



Little Eau Solar Farm

Design and Access Statement

January 2015



Submitted on behalf of Little Eau Solar Limited

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PLANNING APPLICATION
SUBMITTED ON BEHALF OF LITTLE EAU SOLAR LIMITED

SOLAR FARM DEVELOPMENT:
AREA LOCATED IN THE PARISH OF SUTTON ST JAMES IN
LINCOLNSHIRE, APPROXIMATELY 3.5km SOUTH WEST OF THE
VILLAGE OF SUTTON ST JAMES

DESIGN AND ACCESS STATEMENT IN SUPPORT OF PLANNING
APPLICATION TO SOUTH HOLLAND DISTRICT COUNCIL

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GLOSSARY OF ABBREVIATIONS

AGL	Above Ground Level
ALC	Agricultural Land Classification
AOD	Above Ordnance Datum
AONB	Area of Outstanding Natural Beauty
BAP	Biodiversity Action Plan
BERL	BE Renewables Limited
DCLG	Department for Communities and Local Government
DNO	Distribution Network Operator
EIA	Environmental Impact Assessment
EPS	European Protected Species (EU Habitats Directive)
ER	Environmental Report
EU	European Union
FRA	Flood Risk Assessment
GLNP	Greater Lincolnshire Nature Partnership
Ha	Hectare
HGV	Heavy Goods Vehicle
HV	High Voltage
IDB	Internal Drainage Boards
IPCC	Intergovernmental Panel on Climate Change
LPA	Local Planning Authority
LB	Listed Buildings
LBAP	Local Biodiversity Action Plan
LCC HER	Lincolnshire County Council Historic Environment Records
LDF	Local Development Frameworks
LDP	Local Development Plan
LDV	Light Duty Vehicles
LTP	Local Transport Policy
LV	Low Voltage
M	Metres
MAGIC	Multi-Agency Geographical Information for the Countryside
MW	Megawatt
MWh	Megawatt hour
MWp	Megawatt 'peak'
NBN	National Biodiversity Network
NE	Natural England
NERC	Natural Environment and Rural Communities
NGR	National Grid Reference
NPPF	National Planning Policy Framework
ODPM	Office of the Deputy Prime Minister
PPG	Planning Policy Guidance
PTZ	Pan Tilt Zoom
PV	Photovoltaic
RSS	Regional Spatial Strategies
SAC	Special Area for Conservation
SAM	Scheduled Ancient Monument
SFRA	Strategic Flood Risk Assessment
SHDC	South Holland District Council
SUDS	Sustainable Urban Drainage Systems
UK	United Kingdom
UK BAP	United Kingdom Biodiversity Action Plan
UNFCCC	United Nations Framework Convention on Climate Change
WCA	Wildlife and Countryside Act 1981 Schedule 5 Species
WP	Watts of Power
WPD	Western Power Distribution

APPENDICES

Please read this report alongside the following appendices (submitted as part of the full planning application);

Appendix 1 – Site Location Plan
Appendix 2 – Site Layout Plan
Appendix 3 – Typical String Inverter
Appendix 4 – Typical Substation
Appendix 5 – Camera Mounting System
Appendix 6 – Wooden Post, Stock Proof Fence
Appendix 7 – Typical Access Gate
Appendix 8 – Typical Cable Trench Details
Appendix 9 – PV Framework Elevations
Appendix 10 – Typical Front and Piled Front Elevations
Appendix 11 – Access Track Elevations
Appendix 12 – Traffic Management Schematic
Appendix 13 – Biodiversity and Habitat Management Plan
Appendix 14 - Screening Response Letter
Appendix 15a – Public Consultation Display Boards
Appendix 15b – Public Consultation Viewpoints
Appendix 15c – Public Consultation Responses
Appendix 17a – Agricultural Land Classification Impact Assessment and Sequential Test
Appendix 17b - Development Zone Constraints Map
Appendix 17c – Agricultural Land Classification (Post Construction)
Appendix 17d - Agricultural Land Classification Report
Appendix 17e - National Soil Resources Institute Soils Report – Little Eau
Appendix 18a - Natural England's (NE) Joint Character Area (JCA) 46 - The Fens
Appendix 18b - SHDC Landscape Capacity Study - 'Peaty Fens Landscape Character Type'
Appendix 18c – Landscape Plan
Appendix 18d – Visual Amenity Plan
Appendix 18e – Mitigation Proposals
Appendix 19a – Habitat Map of Site
Appendix 19b – Site Photographs
Appendix 20a - Little Eau_Qbar_Imp_100CC_Runoff
Appendix 20b - Little Eau_Qbar_Imp_100CC_Storage
Appendix 20c - Little Eau_Qbar_Imp_FEH_PPT
Appendix 20d - Little Eau_Qbar_Imp_Rates
Appendix 20e - Little Eau_Qbar_Imp_Summary
Appendix 20f - Environmental Agency Flood Risk Assessment Enquiry
Appendix 21 – Cassini Map 1805 – 1874
Appendix 22a – Overview of Sectional Views
Appendix 22b – Sectional Views
Appendix 22c – Sectional Views
Appendix 22d – Sectional Views
Appendix 22e – Sectional Views
Appendix 22f – Sectional Views
Appendix 23a - Event Report
Appendix 23b - Monument Report
Appendix 23c - HER Map

Please note: There is no Appendix 16.

CONTENTS

CHAPTER ONE: INTRODUCTION	7
1.1 Assessment:	7
1.2 Site Selection and Alternatives:	7
1.3 Agricultural Considerations:	10
1.4 Power Output and Carbon Displacement:	10
1.5 Involving the Community:	10
CHAPTER TWO: DESIGN PRINCIPLES	13
2.1 Use, Scale and Appearance:	13
2.1.1 FIXED SOLAR PV PANELS AND FRAMES	13
2.1.2 INVERTERS	14
2.1.3 SUBSTATION	15
2.1.4 CABLES AND GRID CONNECTION	15
2.1.5 SECURITY MEASURES	15
2.1.6 PERIMETER FENCE	16
2.1.7 ACCESS TRACK	16
2.1.8 PLANTING	16
2.1.9 DRAINAGE	17
2.1.10 CONSTRUCTION COMPOUND	17
2.1.11 HIGHWAYS IMPROVEMENT WORKS	18
2.2 Amount:	19
2.2.1 CONSTRUCTION	19
2.2.2 OPERATION	20
2.2.3 DECOMMISSIONING	20
2.3 Layout:	20
CHAPTER THREE: ACCESS	22
3.1 Construction Traffic Management Plan:	22
3.2 Management of Junctions:	26
3.3 Temporary Warning Signs:	26
3.4 Access Improvement Scheme:	26
3.5 Liaison with SHDC Highways Engineer:	27
3.6 Inclusive Access:	27

CHAPTER ONE: INTRODUCTION

1.1 Assessment:

The Design and Access Statement (DAS) has been prepared by BE Renewables Limited (BERL) on behalf of Little Eau Solar Limited to support the submission of a planning application for the development of a solar photovoltaic (PV) farm to generate electricity, which will be fed into the National Grid (NG), known as 'Little Eau Solar Farm' (referred to in the document as the 'project', 'site', 'development' or the 'proposal').

The full description of development is for the: *'Installation of ground mounted photovoltaic (PV) solar arrays to provide ~5 Megawatts peak (MWp) generation capacity together with transformer stations; internal access track; electricity sub-station; landscaping; fencing; security measures; access gate; and ancillary infrastructure'*.

The site at Little Eau is located in the Parish of Sutton St James in Lincolnshire, approximately 3.5km South West of the Village of Sutton St James. It will cover an approximate gross area of 11.81 Hectares (Ha) of agricultural land, located at National Grid Reference (NGR) TF375159 (Appendix 1).

BERL believes as a responsible developer it is important to illustrate the manner in which inclusive design and access requirements for the proposed development have been considered and worked into the proposal.

The development will provide valuable inward investment into the local community; agricultural activity will be able to continue on the land, with the overall economic viability of the agricultural business enhanced by the investment. Local, regional and national objectives to develop forms of low carbon generation will be achieved, aiding the reduction in use of fossil fuels; reducing reliance upon fossil fuels and helping to assist the impact created by man-made climate change.

The Planning Statement that accompanies the application provides detailed appraisal of all relevant National and Local Planning Policies.

1.2 Site Selection and Alternatives:

The National Planning Policy Framework (NPPF) points out that in determining an application for renewable energy developments (paragraph 93), *'planning plays a key role in helping shape places to secure radical reductions in greenhouse gas emissions, minimising vulnerability and providing resilience to the impacts of climate change, and supporting the delivery of renewable and low carbon energy and associated infrastructure. This is central to the economic, social and environmental dimensions of sustainable development'*.

According to Paragraph 7 of the NPPF there are three parts of Sustainable Development: economic, social and environmental. Each part gives rise to the need for the planning system to perform a number of roles:

- *‘an economic role – contributing to building a strong, responsive and competitive economy, by ensuring that sufficient land of the right type is available in the right places and at the right time to support growth and innovation; and by identifying and coordinating development requirements, including the provision of infrastructure;*
- *a social role – supporting strong, vibrant and healthy communities, by providing the supply of housing required to meet the needs of present and future generations; and*
- *by creating a high quality built environment, with accessible local services that reflect the community’s needs and support its health, social and cultural well-being; and*
- *an environmental role – contributing to protecting and enhancing our natural, built and historic environment; and, as part of this, helping to improve biodiversity, use natural resources prudently, minimise waste and pollution, and mitigate and adapt to climate change including moving to a low carbon economy’.*

At the core of the NPPF is the *‘presumption in favour of sustainable development.’*

It is important to note that although NPPF supports renewable energy proposals, recognising the scale of the required change set by UK renewable energy policy and targets, it does not identify any sites to meet the required change. Suitable sites and proposals must therefore be identified by, and come forward through, the development control planning applications process.

Site selection for Little Eau Solar has been guided by the development control considerations laid out in South Holland District Council (SHDC) Local Plan. Our associated planning application documents demonstrate any environmental, economic and social benefits as well as how any environmental and social impacts have been minimised through careful consideration of location, scale, design and other measures.

There are several operational needs of the development proposal:

- Suitable location to benefit from sunlight intensity levels – the site should be relatively flat (or south facing) and free of any buildings or landscape features that could cause overshadowing;
- A suitable location with access to the grid which has capacity;
- A suitable location which is served by appropriate highway infrastructure;
- A site with minimal environmental constraints;
- A suitable site of the right size, shape and orientation that can accommodate a 5MWp solar scheme; and
- A suitable site which is available for the duration of the proposed scheme.

Reflecting on the above, alongside local planning policy, the site is deemed appropriate and has favourably emerged through the site selection process since:

- Sunlight intensity levels – the site is flat and free of any buildings or landscape features that could cause overshadowing;
- Grid connection – proximity of a nearby point of connection which has capacity is essential and hard to find. Availability of a grid connection is a major problem for solar sites.
- Good road access;
- Minimal environmental constraints – the site is not subject to any statutory ‘sensitive’ sites as described within the EIA Regulations.
- Impact on the landscape - the Landscape and Visual Impact Assessment (LVIA) demonstrates that the site is not particularly sensitive and that the proposed development will have little impact on the landscape and views
- Land take requirements – the site is of an appropriate size that can accommodate a circa <5 MWp solar farm; and
- Site availability - the site is available for the lifetime of the proposed scheme (designed operational lifespan of the solar farm is around 25 years). There are no alternative sites allocated in the development plan or which benefit from planning permission that could be utilised.

The SHDC Local Plan 2006¹ was formally adopted in July 2006. A saving direction was issued by the Secretary of State in July 2009 in which a number of the policies within the local plan were saved. However, in the context of the proposal at Little Eau, many of the environmental policies, including those relating to renewable energy (Policy EN3), protecting the natural environment and cultural heritage, have now expired. Of the remaining policies, those of most relevance are set out below identifying the overall strategy and general policies for the district.

- Policy SG1 – General Sustainable Development
- Policy SG4 – Development In The Countryside
- Policy SG13 – Pollution And Contamination
- Policy SG17 – Protection Of Residential Amenity
- Policy SG18 – Landscaping Of New Development
- Policy EC4 – Farm Diversification Projects

Please refer to the Planning Statement for full details regarding each of the above planning policies and how the development complies with each.

¹ South Holland Local Plan - www.sholland.gov.uk/localplan/text/06_en_environment.htm#en1a
DESIGN AND ACCESS STATEMENT
 BE RENEWABLES LIMITED ON BEHALF
 OF LITTLE EAU SOLAR LIMITED

1.3 Agricultural Considerations:

The Agricultural Land Classification (ALC) system divides agricultural land into five grades according to the inherent qualities and versatility of soils interacting with other factors such as slope and climate. Grade 1 of the ALC is described as being of excellent quality and Grade 5, at the other end of the scale, is described as being of very poor quality.

Government policy continues to recognise the importance of protecting ALC falling within Grades 1, 2 and 3a. Considerable weight should be attached to protecting such land from development because of its special importance. SHDC Local Plan states that for Agricultural Land And Development In The Countryside, *'it is important that the development of greenfield land, including the best and most versatile agricultural land is only allowed after all other opportunities to accommodate development on brownfield land and land within existing defined settlement limits has been assessed'*. Please refer to Appendix 17a-d for the full ALC Impact Assessment.

In policy terms, this proposed development site is ideal as it is mostly Grade 3b (which is outside BMV) with pockets of Grade 3a. The majority of the site will be capable of being used for agricultural purposes. In the short term, the intensity of its agricultural use will be reduced whilst the land is used primarily as a solar farm. However, the land will not be 'irreversibly' developed and thus not lost to future generations. The installation of the solar panels will involve unobtrusive construction methods making reinstating of the land after the twenty five year period relatively straight forward. This is unlike other forms of non-agricultural development such as housing or industrial developments which irreversibly develop agricultural land and prevent any return to agriculture.

1.4 Power Output and Carbon Displacement:

Energy calculations indicate that the site has a maximum peak power capacity for ~5MWp sufficient to generate an estimated 4,600 MWh/annum;

Number of homes in the UK that may be supplied with electricity from this solar farm is;

$$4,600 \div 4.9^1 = \sim 939 \text{ homes}$$

¹ 4.9 (MWh/annum) is the overall average and is based taking the total domestic electricity consumption in the UK and dividing it by the total number of households²

The estimate of carbon dioxide (CO₂) equivalent saved annually through the electricity generated from the solar farm is;

$$4,600 \times 0.590^2 = \sim 2,714 \text{ tonnes of CO}_2 \text{ equivalent per year}$$

² 0.590 gCO₂/MWh is the overall average of CO₂ emissions taken from the fuel mix disclosure data table for the disclosure period 01/04/2012 – 31/03/2013³

1.5 Involving the Community:

² Renewables and Ofgem - www.r-e-a.net/resources/facts-and-figures

³ Taken from the 'Fuel Mix Disclosure Data Table' as defined in the Electricity (Fuel Mix Disclosure) Regulations 2005. The data are for the disclosure period 01.04.2012 – 31.03.2013

Consultation with key statutory and non-statutory bodies is recognised as being critical to the planning application process. It focuses attention on key environmental issues and opens a dialogue to discuss methodologies for undertaking further investigations and possible mitigation process of the development.

During the preparation of the planning application, consultation and desktop surveys have been carried out as part of the specialist assessments being undertaken (for more details regarding the public consultation, and to see the visuals that were on display, please refer to the Statement of Community Involvement (SOCI) submitted as part of the planning application).

The Pre-planning Public Consultation Event was held on Thursday 11th July 2013 from 3pm – 8pm in the village hall of Sutton St James.

A team of BERL representatives were present during the consultation to cover all sections of the development (e.g., environmental, design and access, planning, technical). The majority of questions and queries could be answered, for any that could not be answered on the day, we responded (and will continue to do so) afterwards.

Exhibition displays provided information on;

- Site Location
- The Proposal
- Site Characteristics and Area Plan
- Existing Site: Visual Receptors
- Existing Site: Photographs

Accompanying documents provided information on;

- Fact and Figures about the proposal at Little Eau
- Module Specification
- Solar Panel Specification
- National Planning Policy Framework (NPPF)
- Solar Farm Information Pack (Additional Information)

Visitors to the exhibition were invited to complete a questionnaire giving their views on the project.

76 people (including parish councillors and members of the public) attended the exhibition. 35 people registered their views for the scheme on paper;

Questionnaire asked...			
'Are you able to register your support for the proposed scheme?'			
Yes	Do not know	No	Total
23	2	10	35
66%	5%	29%	100%

The overall conclusion was that the proposal at Little Eau was positive in terms of renewable energy technology; supported by the majority of the local community.

BERL and the applicant have taken the feedback from each registered view into consideration before submitting the full planning application. Please see Appendix 15c which show the responses we received. The SOCI includes our full response to those issues raised from objectors.

Little Eau Solar Farm has the potential to create minimal landscape and visual impacts due to the low height of the panels, perimeter screening that will take place and the ability to follow the topography of the land. It is considered to meet all the requirements and be compliant with the development plan for the local area. The local area not being recognised for its;

- Landscape value,
- Quality or importance through designation,
- Will not reduce the public's quality of life,
- Current areas of public access will be retained and there will be no loss of amenity value.

We always endeavor to work with the planning authority and local community to find out what would benefit them in terms of a proposed solar PV farm development (For more details on this please refer to the SOCI). In addition to the public exhibition, further dissemination of information on the project will be made on an ongoing basis through direct dialogue and further discussions with the community via the Parish Council.

CHAPTER TWO: DESIGN PRINCIPLES

2.1 Use, Scale and Appearance:

The site is within no statutory or local areas designated for landscape quality or nature conservation according to the SHDC Local Plan⁴. This makes it an appropriate site to consider the development of a solar PV power plant. The location of the site is within a rural location, minimising proximity to sensitive receptors, and providing sufficient available land for the project.

In addition to installing a renewable energy development, the project will also provide valuable inward investment into the local community. Agricultural activity will be able to continue on the land, with the overall economic viability of the agricultural business enhanced by the investment.

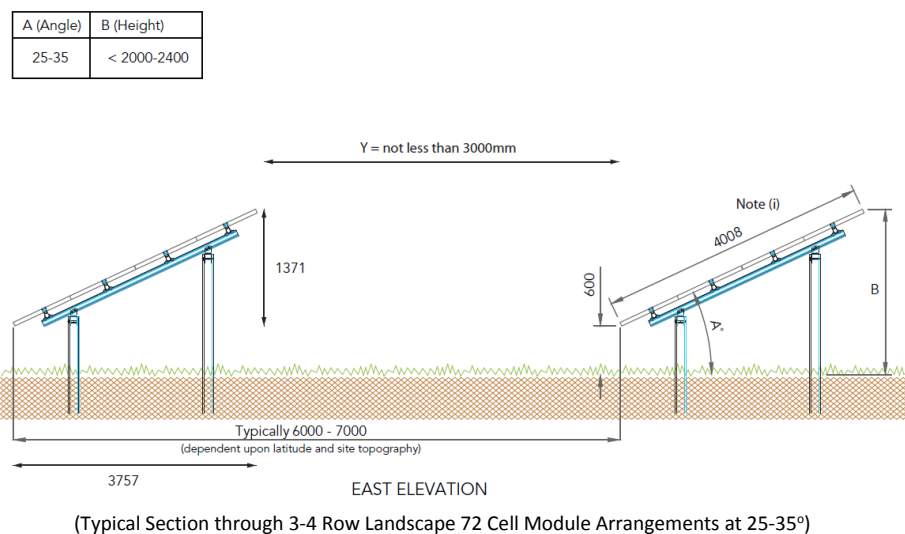
The development will include the following components outlined below;

2.1.1 FIXED SOLAR PV PANELS AND FRAMES

The solar farm comprises of the installation of;

- Number of solar panels mounted to steel and aluminum frame structures,
- 3 or 4-row landscape,
- An angle of approximately 25 - 35 degrees.
- The frames are arranged into rows set south facing, at approximately 3m apart.

An extract of Appendix 9 - Side Elevation is shown below showing further details of the solar panel layout, pitch and frame structures.



⁴ South Holland District Council (2006) 'South Holland Local Plan: Adopted July 2006'.
<http://www.sholland.gov.uk/localplan/>

The frame structures consist of steel uprights and aluminum cross bars. The uprights are 'augured' or 'pushed' into the ground to a depth of approximately 1.5m, dependent upon ground conditions. The uprights are not normally driven into the ground to mitigate the production of construction noise.

Once constructed the panels are mounted to the frames, with a front height of 600mm and back panel height of up to 2400mm. The panels will be installed at an angle of inclination of 25-35 degrees.

The rows of panels are set back from the perimeter site security fence to prevent overshadowing and to permit the construction of the perimeter access track. There is a separation gap of ~3m between each row, to ensure that the panels are not overshadowed and that access can be gained between each row.

The surface of each panel is constructed from toughened glass, beneath which is a non-reflective layer, electrical connections, silicon and a backing layer, all set in an aluminium frame. The layers of silicon comprise of primarily negatively charged electrons, 'n-type', and positively charged electron silicon, 'p-type', contacting each other in the solar panel. When these are exposed to sunlight, the sun's energy 'excites' these electrons making them move from one layer to another and this movement results in the generation of electricity. The different layers of silicon are designed to absorb different wavelengths of irradiation (i.e. the sunlight) and by doing so the efficiency of the solar panel is maximised.

The solar panels are fixed and do not track the path of the sun. The frames are secured through piles augured (or pushed) into the ground, ensuring no excavation is required. This also ensures that the remediation works required at the 'end-of-life' of the solar farm will be minimal (when the site will be restored and available for other agricultural use). In the unlikely event that site conditions or finds dictate that penetrating into the subsoil's would not be an appropriate support system then concrete 'shoes' would be employed as an anchoring system for the solar frames. These shoes would be placed on top of the existing ground level and thereby avoid any damage to any unrecorded artefacts or below ground interest that may be present. This may be required if, for example, the location of one of the support posts interferes with any of the existing below ground drainage within the fields.

2.1.2 INVERTERS

The solar module arrays are connected to an internal electrical collection system, which is suspended from the support tables. These cables are then connected to each solar arrays string inverter (Appendix 3) which are mounted to the rear, behind the rows of solar modules. A string inverter will connect to each row of PV panels to convert the direct current (DC) output to alternating current (AC). The inverters are manufactured with cabinets with an appropriate IP rating to resist the environmental conditions in which they are housed. The inverters dimensions are approximately 1061mm x 702mm x 292mm. They are solid state and do not emit any noise.

2.1.3 SUBSTATION

Appendix 4 - Typical Substation; the substation will be a brick building with pitched tiled roof (in order to keep with the character of the surrounding homesteads dotted throughout the area). The building materials and form will be agreed with the local planning authority. It will house the WPDs High Voltage (HV) Grid Protection Switches and the applicant's metering and consumer side HV switch.

The location of the substation building can be seen on Appendix 2. This location has been determined in relation to the connection requirements to the existing distribution network.

2.1.4 CABLES AND GRID CONNECTION

The low voltage DC cables will be fed along the mounting framework, within and clipped to dedicated cable trunking and via combiner boxes connected to the inverters. The electricity produced by the site will be exported via underground cables. No additional overhead line infrastructure is proposed.

Underground cabling will be laid from the location of the proposed substation at Little Eau solar farm to pre-existing pylons, north of the proposed development site. The cable will be laid to a depth and specification as required by WPD. The cable trench (Appendix 8) will be along the road edge.

At the appropriate time for the development the applicant's street works accredited contractor will apply under a Section 50 License (New Road and Street Works Act 1991), for the works installing the underground cable to be permitted. The works aim to be of a short, temporary duration; completed prior to the commencement of the construction phase associated with the solar farm. All roads disturbed by the cable installation will be fully reinstated at the completion of the cable installation.

An ecological assessment of the proposed cable trenching has been completed and based upon the selected route and the proposed works the applicant considers that the proposed route will have a negligible ecological impact as the works will be for the majority of the length be installed within the road edge.

2.1.5 SECURITY MEASURES

Two types of CCTV (Appendix 5) security will be installed on site;

- 3 pole mounted pan tilt zoom (PTZ) cameras will be installed to provide CCTV coverage of the site. The poles will be installed with a maximum height of 3m. The positioning of the cameras has been selected to minimise their visual impact. Camera views will be restricted to ensure that there are no views into neighbouring properties. They will incorporate passive infra-red to avoid the need for lighting to be necessary at certain times of the day. These cameras will be located close by the perimeter fence.

- 1 number plate recognition camera will be used to cover the access and egress from the site. These are insurance requirements for the facility. The cameras will be set back from the points of entry and exit, ensuring that they will not be able to inadvertently monitor any passing local traffic. The mounting height of the security cameras will be agreed with the local planning authority in line with the above restrictions.

In addition, we will include for the use of non-intrusive additional security measures to secure the photovoltaic panels and string inverters. The security proposals are also referred to in the Design and Access Statement (as required by Department for Communities and Local Government (DCLG) Circular 1 / 2006 paragraph 87).

The locations of the 4 CCTV can be seen in Appendix 2.

2.1.6 PERIMETER FENCE

We are proposing to use a Wooden Post, Stock Proof Fence (Appendix 6) as security fencing around the majority of the perimeter of the site. It will be ~1.8m in height and offset ~5m from the extent of the solar PV modules (for access / shadow gap).

2.1.7 ACCESS TRACK

Appendix 7 – Typical Access Gate; Access to the site will be provided by an access gate off the access track. The proposed access track can be viewed on the Site Layout Plan (Appendix 2). A detailed assessment of the proposed vehicular movements associated with the construction, operational and decommissioning phases of the development can be seen in chapter three of this report and the Environmental Report. Appendix 11 shows the 'Access Track Elevations'.

2.1.8 PLANTING

Hedgerow planting can also be recommended in appropriate locations.

Hedgerows are a locally prominent feature of the 'Peaty Fenlands Landscape Character Type' and are likely to be viewed by the general public as a 'slight beneficial' improvement to the landscape.

Although hedgerows are not present in the immediate area, they provide the most appropriate low-level form of screening, without drawing attention to the development or compromising the effectiveness of the solar modules.

There are biodiversity benefits, hedgerows are important habitats for reptiles, birds and bats.

Hedgerow planting is therefore proposed along the south, west and north sides of the solar park for landscape and visual amenity reasons (Appendix 18e – Mitigation Proposals). However, full perimeter hedging is not required, due to the lack of views from the south, east and west.

The proposals will:

- Screen the industrial, cluttered appearance of the solar park which detracts from the inherent simplicity of the landscape.
- Screen close up views of the solar park from Broad Gate Road.

It is recognised that planting of hedgerows will not be immediately effective. Therefore advanced planting would be recommended to help establish the hedgerows before the solar park is constructed. Visibility of the solar park will also vary at different times of the year, with winter time when the fields and hedges are bare, being the most visible. Planting a thick hedge with spring flowers /early growth may be preferable to improve screening at these times. Planting of conifer /evergreen hedging is not recommended as this is likely to detract from the character of the local landscape.

A suitable hedgerow mix, consisting of species of local provenance has been recommended. Please refer to Appendix 18e – Mitigation Proposals.

More details of the proposed planting will be agreed with the SHDC Biodiversity Officer. Guidance will also be followed from Natural England. Existing and new hedgerows would be managed to enhance their biodiversity importance and encourage the use of these for native British species wildlife.

2.1.9 DRAINAGE

The Environmental Agency's Flood Map shows the proposed development site to be located within Flood Zone 3a. Sustainable Urban Drainage Systems (SUDS) will be used to manage surface water. Further details are provided in the Environmental Report.

2.1.10 CONSTRUCTION COMPOUND

The construction phase of the project will take approximately 4 months (16 weeks). It will require the delivery and storage of construction materials, plant machinery and office/welfare accommodation – therefore a temporary construction compound will be required. The compound will be carefully located in order to minimise environmental or amenity impact.

Size: ~50m x 50m (2500 sqm).

Location: Varies using the installed access track – the compound will during the course of the construction period be relocated to alternative areas adjacent to the installation works. No additional hard standing will be necessary. All construction materials will be stored in containers. These compound areas are temporary in nature and will be completely removed upon completion of the construction phase.

2.1.11 HIGHWAYS IMPROVEMENT WORKS

Minor improvement works will be required at the points of entry and exit from the solar farm, particularly where they join the public highway. The works at each entrance and exit point will be limited; to minor repair works of the road surface.

The repair of some existing wear and tear, and further repairs to the public roads, may be scheduled and requested by the local highways authority.

2.2 Amount:

2.2.1 CONSTRUCTION

The construction of the solar farm is expected to last around 3 months (12 weeks). All traffic movements will be coordinated in accordance with the Construction and Transport Management Plan (CTMP) and its subsequent development which will be finalised through discussions with our Principal Contractor and the Highways Consultee Agencies.

Most of the materials are delivered in the configuration using standard lorry containers, with the materials remaining in these containers once delivered to site until they are required for installation. All deliveries will be made by vehicles that are less than 16.5m in length, i.e. standard permitted road vehicles with no abnormal loads required. Standard road containers are typically 12.2m (40ft) in length.

During the construction process it is expected that there will be approximately 30-40 construction staff and operatives on site at peak, however this will vary dependent upon the phase of the construction schedule and the progression of works. Arrangements will be made to ensure that there is dedicated construction works transport to reduce the impact of separate and individual journeys.

We aim to ensure that the following principals are employed to manage the traffic movements so that the impact is reduced to those living in the community.

There is an anticipated breakdown of the types of vehicles which will be used to transport the components for the solar farm;

ANTICIPATED VEHICLE MOVEMENTS DURING CONSTRUCTION (FIGURES ARE APPROXIMATE)		
COMPONENT	VEHICLE	VEHICLE NUMBERS
Panel Modules	HGV	22
Table Mounting System	HGV	10
Table Support System	Truck	6
Inverter	Trucks	10
Cabling	Trucks	6
Stone and sundry materials	Trucks	17
Fencing	Trucks	4

No of weekly Movements	wk1	wk2	wk3	wk4	wk5	wk6	wk7	wk8	wk9	wk10	wk11	wk12	Totals
Site welfare and Facilities	4	1											5
Fencing deliveries	1	1	1	1									4
Waste recycling lorries			1	1	1	1	1			1		1	7
Delivery of table supports		2	2	1	1								6
Delivery of Table materials			2	2	2	2	2						10
Delivery of cabling				2	2	1	1						6
Delivery of panels				4	3	3	3	3	2	2	2		22
Inverters and substation		2	2	2	2		1	1					10
Concrete materials		2											2
Stone	1	2											3
Weekly total	6	10	8	13	11	7	8	4	2	3	2	1	75
Daily average	1	2	1	2	2	1	1	1	1	1	1	1	

ANTICIPATED 12 WEEKLY VEHICLE REQUIREMENTS AND DAILY AVERAGE DELIVERIES

The total number of deliveries is estimated at **75** lorries/ trucks which will include the estimated **32** HGV vehicles. The maximum daily average of deliveries is **2** vehicles.

2.2.2 OPERATION

The solar farm is anticipated to have a life span of a limited period of 25 years in which the solar PV panels will operate continually.

Once the solar farm is completed there will be very few vehicle movements in and out of the site. Very few routine maintenance visits will be required. Maintenance would involve cleaning of the PV modules to ensure that any leaves or other debris which could reduce the performance of the solar PV modules is removed. Occasional technical work may also be required in case of a fault in the inverter/transformer.

The site may also be used for sheep grazing, so there may be the occasional tractor and trailer movements used to manage the onsite flock. This would not differ greatly from the existing vehicle movements associated with the agricultural use of the site. The scheme has proposed the planting of new soft-landscaping, this will require trimming and cutting in accordance with the sites Biodiversity and Habitat Management Plan (Appendix 13).

2.2.3 DECOMMISSIONING

The transport effects associated with decommissioning are considered to be less than construction as there will be less transport movements and shorter duration associated with the decommissioning phase. It is anticipated to be approximately 2 months. Therefore the same assessment is considered appropriate for decommissioning as it is for construction.

2.3 Layout:

The proposed layout has been developed to achieve the most suitable design for the site, the focused environmental assessment and feedback from the wider local community as a result of our public consultation. This has informed us throughout the design process. Various layout options were considered as part of the initial process to ensure that environmental impacts are minimised and to enable the optimum energy generation for the site. These took into consideration the following issues:

- Comments from the local planning officer;
- Minimising impacts to vegetation, including hedgerows;
- Visual impact;
- Impacts upon agricultural arable activities viability;
- Severance of agricultural fields;
- Density of modules per hectare; and
- Angle of module tilt
- Feedback from our public consultation
- Feedback from our contacts with statutory bodies.

The solar PV panels will be south-facing and tilted ~25-35° angle (the optimum angle to maximise the generation of energy). The panels will be arranged into rows. The spacing of arrays at such intervals optimises the use of the available land area, whilst minimising shading of the panels. The distance between the rows will be approximately 3m. This allows for maintenance vehicles to access the arrays.

CHAPTER THREE: ACCESS

3.1 Construction Traffic Management Plan:

The site is located approximately 3.5 km by road south-west of Sutton St James, which the B1165 (Fishers Gate) passes through. This road will be suitable to support vehicles using the local road network during the construction of the project from the main trunk road network to the west of Sutton St James.

From the B1165 the route to the site will follow a right-turn into Jiggles Gate and then a left turn at the T-junction onto Old Fen Dyke and onto the Sun Cross Road and a right turn into Broadgate. The route will then follow Broadgate and take the left fork and enter New Fen Dike and shortly after the route will access the site directly off New Fen Dike.

The B1165, Jiggles Gate and Old Fen Dyke have a derestricted national speed limit of 60mph each of the roads, and are wide enough for two vehicles to pass, however it would be prudent to exercise care during their use by HGV's and avoid dual passing by HGV's. There are no designated passing places along the road but entrances to fields and verges to the side of the road provide means for vehicles to pass and these are commonly used in normal daily activities by the existing road users in an informal way. For much of the route there are grass verges on either side of the road which often have wet ditches running along both sides, separating the fields from the verge and the road.

The main flow of passing traffic, that does not continue through Sutton St James leaves Old Fen Dike and enters Broadgate as a principle traffic route towards Sutton St Edmunds. New Fen Dike does not cater for a considerable volume of traffic and its use is sporadic, however during harvesting and other intensive farming activity the road supports the use of HGV vehicles and hence is suitable for the intended use.

The visibility of the proposed entry and exit points of the site is good.

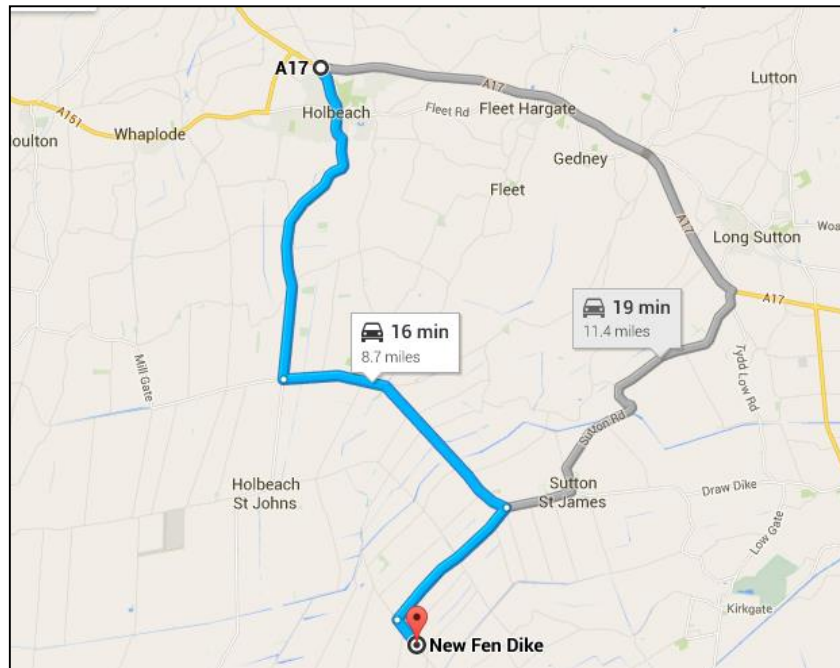
An access track will be required for construction vehicles and to enable maintenance vehicles to access the site during the operation of the site. The selected site access point provides good access to the proposed development fields.

The Department for Transport website has information on the daily average flow of traffic for various roads networks around the country. However there is no traffic flow information for the road leading to the proposed site, either the B1165 or Jiggles Gate and Old Fen Dyke and the other roads within the immediate vicinity of the site.

From our site inspections we have noted that the use by vehicle traffic of New Fen Dike is very low other than during periods of peak farming activity when there is significant usage for farm equipment, HGV trucks and other transport for farm workers involved in the farming activities.

The route proposed for vehicles associated with construction of the plant can be viewed (below). The route will ensure that HGVs will take use of the most suitable public highway

which will cause minimal disturbance and access the wider road network as soon as practicable. Access to the B1165 will be obtained via the network of A-roads serving the area.



(Proposed Access Route to the Site © Crown Copyright and Database Rights 2013 Ordnance Survey 0100031673)

Once within the proposed site access traffic movement will be via the proposed perimeter track and the material off-loaded and distributed to the point of installation works. Distribution of the components will be undertaken by tractor and trailer using existing farm tracks and the new perimeter access track. Distribution to the areas of installation will be on an ad-hoc basis to serve the needs of the installation.

DIRECTION 1	HEADING SOUTH:
	From the A17 at the Holbeach roundabout leave and take the 3 rd exit and head south on the B1168. Photo 1a
	HEADING SOUTH:
	Stay on the B1168 to the T-junction with the B1165.
DIRECTION 2	At the T-junction with the B1165 turn east onto the B1165 – Ravens Brook. Photo 2
DIRECTION 3	At the turning for Jiggles Gate, turn right, heading south-west and enter Jiggles Gate. Photo 3a and 3b
DIRECTION 4	Follow Jiggles Gate until it becomes New fen Dike and follow New fen Dike to the entrance to the site. Photo 4

PHOTO 1(a) - showing the aerial view of the exit from the A17 to the Holbeach roundabout and the 3rd exit to the B1168.



PHOTO 1(b) - showing the exit from the Holbeach roundabout onto the B1168 heading south.



PHOTO 2 - showing the aerial view of the exit from the B1168 (Raven's Gate) and the left turn onto the B1165 heading towards Sutton St James.



PHOTO 3(a) - showing the right hand turn exit from the B1165 onto Jiggles Gate



PHOTO 3(b) - showing exit from Jiggles gate onto Old Fen Dike



PHOTO 4 - showing the exit from Old fen Dike and right turn onto New Fen Dike, leading to the site entrance.



PHOTO 5 - showing the aerial view of the entrance to the site



None of the proposed access routes selected have restricted access, weight or height restrictions. All roads have designated appropriate speed restrictions applicable for their road use and location. Inspection of the route does not highlight any aspect or infrastructure along the route that would result in the route being identified as inappropriate or at risk of creating a significant traffic effect; all currently regularly used by HGVs. The CTMP is developed to further mitigate any transport effect that may be noticed or perceived as a result of the development.

3.2 Management of Junctions:

Temporary traffic warning signs will be deployed through the construction period which will ensure that the safety of the public highway is not compromised. BERL have assumed a visibility splay requirement of 9m by 120m based on the Design Manual for Roads and Bridges (DMRB)⁵ and assumed traffic speeds although the final required visibility splays are still to be confirmed with SHDC. No obstacles should obstruct the required visibility above 1.05m.

3.3 Temporary Warning Signs:

Temporary traffic warning signs will be placed according to the local and highway authority requirements. These warnings will cover the main risks associated with construction traffic entering and exiting the site.

3.4 Access Improvement Scheme:

The access will be improved through the installation of a gravel core access track comprising of;

- Installation of approved geotextile as a sub base / sub grade separation membrane in full compliance with the manufacturer's technical recommendations.

⁵ Design Manual for Roads and Bridges - <http://www.dft.gov.uk/ha/standards/dmr/>

- Compact bed of approved, well graded hard core / granular sub base material.
- Lay bed of single size graded clean granite (or similar) spread and levelled around concrete bases and such like. The chippings must have a target wet resistivity.

CONSTRUCTION COMPOUND, PARKING AND TURNING	The construction compound, parking and turning will be located within the site entrance.
STORAGE	There is no requirement for onsite storage of deliveries. Deliveries will be made as required. Please refer to the Environmental Report for more details. The deliveries will be offloaded and taken straight to the area of the site where they are required for installation.
SURFACING	The top soil from the access path will be removed to a depth of approximately 100mm and a terrain membrane will be laid here and filled with stone which will then be compacted down by 100mm to provide a suitable surface for vehicles.
DRAINAGE	The access arrangements do not involve impermeable hard surfacing and so no additional drainage measures are required beyond already discussed in the Environmental Report.
WHEEL WASH FACILITIES	When necessary the wheels will be cleaned manually within the construction compound before vehicles exit the site.

3.5 Liaison with SHDC Highways Engineer:

Once the construction programme has been confirmed contact will be made with the SHDC Highways Engineer to enquire whether they wish to undertake a pre-construction inspection of the site. If required, the project manager and a representative from our specialist engineering, procurement and construction (EPC) contractor will attend this inspection.

3.6 Inclusive Access:

The site will not be open to the public so it is considered that the requirements of inclusive access for the public are not relevant to the project.