one of our operational solar farms should they wish, so that they are able to see one close up and gain an appreciation for what the proposed development will look like once constructed.



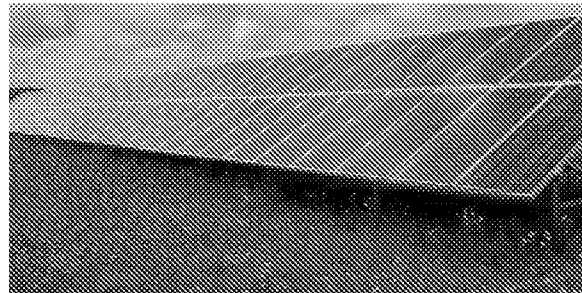
Higher Pirzwell Solar Farm, Devon



Barton Solar Farm, Devon



Ninnis Solar Farm, Cornwall



Benbole Solar Farm, Cornwall

4.3 LAYOUT

The proposed Layout submitted with this application has been prepared by Lightsource’s in house Technical Team to make the most efficient use of the land available, whilst taking into account on site features such as accommodating sheep grazing and avoiding shading from trees.

If planning permission is granted, then Lightsource will engage a specialist Engineering, Procurement and Construction (EPC) firm to prepare the final detailed design layout and construct the solar farm, and will also finalise details with the Distribution Network Operator for their substation. The proposed Layout and elevations are based on informed assumptions of the most likely options for equipment and their positioning, however it may be that availability of equipment, or specific site requirements, mean that the final detailed design differs in some minor respects from the proposed layout. To address this, Lightsource proposes a Condition as outlined in Section 4.6 of this report.

The total area of the development will be 9.92 hectares, with the area of ground covered by the rows of solar panels and associated infrastructure totalling 29.55% of the site area; the remainder of the site being grassed land constituting the gaps between the rows of solar panels, and between the fence and the solar farm.

The plans accompanying this application include:

- Layout Plan
- Mounting Frame and Panel Elevation

- Fence Elevation
- Inverter Elevation
- Transformer Elevation
- Sunstation Elevations (Clientside and DNO)
- CCTV Camera Elevation
- Storage Building Elevation
- Communications Building Elevation
- Auxiliary Transformer Elevation
- Composting Toilet Elevation

4.4 LANDSCAPING

A planting plan is included with this application showing the proposed landscaping work. This will be implemented in the first planting season following completion of the solar farm.

The landscaping work will include hedgerow and tree planting along the northern, western and southern boundaries.

4.5 ACCESS

Access to the site will be directly off Yapton Lane to the west of the site, as shown in blue on the below aerial.



This access is well formed and can easily accommodate HGV's (indeed it has been doing so for some time). The access was not seen as being particularly contentious during either the pre-application engagement with the Council or at the community consultation event.

Construction Traffic: This application is accompanied by a Construction, Decommissioning and Traffic Management Method Statement which provides detail on levels of construction traffic, how the site will be accessed and how construction traffic will be managed.

It is considered that the relatively low levels of traffic to be generated during the construction period will not result in any material adverse impact on traffic safety or traffic flows in the surrounding roading network.

Operational Traffic: Traffic generation during the operational life time of the solar farm will primarily be restricted to maintenance visits, including:

- 2-3 grass cuts a year (if sheep grazing does not keep grass sufficiently short).
- 2-4 visits per year to wash panels – this will involve bringing in a water cube on the back of a flatbed 4x4.
- Operations and Maintenance staff will visit the site a couple of times a month – this will be in a transit van or 4x4 type vehicle.
- 4 visits per year to read the electricity meter – this will be in a transit van or 4x4 type vehicle.

As solar farms are still relatively new in many areas of the UK, Lightsource also occasionally undertakes educational tours of our operational solar farms.

Decommissioning Traffic: Decommissioning of the site will take approximately half the time that construction takes, and will require similar levels of traffic as the construction phase to remove infrastructure from site. Further detail is provided in the Construction, Decommissioning and Traffic Management Method Statement.

4.6 RECOMMENDED CONDITIONS

As detailed in Section 4.3 above, the final detailed design for the solar farm, as prepared by the EPC we engage to construct it, may have some minor differences from the proposed layout, though we always endeavour to keep these to a minimum. To ensure Council approval of the final detailed design layout and elevations prior to construction, Lightsource proposes the following pre-commencement condition:

“Prior to commencement of the development, full details of the final locations, design and materials to be used for the panel arrays, inverters, transformers, control room, switchgear substations and CCTV cameras shall be submitted to the local planning authority and agreed in writing.”

Alternatively, the Council may wish to attach a condition listing the approved plans, thus allowing for a Variation of Condition to be sought to amend the plans as required based on the final detailed design, for example:

“The development hereby permitted shall be carried out in accordance with the following approved plans, unless otherwise agreed in writing with the local planning authority:

- *Layout Plan*
- *Mounting Frame and Panel Elevation*
- *Fence Elevation*
- *Inverter Elevation*
- *Transformer Elevation*

- *Switchgear Elevation*
- *CCTV Camera Elevation*

In order to condition the removal of the solar farm as part of the planning permission, Lightsource recommends the following condition wording:

“Within 6 months of the cessation of energy generation from the development, all infrastructure associated with the solar farm will be removed from the site, and the site restored to its original condition.”

Although solar farms have low operating costs, they are relatively expensive to develop, therefore if the Council requires a specific time bounded condition for decommissioning, then Lightsource requests that this be 30 years and 6 months from the date that construction starts on site. This will provide for 30 years of electricity generation, and 6 months for later decommissioning. We recommend the following wording:

“Within 6 months of the cessation of energy generation from the site, or a period of 30 years and 6 months following completion of construction, whichever is the sooner, all infrastructure associated with the solar farm will be removed from the site and the site restored to its original condition.”

If the later condition is used we recommend including an additional condition requiring notice to be given to the LPA of the start of construction, for example:

“Written notice is to be given to the LPA at least 5 days prior to construction starting on site.”

5 KEY BENEFITS OF THE PROPOSAL

The proposal will result in a wide range of environmental benefits, as well as financially benefiting the local community. This is against limited, localised impacts, as discussed in Section 6.

5.1 RENEWABLE ENERGY GENERATION AND SECURITY OF SUPPLY

As discussed, increasing the capacity of renewable electricity generation in the UK is critical for reducing the country's carbon emissions and for improving our energy self-sufficiency to avoid the volatility in the global fossil fuel market.

A range of energy generation methods are required to ensure security of supply on the national grid network, and all options have their advantages and disadvantages. A comparison of solar farms with other energy generation options is provided in Appendix B.

5.2 BIODIVERSITY AND HABITAT ENHANCEMENT

The RSPB's 2013 'State of Nature' report found that approximately 60% of British wildlife is in decline, much as a result of agricultural intensification and subsequent habitat loss.⁷ The RSPB and Natural England have both identified the opportunity that solar farm development presents for providing substantial wildlife gains, due to the extent of the unutilised area between panel rows and bordering the installation, combined with the low levels of disturbance from humans or machinery within the sites once operational.^{8,9} Wildlife habitats can be provided in these areas that will boost numbers of bees and other pollinating and predatory insects, and provide enhanced feeding opportunities for birds and small mammals.¹⁰

In managing these habitats, nutrient input to the land and watercourse will also be significantly reduced in comparison to arable use. Soil health is essential for long term sustainability of farming, and solar farms could play an important role by resting soils through the life of the solar farm, allowing soil nutrients to restore naturally, without the need for regular use of fertilizers.¹¹

The majority of the application area currently has low ecological value, being cultivated farmland. Measures proposed to enhance the biodiversity values of the site include the additional hedgerow and tree planting along the site boundaries, and the creation of species rich grassland within the site boundary.

The first solar farms in the UK were constructed in 2011, and a recent study of a selection of these by an independent ecologist identified numerous biodiversity gains when compared with agricultural fields used as controls in the study.¹²

⁷ State of Nature Partnership (2013) *State of Nature: The State of Nature in the UK and its Overseas Territories*, www.rspb.org.uk/Images/stateofnature_tcm0-345839.pdf

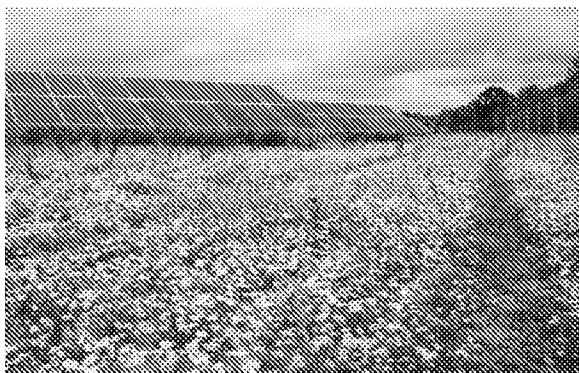
⁸ Natural England (2011) *Solar parks: maximising environmental benefits*, Natural England Technical Information Note TIN101

⁹ State of Nature Partnership (2013) *State of Nature: The State of Nature in the UK and its Overseas Territories*, www.rspb.org.uk/Images/stateofnature_tcm0-345839.pdf

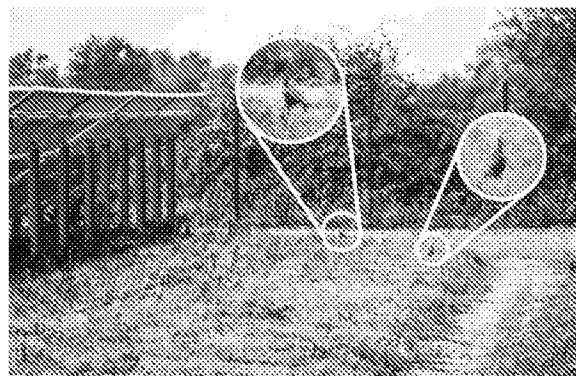
¹⁰ RSPB (2011) *Solar Power*, RSPB Briefing March 2011

¹¹ BRE (2014) *Biodiversity Guidance for Solar Developments*, Eds G.E. Parker and L Greene

¹² Parker, C and McQueen, C (2013) *Can Solar Farms Deliver Significant Benefits for Biodiversity?*, Preliminary Study July-August 2013, Unpublished Report



Flower colonisation of Tavells Solar Farm, Hampshire



English Partridge at Wilburton Solar Farm, Cambridgeshire

5.3 FARM DIVERSIFICATION AND SUPPORT

Around half of all UK farms undertake some form of activity that is outside of the core business of farming in order to support farm operations – this is farm diversification. Diversification can result in a more productive use of part of the farm estate and can provide a constant form of income to the farm as a balance to the traditional fluctuations in farm incomes; this can then be reinvested in farming activities.

The site is part of a wider landholding of approximately 1000 acres, and the use of the site itself for a solar farm will not adversely affect the existing farm business. To the contrary, the development would benefit the remaining working farm by making a positive contribution to its economic viability by providing a regular, diversified, income stream in the form of the lease payments for the duration of the solar farm tenancy. This is highly beneficial to the business at a time when prices for crops and livestock can vary greatly year to year, as it provides a level of revenue security that cannot otherwise be achieved.

It should also be noted, that in this instance the solar farm represents an opportunity to provide a dual use of the specific site, harvesting the sun's energy to generate electricity, and agricultural production through the grazing of sheep.

5.4 COMMUNITY BENEFIT

5.4.1 COMMUNITY BENEFIT FUND

Lightsource believes that the local communities housing major renewable energy developments should be recognised for their contribution to our country's need for secure, 'home-grown', cleaner forms of energy. Lightsource is committed to providing a long term commitment to benefit the host communities of our solar farms.

A community benefit fund will be offered to the Walberton Parish Council. This is an unconditional offer and does not require support from the Parish Council for the proposal, nor are they expected to withhold any objection. It will be in the form of an annual payment for 20 years, and will be linked to the final capacity of the site.

In addition to this, since April 2013, local authorities have been able to keep all business rates generated by renewable energy schemes, rather than it being collected nationally. The business rates for solar farms are approximately £4000p/MW per annum, and thus approximately £20,000 per year for this proposal. In the case of this development 80% of the business rates will be kept by Arun District Council and 20% will go to West Sussex County Council.

5.4.2 EMPLOYMENT OPPORTUNITIES

There are likely to be work opportunities generated for local contractors during the construction and on-going operation of the solar farm. The specialist Engineering, Procurement and Construction firms engaged by Lightsource to undertake detailed design and construction of our solar farms, typically employ local contractors as part of their work force during the construction period. As part of the community engagement process Lightsource has specifically sought to develop a database of local suppliers and contractors whose services could be engaged during and post construction.

Lightsource also typically engages local contractors to undertake general maintenance activities on site, as well as employing regionally based Operations and Maintenance staff to manage the operational solar farms.

5.4.3 CARBON FOOTPRINT REDUCTION

The Walberton Parish will benefit from a reduction in their carbon footprint. The electricity generated by the solar farm will enter the local grid network and will be utilised at the closest points of demand, meaning that more of the electricity used by Walberton will be from a clean renewable source, as opposed to from the burning of fossil fuels.

5.5 HEALTH

The electricity generation sector is the single largest contributor to CO₂ emissions in the UK through the burning of fossil fuels. An increase in our renewable, zero and low carbon energy generation capacity will result in a reduction not only in our carbon emissions, but also in the other air pollutants that are emitted during the burning of fossil fuels. Prolonged exposure to elevated levels of air pollution affects the human respiratory and inflammatory systems. The emissions associated with energy generation through fossil fuel burning, including sulphur dioxide, nitrogen oxide, and carbon dioxide, as well as fine particulates, are particularly problematic for people with lung or heart conditions. Whilst the impact of this particular solar farm alone is unlikely to result in a measureable impact on air quality or people's health – the cumulative positive impact of a growing zero and low carbon energy sector will reduce air pollution, and thus reduce the risk posed to human health.

6 ASSESSMENT

6.1 USE OF AGRICULTURAL LAND

The proposal involves the development of a solar farm within 9.93ha of agricultural land. Appendix A to this report sets out the necessity for locating the proposed solar farm on agricultural land.

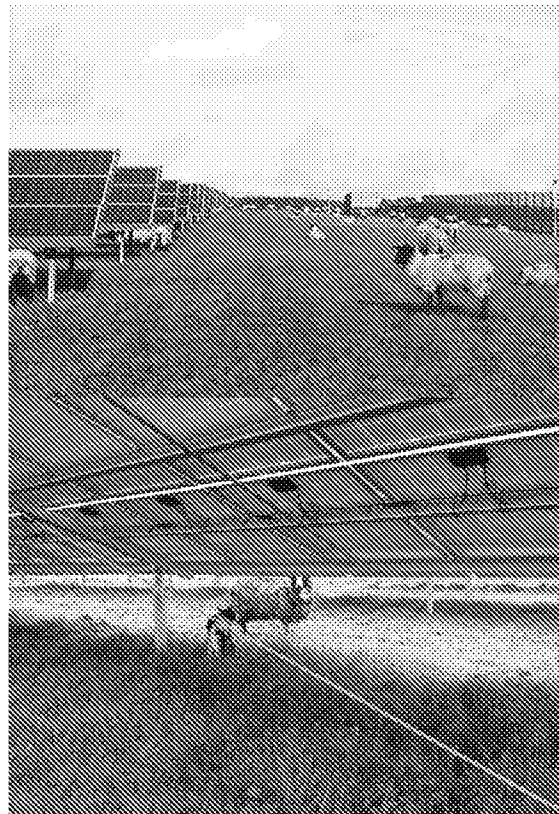
The site is within land classified as Agricultural Land Gradings 2 and 3A. This is classed as higher quality agricultural land, which is consistent with almost all of the Arun Districts agricultural resource.

In the case of the proposed solar farm, the design specifically provides for an ongoing agricultural use of the site through sheep grazing. Lightsource has found sheep grazing to be beneficial in the operation and maintenance of our solar farms, as it largely avoids the need for mowing between and beneath the rows of panels.

There are also significant opportunities for habitat and biodiversity enhancement, as discussed

The proposed development will be a temporary use of the land. Solar farms do not involve the introduction of large areas of hard surfaces, and all infrastructure can be easily removed at the end of the solar farm's operational life, followed by a return to sole agricultural production, thus there will be no loss of agricultural land. This position is confirmed in the Secretary of State's decision allowing the appeal on a 24MW solar farm on a mix of Grade 3a and 3b land; the Secretary of State confirmed at Paragraph 27 that *"there is no cogent evidence to demonstrate that the proposal would result in a significant (or permanent) loss of the best and most versatile land or harm to the agricultural industry."*¹³

Meeting the Government's target of 10GW of solar energy generation solely through ground-mounted systems would require the use of less than 0.05% of all agricultural land in the UK.¹⁴ It should be noted that the solar farm will be a passive installation, harvesting the sun's energy to generate electricity for human consumption – aside from the obvious visual difference, the outcome is little different to growing crops of rapeseed, poplar and willow for biofuel, and in fact solar PV requires significantly less land for the same energy output as biofuel crops, with even the most efficient biofuels requiring 29 times the land area as solar PV¹⁵.



Lamb underneath array at Newlands Solar Farm, Devon

¹³ Recovered appeal reference APP/T3535/A/13/219543 (decision dated 11 March 2015)

¹⁴ Based on 'World Bank Indicators – United Kingdom Land Use statistics', and assuming total installed capacity of 10GW of solar farms.

¹⁵ Greyer, R et al (2013) 'Spatially Explicit Life Cycle Assessment of Sun-to-Wheels Transportation Pathways in the US', *Environmental Science and Technology*, 47(2), pp 1170-1176

6.2 LANDSCAPE AND VISUAL IMPACT

The main impact associated with solar farms is the visible change to the site within which it is built. The Landscape and Visual Assessment submitted with the application has concluded that, given the flat topography of the site and the wider area, the solar farm would not present a prominent feature when viewed from external receptors, particularly when viewed against the wider landscape

The proposal would present a moderate adverse visual impact on some dwellings, and users of Yapton Lane and some surrounding footpaths. However, these effects will reduce as mitigation measures (planting) are implemented.

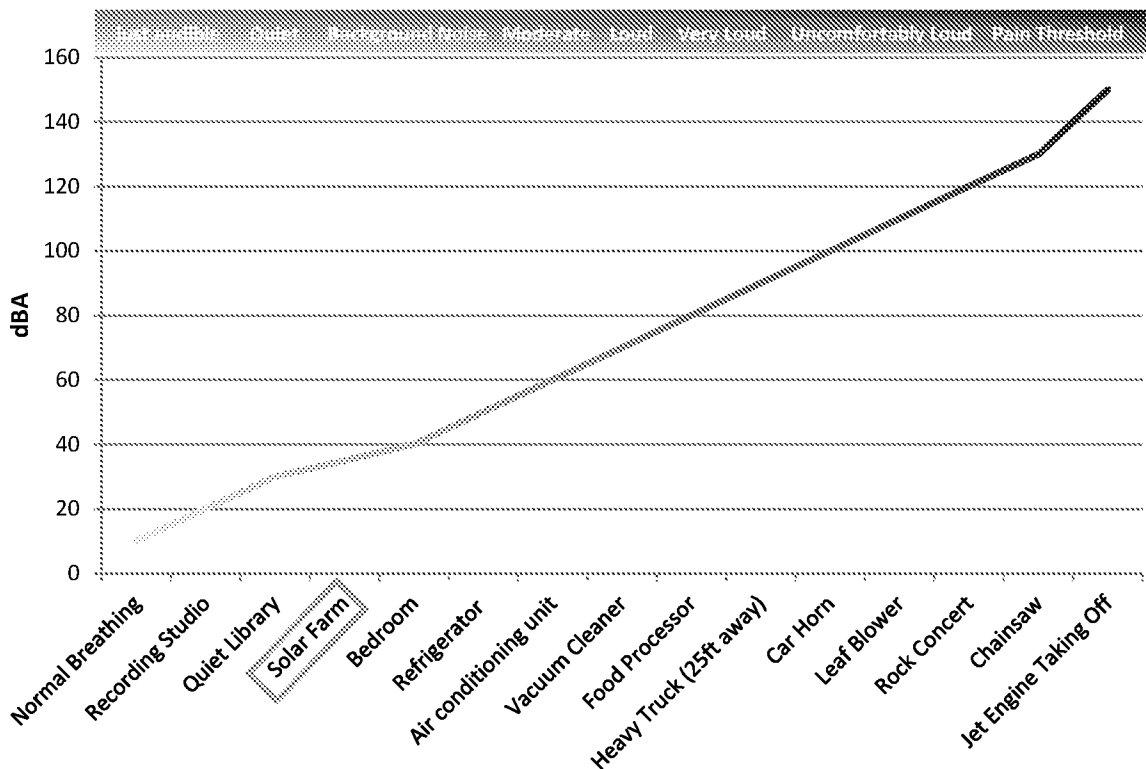
Overall, it is felt that the landscape effects of the proposal are not of a level to warrant undue concern, particularly when considered alongside the wider benefits of the proposal.

6.3 AMENITY

Solar farms are not noisy developments. The PV panels, which comprise the main feature of solar farms, do not generate any perceptible noise. The inverter cabinets are fitted with cooling fans, which generate a small amount of noise whilst the solar farm is operating during the day. However, the cabinets trap the majority of noise generated. Solar farms only operate during daylight hours, thus there is no noise generated at all in the evening, night and early morning, when ambient noise levels are typically lowest.

Lightsource has strict conditions relating to noise within the contracts we have with the specialist Engineering, Procurement and Construction (EPC) firms that we use to construct our solar farms. These conditions require that a maximum noise level of 35dBA is not exceeded at the site boundary. What this means in practice, is that there will be no audible noise beyond the site boundary once ambient noise is taken into account. To put the figure of 35dbA into perspective, a normal conversation typically ranges between 44 and 65dBA.

The graph below shows some typical noise levels as a comparison.



The solar farm does not involve any moving components; therefore there is no potential for any vibration impact. The development will not result in any emissions. To the contrary it will in fact help to reduce the level of CO₂ emissions in the UK associated with electricity generation.

6.4 ECOLOGY

The Preliminary Ecological Appraisal accompanying this application identified the potential for a number of protected species on site. These include badger, Great Crested Newts, Brown Hare, Hedgehog, a number of reptiles and a number of birds.

In general, it is considered that a solar farm can operate in this location without any long term impact on these species (given the small footprint of the site in comparison with the wider supporting habitats. However, construction of the site will need to be managed to avoid impacts on some species. These mitigation measures include offsetting all works and development from field margins and identified badger setts, pre-construction surveys and targeted site preparation works, and specified construction windows.

A full description of these mitigation measures can be found in the accompanying ecological appraisal.

6.5 CULTURAL HERITAGE

The Heritage Statement accompanying this application has concluded that the proposal would not physically impact on any designated heritage assets. An accompanying Geophysical Survey has concluded that there may be potential for undesignated assets within the site boundary – Lightsource are currently working with the West Sussex County Council to confirm any further work which may be required as a result of these surveys.

With regards to designated heritage assets beyond the site boundary, the assessment has concluded that there would be no impact on any asset, or its setting, above a slight adverse nature.

6.6 FLOOD RISK

The proposed development of a solar farm at the subject site will not result in any discernible change to quantity or rate of run-off from the site. The development will not increase the risk of flooding on either the subject site, or the surrounding areas. Small swales have been proposed along access tracks to direct surface runoff off these surfaces, however no formal SUDS features have been deemed necessary as part of this development.

6.7 GLINT AND GLARE

There is sometimes a misconception that PV panels might result in significant adverse glint and glare effects, with reflected sunlight creating a nuisance or even a safety risk for planes or traffic. This is not the case. The glass used to make the panels is not like window glass; it is specifically designed to absorb as much daylight as possible to convert to electricity, and therefore has a low level of reflectivity when compared to surfaces such as window glass, water or snow. Less than 9% of total incident visible light is reflected by PV panels, whereas normal glass reflects about 17%.

The potential for glint and glare from a solar farm is much lower than the potential for glint and glare from other man-made structures such as poly tunnels and glass houses, as well as natural features such as water or snow.

Glint refers to a specular reflection, produced as a direct reflection of the sun off of a surface. Glare refers to a continuous source of brightness, being the general reflection of a bright sky rather than a direct reflection of the sun.

In summer, once the sun reaches sufficient height in the south eastern sky, sunlight will fall directly on the panels and there may be a slight chance of glint occurring, however, the reflected beam will be directed back into the sky toward the south west. During the winter, the location of the sun in the sky means light would be reflected back into the sky toward the west-southwest. Because most of the reflections from the panels will be skyward, the solar farm will not create a traffic hazard, or nuisance to residential properties.

This skyward reflection does not create a safety hazard for aeroplanes. In Germany and the USA it is common for PV systems to be installed on airport terminal buildings, or within airport grounds, and in 2012 solar panels were installed on the terminal buildings at Birmingham and Gatwick Airports in the UK.

6.8 WASTE

The solar farm will not produce any waste, therefore no onsite waste storage or waste collection is required during operation.

6.9 CONSTRUCTION

The Construction, Decommissioning and Traffic Management Method Statement accompanying this application provides detailed information regarding the construction activities associated with developing the proposed solar farm. It is considered that any adverse effects on the surrounding area arising from the construction period will be minor and temporary only in nature.

6.10 DECOMMISSIONING

PV modules have an operational life of over 30 years, with most Tier 1¹⁶ panels still working at 80% of the original capacity after their 25 year warranty period, thus it is not anticipated that many will need to be replaced over the life of the system. Once the panels reach the end of their life, or earlier if a term is imposed through planning conditions, the site will be decommissioned, all infrastructure removed, and the site restored to its original state.

The Construction, Decommissioning and Traffic Management Method Statement accompanying this application provides detailed information regarding the decommissioning process.

¹⁶ Lightsource only use Tier 1 panels in their solar farms. 'Tier 1' refers to the top 20% of panels in terms of the efficiency, performance, and longevity.

7 PLANNING POLICY

7.1 INTERNATIONAL POLICY

The UK is a signatory to the EU Renewables Directive (2009), under which our legally binding target is for 15% of total UK energy consumption to be generated from renewables by 2020, with this target rising to 80% by 2050.

The UK's Renewable Energy Strategy (RES) sets out how the UK will increase its renewable energy generation and reduce greenhouse gas emissions. The Strategy is based on a scenario of 30% of electricity, 12% of heat and 10% of transport being generated from renewables by 2020. In 2012 UK electricity generation from renewable sources was 11.3%, an increase of 1.9% from 2011,¹⁷ and in 2013 this had risen to 13.9%.¹⁸ A substantial increase will be required in order to achieve 30% within the next five years.

On behalf of the European Union, the Vienna University of Technology and the Energy Economics Group published an assessment of the progress each EU member state has made towards meeting their 2020 targets. In relation to the UK, the report states that *"it is not expected that its 2020 RES [Renewable Energy Sources] target can be achieved under baseline conditions...Thus, the UK is a candidate for importing surplus RES deployment of other Member States that are not needed for their own target fulfilment. The energy produced from RES has to nearly double in 2020 to fulfil the UK target when compared to the baseline case."*¹⁹ Unless the rate of deployment for renewable energy generation schemes increases, the UK is likely to miss its legally binding targets.

7.2 NATIONAL POLICY

7.2.1 NATIONAL ENERGY POLICY

The UK Government is committed to meeting our renewable energy targets, which are set out in national policy through the Climate Change Act of 2008. Section 13 of this Act states that there is a duty for the Secretary of State to prepare proposals and policies for meeting carbon reduction targets. These obligations fall to Local Planning Authorities.

In 2011 the Department of Energy and Climate Change published the UK Renewable Energy Roadmap, which was updated in 2013. This presents the framework for the delivery of renewable energy deployment in the UK; it reiterates the Government's commitment to meeting our renewable energy targets. 2013 also saw the publication of the UK Solar PV Strategy Roadmap which states that *"Solar photovoltaic (PV) technology is a mature, proven technology and is a reliable source of renewable energy with an important role to play in the UK energy generation mix."* Paragraph 13 of this Strategy notes that presently solar PV accounts for 12% of renewable electricity capacity in the UK.

There are a raft of other National guidance documents relating to energy and renewable energy more specifically which support the Government's aim to significantly increase the amount of electricity generated in the UK from renewable sources.

¹⁷ Department of Energy and Climate Change (2013) *Digest of UK Energy Statistics*

¹⁸ Department of Energy and Climate Change (2014) *Digest of UK Energy Statistics (DUKES)*

¹⁹ Vienna University of Technology & Energy Economics Group (2014) *2020 RES Scenarios for Europe – Are Member States Well on Track for Achieving 2020 RES Targets?*

7.2.2 NATIONAL PLANNING POLICY

The National Planning Policy Framework (NPPF) was published on 27th March 2012, replacing all national level Planning Policy Statements, Planning Policy Guidance, and regional planning guidance for England. The central theme of the NPPF is the presumption in favour of sustainable development, as detailed in Paragraph 14. There can be a tendency to overlook this starting point, which requires that in decision taking Local Planning Authorities:

- Approve development proposals that accord with the development plan without delay; and
- Where the development plan is absent, silent or relevant policies are out of date, grant permission unless:
 - Any adverse impact of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in the NPPF taken as a whole; or
 - Specific policies in the NPPF indicate that development should be restricted.

Part 10 is of direct relevance to renewable energy generation. Paragraph 97 states that in order to increase the use of renewable and low carbon energy generation:

“...local planning authorities should recognise the responsibility on all communities to contribute to energy generation from renewable or low carbon sources”.

It goes on to state that LPAs should have *“a positive strategy to promote energy from renewable and low carbon sources; [and] design their policies to maximise renewable and low carbon energy development while ensuring that adverse impacts are addressed satisfactorily.”*

Paragraph 98 advises that when local authorities are determining planning applications, they should:

- *“not require applicants for energy development to demonstrate the overall need for renewable or low carbon energy and also recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions; and*
- *approve the application if the impacts are (or can be made) acceptable...”*

As is discussed in Section 6 of this report, it is considered that the potential impacts of the proposed solar farm development are, or can be made, acceptable in this specific location, given the careful site selection and proposed mitigation measures.

Other sections of the NPPF are also relevant to the development of a solar farm in the countryside, these include:

- Paragraph 28, which states that in supporting strong rural communities, local plans should *“promote the development and diversification of agricultural businesses”*. As discussed previously, solar farm development can be seen as a form of farm diversification, to provide additional income to support agricultural production on the rest of the farm unit.
- Paragraph 118 notes that adverse impacts on biodiversity should be avoided, and net gains promoted where possible. The proposed hedgerow and tree planting, along with the grassland creation and management programme within the site, combined with the targeted construction mitigation measures proposed, will ensure that not only are adverse effects avoided, but there will in fact be a net improvement in biodiversity within the site and its surrounds.

- Paragraph 112 states that when “*development of agricultural land is demonstrated to be necessary, local planning authorities should seek to use areas of poorer quality land in preference to that of higher quality land*”. The necessity for using agricultural land is set out in Appendix A. The site is a combination of Agricultural Land Grades 2 and 3A. The site will continue to be used for agricultural purposes, and will have a mixed use, combining the solar farm’s energy generation with sheep grazing.
- Paragraph 115 notes that great weight should be given to conserving National Parks, the Broads and AONBs. In selecting sites for development, Lightsource has specifically avoided such areas.
- Paragraph 128 states that when determining planning applications local authorities should require an applicant to describe local heritage assets, and prepare a desk-based assessment, and where necessary, a field evaluation, where the proposed development site has or has the potential to include heritage assets. An assessment of actual and potential heritage assets is provided with this planning application.

7.2.3 PLANNING GUIDANCE

It is important to note that the Planning Practice Guidance, and any relevant speeches and statements by Ministers, provides guidance only, it does not constitute or create new policy (see appeal decision APP/Z3825/A/14/2219843).

7.2.3.1 Planning Practice Guidance

The Planning Practice Guidance website includes a section for Renewable and Low Carbon Energy, the key theme of which builds upon the wording of Paragraph 98 of the NPPF, highlighting the importance of renewable energy generation to the UK’s security of electricity supply and greenhouse gas reduction targets, but making clear that planning permission will only be granted where the impacts at the specific site are, or can be made, acceptable.

With respect to large scale ground mounted solar farm developments the Planning Practice Guidance provides the following relevant factors for local authorities to consider:

- “*Encouraging the effective use of land by focusing large scale solar farms on previously developed and non-agricultural land, provided that it is not of high environmental value.*” While the use of brownfield land is encouraged here, the use of greenfield sites is not restricted, though such sites require additional measures beyond that for brownfield sites, as noted below. Whilst the DCLG is encouraging the use of previously developed land through planning guidance, it is worth noting that the last full dataset of the National Land Use Database for Previously Developed Land was published in 2010, the Homes and Community Agency received piece meal data in both 2011 and 2012, and datasets have not been commissioned by the Government since then.
- “*Where a proposal involves greenfield land, whether (i) the proposed use of any agricultural land has been shown to be necessary and poorer quality land has been used in preference to higher quality land; and (ii) the proposal allows for continued agricultural use where applicable and/or biodiversity improvements around arrays.*” Appendix A sets out the necessity for the use of agricultural land for this proposal, and comments on the quality of the agricultural land. Whilst it is proposed to use higher quality agricultural land, it is noted that this use is temporary, and agricultural use will still continue in the form of sheep grazing. In addition, the biodiversity enhancements provided also provide a net benefit to

the area. It is also noted that the majority of the Arun District agricultural land holding is higher quality, which greatly restricts the ability to provide for renewable energy developments on lower quality land.

- *“Solar farms are normally temporary structures and planning conditions can be used to ensure that the installations are removed when no longer in use and the land is restored to its previous use.”* As detailed in the Construction, Decommissioning and Traffic Management Method Statement accompanying this application, the solar farm will be fully decommissioned at the end of its operational life, with all infrastructure removed from site. This temporary use means that the site will remain as greenfield land and will not meet the definition of ‘previously developed land’.
- *“The proposal’s visual impact, the effect on landscape of glint and glare and on neighbouring uses and aircraft safety.”* The proposal’s visual impact is analysed in detail in the accompanying Landscape and Visual Impact Assessment, which concludes that the proposal would result in only a moderate adverse effect at worst, which would reduce over time as mitigation planting takes effect. The potential effect of glint and glare is addressed in Section 6 of this report, it is not considered to present either adverse safety or visual impacts.
- *“The extent to which there may be additional impacts if the solar arrays follow the daily movement of the sun.”* This proposal does not involve moving panels; the panels are fixed in place at an optimal angle for daylight absorption.
- *“The need for, and impact of, security measures such as lights and fencing.”* The required security measures include a 2m high fence, CCTV cameras, and a motion sensor light above the door of the Distribution Network Operators substation. No perimeter lighting or permanent site illumination is required. The proposed fence has been selected for its appropriateness in an agricultural setting.
- *“Great care should be taken to ensure heritage assets are considered in a manner appropriate to their significance, including the impact of proposals on views important to their setting. As the significance of a heritage asset derives not only from its physical presence, but also from its setting, careful consideration should be given to the impact of large scale solar farms on such assets. Depending on their scale, design and prominence, a large scale solar farm within the setting of a heritage asset may cause substantial harm to the significance of the asset.”* A Heritage Assessment looking at archaeology, listed buildings, and other heritage assets and their setting has been prepared and accompanies this application. This concludes that the solar farm would only result in a slight adverse effect on built heritage, well below the threshold of substantial harm.
- *“The potential to mitigate landscape and visual impacts through, for example, screening with native hedges.”* The Landscape and Visual Impact Assessment accompanying this application considers mitigation measures, and a Planting Plan is enclosed, which includes hedgerow and tree planting along the site boundaries.
- *“The energy generating potential, which can vary for a number of reasons including, latitude and aspect.”* The viability of the site to generate energy from natural daylight is a critical element of our site selection process. This site has been assessed by our Technical Department as suitable for a solar farm with a generating capacity of 5MW, which is equivalent to the energy requirements of 1,500 typical UK homes.

7.2.3.2 Ministerial Statements

On the 22nd April 2014 The Rt Hon Gregory Barker MP wrote to all Local Authorities regarding the Solar PV Strategy. Whilst noting a desire to focus solar PV growth on roof space and previously developed land, he also noted that *“There is still a place for large-scale field-based solar in the UK’s energy mix.”* He reiterated the point that such proposals must be ‘sensitively placed’, and pointed to the guiding principles in the Solar PV Strategy, being:

- *“Support for solar PV should ensure proposals are appropriately sited, give proper weight to environmental considerations such as landscape and visual impact, heritage and local amenity, and provide opportunities for local communities to influence decisions that affect them.”*

As discussed throughout this report, the proposal is considered to be appropriately sited and will avoid any significant environmental impact, including with respect to visual, heritage and local amenity impacts. As set out in the Statement of Community Involvement accompanying this application, Lightsource has engaged with the local community in a meaningful way, providing information about our proposal and ensuring that there were opportunities for local feedback to inform the design process.

On the 25th March 2015, the day before parliament closed for prorogation before the 2015 Election, The Rt Hon Eric Pickles MP delivered a speech to parliament which addressed a number of planning topics. With regard to large scale solar he stated the following:

“The National Planning Policy Framework includes strong protections for the natural and historic environment and is quite clear that local councils when considering development proposals should take into account the economic and other benefits of the best and most versatile agricultural land. Yet, some local communities have genuine concerns that when it comes to solar farms insufficient weight has been given to these protections and the benefits of high quality agricultural land. As the solar strategy noted, public acceptability for solar energy is being eroded by the public response to large-scale solar farms which have sometimes been sited insensitively.”

“When we published our new planning guidance in support of the framework, we set out the particular factors relating to large scale ground mounted solar photovoltaic farms that a local council will need to consider. These include making effective use of previously developed land and, where a proposal involves agricultural land, being quite clear this is necessary and that poorer quality land is to be used in preference to land of a higher quality.”

“We are encouraged by the impact the guidance is having but do appreciate the continuing concerns, not least those raised in this House, about the unjustified use of high quality agricultural land. In light of these concerns we want it to be clear that any proposal for a solar farm involving the best and most versatile agricultural land would need to be justified by the most compelling evidence. Of course, planning is a quasi-judicial process, and every application needs to be considered on its individual merits, with due process, in light of the relevant material considerations.”

As can be expected with any form of development, there are both good and bad examples out there of solar farms. As detailed in Section 2 of this Statement, Lightsource considers appropriate site selection to be critical to the success of any solar farm – this specific site was thoroughly assessed and considered before a decision was made to progress with a planning application, and it is considered that this proposal has been sited sensitively.

Lightsource agree that the need for energy security and greater generation from renewable sources does not override other local environmental concerns or factors. This is why we have undertaken a thorough environmental assessments to identify whether the proposal would result in any significant adverse impacts. These assessments accompany the application and confirm that any adverse effects will be limited and temporary. Included in these assessments is an Assessment of Agricultural Land Grading which is one factor feeding into the assessment and consideration of the overall planning balance for the proposal.

The evidence put forward in this Statement, and in the accompanying environmental assessments, provides compelling evidence in support of the proposal through identifying the benefits of the proposal, and the limited harm that would arise from the scheme.

As previously noted, the Secretary of State upheld the Ellough Airfield appeal, for a solar farm using 11.6ha of best and most versatile land, concluding that there would be no significant or permanent loss of the best and most versatile agricultural (see point 27 of the Secretary of State's decision letter and point 80 of the Inspectors report)²⁰; this scheme is of a similar size to what is being proposed here.

Therefore, the Secretary of State does not preclude the development of solar farms on land which is classified as best and most versatile agricultural land. It is a case of weighing up the benefits against any harm resulting from the development. As demonstrated in this Statement and the accompanying reports, there would be a limited and temporary harm as a result of the development which would be significantly outweighed by the benefits.

7.3 LOCAL PLANNING POLICY

The relevant local planning framework is made up of Arun Local Plan 2003. The Arun District Local Plan 2011 – 2031 was submitted to the Secretary of State in January 2015, and is currently under consideration. As such, little weight can be afforded to this document and it has not been included in the below discussion.

7.3.1 ARUN LOCAL PLAN 2003

Relevant policies from the adopted Local Plan are discussed as follows:

POLICY GEN3 Protection of the Countryside

Outside the Built-Up Area, as defined on the Proposals Map, the countryside will be safeguarded for its own sake. Development will not be permitted unless:

- (i) it meets the operational needs of agriculture, forestry, the extraction of minerals or the deposit of waste; or*
- (ii) for quiet, informal recreation; or*
- (iii) for the diversification of the rural economy; or*
- (iv) for essential road schemes; or*
- (v) it is in accordance with a policy in Sections 2 and 3 of the plan referring to a specific use or type of development.*

²⁰ Appeal reference APP/T3535/A/13/2193543

Permission will not be given for the extension of isolated groups of buildings or the consolidation of linear or sporadic development unless the proposal accords with criteria (i) to (iii) or (v).

The proposal is for a renewable energy development, for which a rural location is essential. Whilst this policy does not specifically provide for such development, it is considered that the proposed location in this instance does not affect the underlying character or function of the rural/countryside environment, and as such there is not material planning reason which would preclude a departure from planning policy in this instance, particularly given the underlying benefits provided by the proposal.

POLICY GEN21 Renewable Energy

Planning permission will be granted for development for renewable energy generation provided that:

- (i) there is no significant harmful environmental effect on the quality of the natural and built environments;*
- (ii) there is no unacceptable impact on the amenity of neighbouring residents;*
- (iii) there is no adverse effect on public safety;*
- (iv) development will make a contribution to meeting need on a local, regional or national basis and the reduction in emissions of damaging greenhouse gases.*

As identified in Section 6 above, and the specialist assessments supporting this application, there will be no significant harm resulting from this development (the LVIA in particular concluding that the level of adverse effect would be moderate, and would reduce with time). All neighbouring properties are at distance (at least 200m), and their views will not be dominated by the development, as a result of the flat nature of the site and the existing and proposed hedgerow screening.

The development would make a small but significant contribution to renewable energy targets, and will help to reduce carbon emissions in the local area.

Further, the footnote associated with this policy states that renewable energy proposals should be located outside of the South Downs and identified Coastal Strategic gaps, and instead encourages siting on Coastal Plains. Being located on the Upper Coastal Plain, and away from the specified constraints, the proposal satisfies this criteria.

POLICY AREA12 Agricultural Land Quality

The use of best and most versatile agricultural land (Grades 1, 2 and 3a) for any form of development not associated with agriculture or forestry will not be permitted unless need for the development outweighs the need to protect such land in the long term. Where development is permitted on the best and most versatile land it should, as far as possible, use the lowest grade of land suitable for that development.

As identified throughout this application, a rural location is essential for a solar farm of this scale. Appendix A below details the site selection process as it relates to agricultural land – in this instance given the constrained grid network, site development is restricted to a small area, the majority of which is either higher quality land, or subject to flood risk.

7.4 GRID CONNECTION LEGISLATION

This planning application does not include the works or infrastructure associated with the connection to the grid network except for the onsite substation/switchgear.

Works required for the underground cable to connect the solar farm to the electricity grid network are undertaken by the Distribution Network Operator as a Statutory Undertaker under Part 17, Class G(a) of the General Permitted Development Order.

8 CONCLUSION

The Lower Farm, Binsted solar farm will increase the UK's sustainable, locally generated, energy supply, by providing enough clean energy to power 1,500 households. Growing our renewable energy generation capacity will both reduce our carbon emissions and enhance security of energy supply by lowering our reliance on volatile international fossil fuel markets. The proposal also provides the opportunity to enhance biodiversity values.

Government policy promotes the development of large and small scale renewable energy developments, provided that the environmental impacts of individual proposals are acceptable, or can be made so through mitigation strategies.

The proposed location has a number of advantages. From an energy generation perspective, the relatively flat topography is ideal for maximising daylight capture, and proximity to existing National Grid overhead line infrastructure provides for efficient transmission of the electricity generated. The site is well screened and presents a low visual profile when viewed from surrounding areas, meaning that visual impact will remain minimal. It is considered that the impacts of the proposal will be acceptable, and where potential environmental impacts have been identified, detailed assessments have been undertaken and these accompany this application.

Consultation has been undertaken with the LPA, local Parish Council and local community, and issues raised during this engagement process have been addressed as detailed in the accompanying Statement of Community Involvement.

The proposal has been shown to comply with the relevant planning policy framework therefore, planning permission should be granted.

APPENDIX A – USE OF AGRICULTURAL LAND

As detailed in Section 6, where solar farms are proposed on agricultural land, the Planning Practice Guidance for ‘Renewable and Low Carbon Energy’, directs LPAs to consider whether the proposal has shown the use of agricultural land to be necessary.

Site Requirements for Solar Farms

Section 2 of this report details the various criteria that are assessed in determining whether a site has potential for a solar farm development. Whilst all of these criteria are important in determining whether a site has potential for the development of a viable solar farm, the following are of particular relevance to the reasons why the use of agricultural land is necessary in this instance:

- **Site Size**

Although solar farms have low heights, they do require relatively large land areas. The rows of mounted solar panels must have large enough separation distances to avoid one row of panels shading another, and panels must also be set back from boundaries with vegetation to avoid shading impacts. As a result, typically only 30% of a solar farm site actually has any infrastructure on it, the rest remains open. Given current market conditions (including panel prices, and levels of support provided by the Renewable Obligation Certificates scheme), at present a minimum of 8ha is required to enable development of a viable solar farm.

The area of land required for a solar farm rules out urban locations for their development, as the availability of large sites is rare, and any such sites are typically either formally allocated for housing or commercial development, or informally reserved for such activities through land values. Thus, a rural location is required for solar farm developments.

- **Grid Capacity**

The purpose of a solar farm is to convert daylight into useable electricity – this must then be connected into the national grid network for it to be used by households and businesses. Without a viable grid connection, a solar farm cannot be developed. In order to connect into the grid, there must be available capacity on the line such that it can accept increased electricity flow.

The national grid network is strained in many places, with large areas of the country having no available grid capacity. Thus, grid capacity is one of the key constraints determining where solar farms can feasibly be developed and where they cannot.

- **Site Availability**

In order to develop a solar farm, the land in question must be commercially available for that use – meaning the landowner must be willing to either lease their land for 30 years, or sell the land. For sites which have potential for housing or commercial building development, the value of the land/level of rent is too high for solar to be competitive as an alternative use.

Availability of Brownfield Sites

Redevelopment of ‘brownfield’ land for solar farms is encouraged through planning guidance and Lightsource operates several solar farms within former quarries, former landfills and closed airfields, though even these sites do not always meet the definition of ‘previously developed land’ if they are used for agricultural purposes.

On behalf of the Government, the Homes and Communities Agency manages the National Land Use Database of Previously Developed Land (NLUD-PLD), this provides a record of all brownfield sites in England. The database was set up in response to Government targets introduced in the late 1990s, for 60% of new housing development to be undertaken on brownfield sites.

The NLUD-PLD categorises land into 6 categories as follows²¹:

- A. Previously developed land which is now vacant
- B. Vacant Buildings
- C. Derelict land and buildings
- D. Land or buildings currently in use and allocated in the local plan/and or having planning permission (for housing)
- E. Land or buildings currently in use where it is known there is potential for redevelopment (but sites do not have planning allocation or planning permission for housing)
- F. Previously developed land or buildings (already entered in database) that have been redeveloped or where construction has started.

Of relevance to solar farm developments are categories A and C, land which is either vacant or derelict. Vacant buildings will not provide the size of land required for a solar farm (Category B), and land that is either allocated for housing or has planning permission (Category D), or on which development has already begun (F) are not available for solar farm development.

The latest full dataset available from the Homes and Communities Agency is from 2010. Piece meal updates to the datasets were received in 2011 and 2012, however no new datasets have been commissioned since then.

According to the latest full data set there were 10,296 sites categorised as Type A and C previously developed land in England. Of these, 528 have land areas of 8ha or more. Removing from this those sites that are identified in the register as having received Outline Plan approval, or Planning Permission, or which have been allocated for housing under the Local Development Framework, leaves 195 sites in England which may potentially be viable and available for solar farm development. This equates to less than 2% of all vacant or derelict brownfield land.

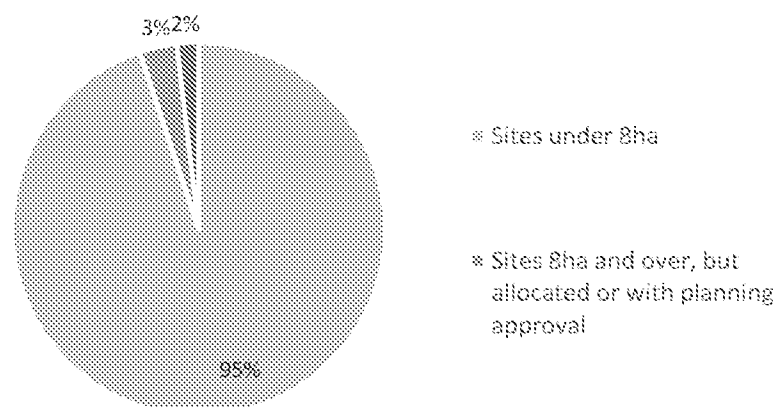


Figure A-1: Graph showing percentage of Vacant and Derelict Land potentially available for Large Scale Solar Farm development

²¹ Homes and Communities Agency (2010) 'Annex B – Summary 2010 Headline Report' *National Land Use Database 2010*.

In assessing whether a brownfield site is suitable for solar development the criteria used will depend on the NLUD-PDL category:

- Vacant land is defined as “*previously developed land which is now vacant and could be redeveloped without treatment.*”
- Derelict land is defined as “*land so damaged by previous industrial or other developed that it is incapable of beneficial use without treatment, where treatment includes any of the following: demolition, clearing of fixed structures or foundations and levelling*”.

Vacant land can be assessed according to the criteria in Section 2 of this report in order to determine the technical viability for a solar farm, and the potential for environmental impacts given site specific characteristics. Derelict land is likely to require more detailed technical analysis. Issues that could be encountered include constraints posed by the load bearing capacity of a landfill cap, ground contamination where heavy industry has been present, or dust from ongoing quarry operations.

As noted in the DECC UK Solar PV Strategy Part 1, not all brownfield sites are suitable for solar development, “*a brownfield site may contain a Site of Special Scientific Interest or be part of an Area of Outstanding Natural Beauty. Likewise, even plots of the highest grade agricultural land could include areas which are in themselves lower grade and could legitimately be used for solar PV deployment.*”²²

Analysis of Arun District

According to the NLUD-PLD records, there are no vacant or derelict allotments that are not already allocated for development or subject to a planning permission or outline planning within the District. Accordingly a greenfield site is considered to be the only viable location for large scale solar development in Arun District.

Agricultural Land Value

The proposal is located on higher quality land, being a combination of Grade 2 and 3A. However, as shown in the aerial below, a vast majority of Arun District is either Grade 1 or Grade 2 land (identified as dark blue and light blue respectively), and as such opportunities for siting on lower quality land is limited.

²² Department of Energy and Climate Change (2013:24) *UK Solar PV Strategy Part 1: Roadmap to a Brighter Future*, DECC



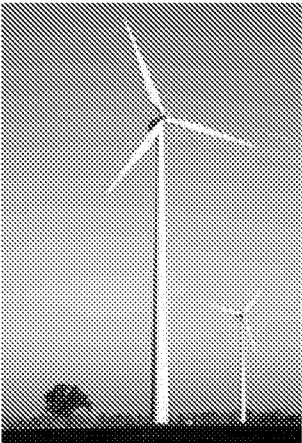
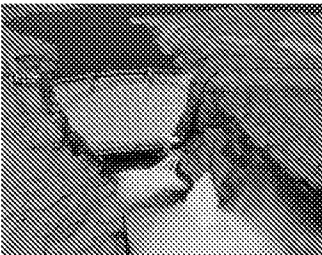
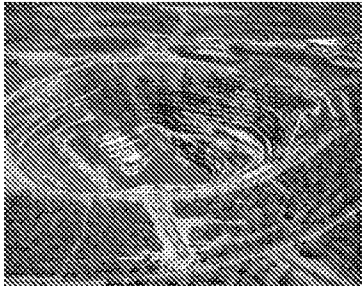
Photo A-1: Arun District Council Site Constraints (Orange = National Park; Dark Blue = Grade 1 Land; Light Blue = Grade 2 Land; Red line = District Boundary)

Siting is further limited by the presence of the South Downs National Park to the north (shown as brown on the above aerial), and the presence of strategic gaps to the north and west of Pagham, and the north and west of Littlehampton.

Conclusion

The requirement for a rural location, given land area requirements, combined with grid capacity and the lack of supply of brownfield sites that are both technically feasible for solar farms and commercially available for development, means that it is necessary to utilise agricultural land for this solar farm development.

APPENDIX B – COMPARISON OF ENERGY GENERATION OPTIONS

Energy Generation Method	Comparison with Solar Farms
Wind Farms 	• A 1MW turbine is typically 80m high to the hub, with a ground to blade tip height of 120m, thus they have a much wider reaching visual impact than solar farms. • Solar farms are very quiet, and do not create noise and vibration issues for local communities, as wind farms sometimes can. • Solar farms are static and passive with no moving parts. Thus they do not draw attention through movement like turbine blades, and pose no threat to birds. • Wind turbines only produce energy when the wind is strong enough, but not too strong. Solar panels produce electricity during all daylight hours. • Wind turbines do produce a large amount of energy based on the small ground area that they require.
Hydropower 	• Hydropower is limited by the availability of large rivers. • The creation of the dam lake destroys the local habitats in the areas that are flooded, as well as impacting on downstream river ecosystems by altering the river flow. • Hydropower can produce large volumes of energy throughout the day, so long as water is available. • Effects of dams are significant in comparison with the low impact nature of a network of comparatively small solar farms.
Anaerobic Digestion 	• Whilst biomass energy production results in lower carbon emissions than fossil fuel energy generation methods, the operation of solar farms results in zero carbon emissions. • Solar farms do not emit any air pollutants or odours. • Anaerobic digestion plants require less land than solar farms; however, they still involve large industrial style buildings.
Nuclear  	• Nuclear power has the benefit of being able to generate large amounts of electricity at any time of day. • Nuclear power stations are large buildings, with much greater visual impacts on the local surrounding area than a network of comparatively small scale solar farms. • Nuclear waste is highly toxic and expensive to dispose of. • Uranium is mined in large scale open cast mines, impacting significantly on the country of origin. • New nuclear power station developments require far higher subsidies than those provided for renewable electricity generation options. 

Fossil Fuels



- The burning of fossil fuels to create energy is currently cheaper than renewable energy methods; however it results in significant carbon emissions, and other air pollutants.
- Fossil fuels are a non-renewable resource, and the UK is often at the mercy of global price fluctuations.
- Extraction of fossil fuels including mining, fracking, and oil wells can have significant adverse impacts.
- Solar panels have a lifespan of over 30 years, whereas coal can only be burnt once.
- Solar farms do not emit any air pollutants or odours.