# Fenndyke Solar Farm

## Environmental Report:

## Revision 1

September 2014



Submitted on behalf of Fenndyke Solar Limited

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PLANNING APPLICATION

SUBMITTED ON BEHALF OF FENNDYKE SOLAR LIMITED

SOLAR FARM DEVELOPMENT:

**AREA LOCATED IN THE PARISH OF SUTTON ST JAMES IN LINCOLNSHIRE, APPROXIMATELY 1.6km WEST OF THE VILLAGE OF SUTTON ST JAMES**

# ENVIRONMENTAL REPORT REV 1 IN SUPPORT OF PLANNING APPLICATION TO SOUTH HOLLAND DISTRICT COUNCIL

SEPTEMBER 2014

# CONTENTS


CHAPTER ONE: INTRODUCTION ..... 9

1.1 Background: ..... 9

1.2 Need for the Project: ..... 9

1.3 Site Description: ..... 9

1.4 Site History: ..... 11

1.5 Project Description: ..... 12

1.6 Solar Farm Specifics: ..... 13

1.6.1 PANELS AND FRAMES ..... 13

1.6.2 SUBSTATION BUILDING ..... 14

1.6.3 PLANTING ..... 14

1.6.4 FENCING ..... 14

1.6.5 SECURITY ..... 15

1.6.6 CABLE ROUTE ..... 15

1.6.7 CONSTRUCTION COMPOUND ..... 16

1.6.8 HIGHWAY IMPROVEMENT WORKS ..... 16

1.7 Planning Policy Context: ..... 16

1.7.1 CLIMATE CHANGE AND GREENHOUSE GASES ..... 16

1.7.2 INTERNATIONAL POLICIES ..... 17

1.7.3 EUROPEAN UNION POLICIES ..... 18

1.7.4 NATIONAL POLICIES ..... 18

1.7.5 NATIONAL PLANNING POLICY FRAMEWORK ..... 19

1.7.6 REGIONAL POLICIES ..... 24

1.7.7 LOCAL POLICIES ..... 24

1.8 Purpose and Structure of the Environmental Report: ..... 28

CHAPTER TWO: LANDSCAPE AND VISUAL ASSESSMENT ..... 30

CHAPTER THREE: EXTENDED PHASE 1 HABITAT AND PROTECTED SPECIES SURVEY ..... 31

3.1 Introduction: ..... 31

3.1.1 PROPOSED WORKS ..... 31

3.1.2 LIMITATIONS AND CONSTRAINTS ..... 32

3.2 Methodology: ..... 32

3.2.1 DESK STUDY METHODOLOGY ..... 32

3.2.2 FIELD SURVEY METHODOLOGY ..... 32

3.2.3 PROTECTED SPECIES ASSESSMENT METHODOLOGY ..... 32

3.3 Results: 33
3.3.1 DESK STUDY RESULTS 33
3.3.2 FIELD SURVEY RESULTS 33
3.3.3 PROTECTED SPECIES ASSESSMENT METHODOLOGY 34
3.3.4 DISCUSSION 35
3.3.5 OVERVIEW 36
3.3.6 RECOMMENDATIONS 36
3.4 Relevant Legislation: 37
3.4.1 EUROPEAN PROTECTED SITES 37
3.4.2 INJURIOUS WEEDS 37
3.4.3 UK BIODIVERSITY ACTION PLAN 37
3.4.4 PROTECTED SPECIES 38
3.4.5 ASSESSMENT OF DESIGNATED SITES 39
3.4.6 ASSESSMENT OF IMPACT UPON ONSITE HABITATS 39
3.5 Summary: 40
CHAPTER FOUR: NOISE REPORT 43
4.1 Introduction: 43
4.2 Planning: 43
4.3 Background: 44
4.4 Construction: 44
4.5 Operation: 44
4.6 Decommissioning: 45
4.7 Mitigation of Potential Noise: 45
CHAPTER FIVE: GLARE AND GLINT ASSESSMENT 46
5.1 Introduction: 46
5.2 Additional Works: 46
CHAPTER SIX: CULTURAL HERITAGE 47
6.1 Introduction: 47
6.2 Site Character and Cultural Heritage: 47
6.3 Natural Heritage: 47
6.4 Proposed Development: 47
6.5 Additional Works: 48
CHAPTER SEVEN: SUSTAINABILITY 49
7.1 Environmental Sustainability: 49

7.1.1 SUSTAINABLE MATERIALS IN CONSTRUCTION ..... 49
7.2 Sustainable Waste Management: ..... 50
7.2.1 CONSTRUCTION PERIOD ..... 50
7.2.2 OPERATIONAL PERIOD ..... 50
7.3 Energy Efficient Design and Renewable Energy: ..... 50
7.4 Water Resources: ..... 50
7.5 Nature Conservation and Biodiversity: ..... 51
7.6 Summary: ..... 52
CHAPTER EIGHT: TRANSPORT ASSESSMENT ..... 53
8.1 Transport Policy: ..... 53
8.2 Existing Conditions: ..... 54
8.3 Prior to Works Commencing: ..... 55
8.4 Assessment of Effects: ..... 56
**8.4.1 CONSTRUCTION** ..... 56
**8.4.2 OPERATION** ..... 58
8.5 Summary: ..... 59
CHAPTER NINE: FLOOD RISK ASSESSMENT ..... 60
CHAPTER TEN: AGRICULTURAL LAND CLASSIFICATION ..... 61
CHAPTER ELEVEN: REFERENCES ..... 62

# APPENDICES

**Appendices** *from Previous Application (Planning Ref: H20-0017-14)*:

Appendix A – ALC and Soil Survey
Appendix B – Glint and Glare Study
Appendix E – Archaeological Impact Assessment

Appendix 12 - Screening Response Letter
Appendix 19 - Annex D: Renewable Energy Statement of Need
Appendix 20 – Cassini Map 1805 – 1874
Appendix 24 - Greater Lincolnshire Nature Partnership - Habitats, Statutory and Non-Statutory Sites
Appendix 27 - Schedule Monuments Research

**Revised Appendices** *from Previous Application (Planning Ref: H20-0017-14)*:

Appendix C – LVIA – Rev 1
Appendix D – FRA – Rev 1

Appendix 1 – Site Location Plan Rev 1
Appendix 2 – Site Layout Plan Rev 1
Appendix 3 – String Inverters Rev 1
Appendix 4 – Typical Substation Rev 1
Appendix 5 – Camera Mounting System Rev 1
Appendix 6(a) – Wooden Post, Stock proof Fence Rev 1
Appendix 8 – Typical Cable Trench Details Rev 1
Appendix 9 - Proposed Grid Connection Route Rev 1
Appendix 11 – Biodiversity and Habitat Management Plan Rev 1
Appendix 13 – PV Framework Elevations Rev 1
Appendix 16(i) – Sectional View Overview Rev 1
Appendix 16(ii) – Sectional Views Rev 1
Appendix 16(iii) – Sectional Views Rev 1
Appendix 16(iv) – Sectional Views Rev 1
Appendix 16(v) – Sectional Views Rev 1
Appendix 18 – Traffic Management Schematic Rev 1
Appendix 21 – Visual Amenity Plan Rev 1
Appendix 25 – Phase ONE Plan Rev 1
Appendix 26 – Landscape Plan Rev 1

**New Appendices:**

Appendix F – Agricultural Land Classification Impact Assessment and Sequential Test
Appendix F (i) – Development Zone Constraints Map

Appendix 6(b) – Wattle Fence

# 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 |
| 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 |

# CHAPTER ONE: INTRODUCTION

## 1.1 Background:

Be Renewables Limited (BERL) on behalf of Fenndyke Solar Farm Limited is proposing to develop a solar photovoltaic (PV) power farm of ~17.55 Mega Watts peak (MWp) known as 'Fenndyke Solar Farm' (referred to in the document as the 'project', 'site' or the 'proposal').

BERL is a UK based renewable energy developer specialising in the delivery of utility scale renewable energy infrastructure, primarily commercial solar farms. With secured funding for their developments through UK based specialist investment funds established for the purposes of developing, funding and operating commercial scale solar PV projects within the UK BERL is currently developing several commercial scale solar PV farms across the UK.

This Environmental Report (ER) has been prepared to provide information on the project in support of the accompanying Planning Application, and to assess the potential environmental impacts (including Ecology, Landscape and Visual, Noise, Glint and Glare, Cultural Heritage, Traffic and Highway Issues and Flood Risk) that were identified in the Screening Opinion Response, issued by South Holland District Council (SHDC), dated 2nd April 2013 (Appendix 12).

This planning application is a resubmission of the documents for planning application ref: H20-0017-14 which was unanimously rejected at the SHDC Planning Committee Meeting under Decision Notice dated 11th July 2014.

Following the rejection of the application - BERL held a meeting with SHDC's Mr Richard Fidler and Mr Paul Jackson. BERL proposed an amended development boundary. It was agreed that rather than proceed to an appeal against the rejection of the previous planning application, BERL would prepare a revised scheme based upon the amended boundary for consideration by SHDC Planning Department and subsequent Planning Committee. This Environmental Report is prepared to accompany this amended planning application for the revised scheme.

## 1.2 Need for the Project:

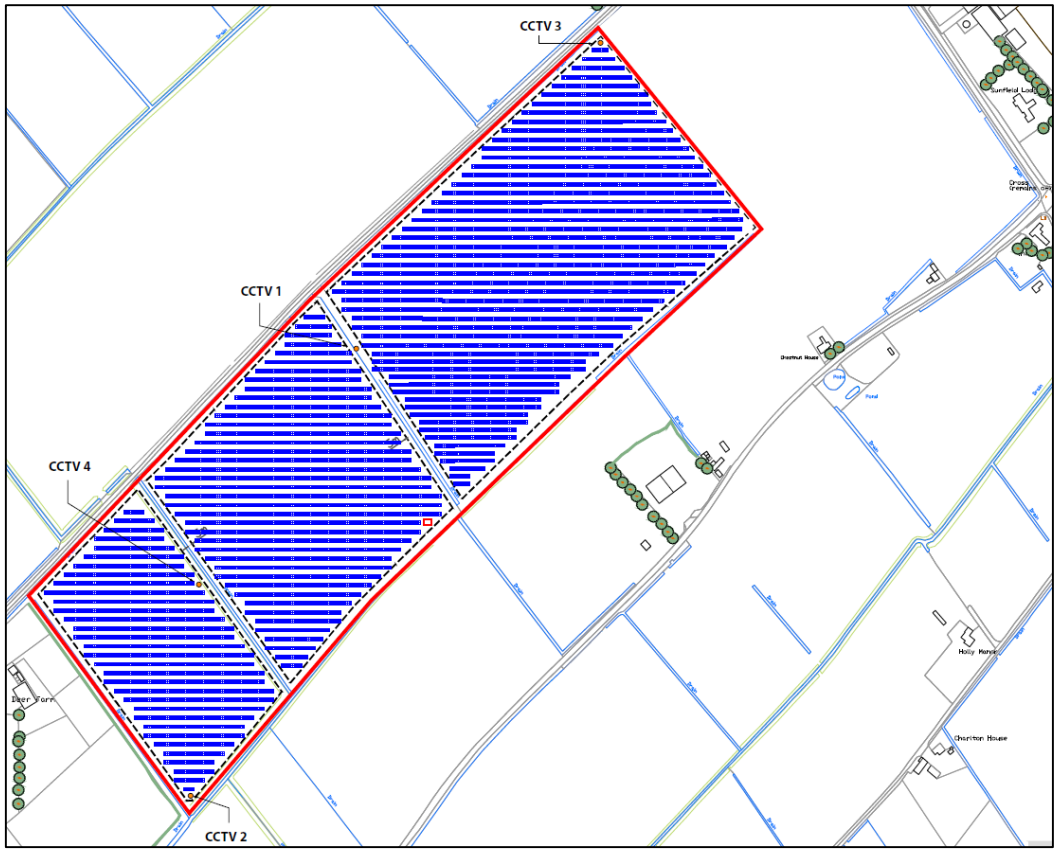
Nothing is endless, but as an energy source for the earth, the sun will last longest. It is most likely that it will create light and warmth for another few billion years. Moreover, it shines everywhere and nobody can claim ownership of the energy produced. Without affecting potential food resources or endangering any life, we need to capture the energy which flows daily from the sun. We believe it is necessary to invest in installations that will do this for us. The project will be on approximately 19.2 hectares (Ha) of arable farming land located in the parish of Sutton St. James in Lincolnshire, approximately 1.6km west of the village of Sutton St James. The National Grid Reference (NGR) for the centre of the site is TF375172.

## 1.3 Site Description:

Fenndyke Farm is located approximately 1.6 km west of Sutton St James, measured to the centre of the solar farm, near Spalding, Lincolnshire. It lies within Natural England's (NE) Joint

Character Area (JCA) 46 - The Fens which is a distinctive, historic and human-influenced wetland landscape lying to the west of the Wash Estuary, which formerly constituted the largest wetland area in England. '*The area is notable for its large-scale, flat, open landscape with extensive vistas to level horizons. Elevations rarely pass the 10m contour, and typically vary by little more than one or two metres over long distances. Much of the land is below sea level, relying on pumped drainage and the control of sluices at high and low tides to maintain its agricultural viability'* (Ref 1.1).

The application site comprises of three agricultural fields that are currently in arable crop production;




(Extract taken from Appendix 2 – Rev 1: Site Layout Plan)

The site has an existing buffer zone of natural grasses and ditches which we propose to retain, setting back the boundary of the solar farm perimeter from these features. The site will be fenced and also screened with new planting of 'typical native' species hedgerows. This new hedgerow will be managed and maintained to encourage the increase in bio-diversity and re-population of some of the more distressed populations of native wildlife.

The land is flat and stands below the level of the surrounding roads in a relatively isolated location away from any large areas of residential properties. The site is accessible from unclassified roads. Sporadic trees and shrubs are found around the perimeter of the fields which adjoin the public roads.

The site has no statutory national or local designations. The nearest Listed Building (LB) is at Sandy Gate House which is approximately 1km south-east of the site. It is surrounded by existing shelter belt (Appendix 25 - Rev 1).

There is one Scheduled Ancient Monument (Appendix 27) referred to as a 'Boundary Cross' which is located at the junction of Old Fen Dike and Broad Gate (north east of the site) (Appendix 26 - Rev 1). A further SAM 'St Ives Cross' approximately 1.6km north east of the site, is located at the junction of Broad Gate and Fishers Gate in the village of Sutton St James (Appendix 26 - Rev 1).

The sites relatively remote location, un-designated status, flat, limited views from outside and its proximity for connection to the electricity distribution network makes it an ideal location for the siting of a new solar farm with limited visual impact. The proposed measures of screening and landscaping, as described throughout the planning documents will provide an effective measure of mitigation.

**1.4 Site History:**

Stretching across South Lincolnshire and North Cambridge shire, the Fens were originally an expanse of swampland. During much of the 16th Century there was discussion about the possibility of draining, turning this 'waste land' into 'productive agricultural' use. The sea banks around the edge had been built, improved and extended since Roman times and on into the middle ages. Yet the peat of the inland fens had built up to such an extent that most of the land was above sea level and it appeared to be practical to drain the area, if only the rivers could be tamed and straightened. The 4$^{th}$ Earl of Bedford designed a drainage system for the whole area and petitioned for permission. However the civil war broke out before the drainage works could be completed and so progress stopped for almost 10 years. When the war was over, work resumed. Once drained, the soil dried out, the peat sank very quickly and the level of the land fell below that of the waterways, thus preventing the water from draining away further. It was not until windmills were introduced to pump water from the fields in to the waterways that the situation improved. These have since been succeeded by more efficient pump systems, providing a permanent solution to the flooding (Ref 1.2). Today, drained peat is more vulnerable to loss, particularly where the deposits are deep and the water table is kept artificially low. Peat wastage through shrinkage, oxidation and wind erosion is a long term issue affecting the ecosystem services of the Fens (Ref 1.1).

Appendix 20, the 'Cassini Map 1805-1874' provides an illustration of the changes to the local area since the early 19$^{th}$ Century. The map is valuable as it shows the early formation of the pattern of fields. It confirms the longitudinal nature of these with long straight perimeter roads forming a strong boundary. We can see the emergence of small settlements at Sutton St James and Sutton St Edmunds. The location of isolated farms and homesteads appear 'dotted' alongside the edge of the local roads. The area of the land for the proposed solar farm is discernible. However the fields have not been divided by the drainage ditches. Most of the land at this time would have been used for sheep farming and for the production of wool, the bed-rock of the prosperous Lincolnshire economy of this time.

**1.5 Project Description:**

Associated infrastructure works includes;

- Associated Low Voltage Direct Current Cabling
- Minor Improvements to Existing Access Points to the Development Fields
- High Voltage (HV) Cabling - approximately 2700m - along the Indicative Cable Route, to the Point of Connection at Western Power Distribution's (WPD) South Holland Substation, located on Jiggles Gate
- Boundary Fence – maximum 1.8m
- Perimeter Boundary Planting and Landscaping
- Inner Boundary/Perimeter Access Track
- Up to 4 Pole Mounted Security Cameras and Associated Cabling –
    - 1 will automatically recognize vehicle number plates for access of site traffic and monitoring
    - 3 will be pan tilt zoom (PTZ) cameras for site security
- Temporary Construction and Store Area – this will include facility for Site Operative Welfare during the Construction Works. These facilities will be typically housed on the perimeter boundary access roads and within the area of each of the fields that will be sequentially completed. They will be removed on the completion of the construction works.

The **CONSTRUCTION** of the proposed development will take approximately 16 weeks (4 months), with all equipment being delivered to site via road (please refer to Chapter Eight for more details). Once constructed the site would generate **~16,708** MWh per annum of low carbon electricity each year to feed directly into the local electricity grid network. This will be sufficient to power the equivalent of **~3,410** average UK households and mitigate (replace) the emission of **~9,858** tonnes of $CO_2$ into the atmosphere annually using a carbon displacement figure of 590g$CO_2$/kWh and average household electricity consumption of 4,900 kWh per annum (Ref 1.3).

The **OPERATIONAL** period of the solar farm is 25 years. The site will then be decommissioned and restored to agriculture use within six months of the permanent cessation of power generation (in accordance with a scheme that will be submitted for approval prior to the solar farm ceasing permanent operations).

As part of the **DECOMMISSION** phase the solar panels, steel frames, copper cabling and electrical infrastructure will be removed and recycled. BERL notes that 1.6 billion people in the world have no access to electricity! The 'Solar Without Borders' organisation works toward improving this reality by installing recycled solar panels in Third World countries. Solar without Borders is a unique project which improves the quality of life and dignifies the existence of many people in Third World countries. By providing solar electricity to undeveloped areas of the world, Solar without Borders is helping to illuminate school classrooms for evening lessons and women's groups, facilitate refrigeration for necessary medicines and vaccines, and power hydraulic pumps for drinking water, all in places where this was not previously possible or is cost prohibitive. BERL wants to make a valuable contribution to the creation of a world in

which a bright future is preserved for the coming generations in the social, cultural and economic spheres.

## 1.6 Solar Farm Specifics:

### 1.6.1 PANELS AND FRAMES

The solar farm comprises of the installation of ~56,600 solar panels mounted to steel and aluminum frame structures, 4-row landscape, at an angle of approximately 20 degrees. The frames are arranged into rows set south facing, at approximately 3m apart. The inter-row and perimeter gap is sufficient for the continuation of agricultural activity on the site and permits the integration of the farm diversification and agricultural activity to go hand in hand whilst securing an improvement to the local biodiversity and ecology within the area.

A Side Elevation is shown in Appendix 13 - Rev 1 and a Site Layout Plan can be viewed at Appendix 2 - Rev 1 showing further details of the solar panel layout and frame structures.

The frame structures consist of steel uprights and aluminum cross bars. The uprights are 'augured' into the ground to a depth of approximately 1.2 to 1.7m, dependent upon ground conditions. The uprights are pushed into the ground to mitigate the production of construction noise.

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.

### 1.6.2 SUBSTATION BUILDING

This is primarily a requirement of the Distribution Network Operator (DNO) to enable the generation from the solar farm to be exported and connected to the regional electricity network system, as operated under their license. The substation building (Appendix 4 – Rev 1) will be located towards the south east of the red line boundary of the application site, in the middle field (Appendix 2 - Rev 1). This location has been determined in relation to the connection requirements to the existing distribution network and to provide the required interconnectivity to the connection to the electricity network of the generation from the proposed Fenndyke solar farm.

The substation will be a brick or stone clad 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 panning authority. It will house the WPD HV Grid Protection Switches and the applicant's metering and consumer side HV switch. The route of the grid connection cable will exit the site of the development at the corner of Bardlings Drove and Old Fen Dike and proceed along Old Fen Dike and Jiggle's Gate to the South Holland Substation that is operated by WPD (Appendix 9 – Rev 1).

### 1.6.3 PLANTING

The topography of the area ensures that the visual impact of the site is limited to the local immediate areas. When viewed from many of the visual receptor points (please see Chapter Two and Appendix 21 - Rev 1 for more details), many of the visual receptors are already screened by the perimeter planting and shelter belts within or bordering their property. It is proposed that new hedgerows will be planted along the perimeter boundaries of the site to supplement the existing isolated trees and shrubs that exist along the boundary perimeter of the fields.

The site is currently in arable use and this activity limits the variety and the bio-diversity of the site as a whole. The proposed solar farm provides an opportunity to establish a species rich grassland which would significantly enhance the net biodiversity value than the current site use.

These species rich grasses would be allowed to grow onsite with other species of local wild flowers. Any grazing or mowing would be managed in accordance with the Biodiversity and Habitat Management Plan (Appendix 11 – Rev 1).

Details of the proposed planting will be agreed with the SHDC Biodiversity Officer and guidance followed from Natural England (NE).

### 1.6.4 FENCING

For safety and security purposes, a 1.8m wooden post, stock proof fence will be installed along the perimeter of the field boundaries (Appendix 6a – Rev 1). The fencing is setback approximately 4-5m from the site boundary, with the solar panels some further 4-5m from the fence. The fence will be installed behind any already

existing planting and that which is proposed (Appendix 16(i)-(v) – Rev 1) Access to the site will be provided with an access gates. The locations of these can be viewed on the Site Layout Plan (Appendix 2 – Rev 1).

Additionally, a Wattle Fence - Appendix 6(b) will be installed along the north-eastern boundary for screening purposes.

### 1.6.5 SECURITY

Two types of CCTV (Appendix 5 – Rev 1) security will be installed on site (locations shown in Appendix 2 - Rev 1);

- 1 pole mounted 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 (Appendix 2 – Rev 1). 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.
- 3 number plate recognition cameras will be used to cover the access and egress from the site. These are an 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.

### 1.6.6 CABLE ROUTE

To connect to the national grid, approximately 2700m of underground cabling will be laid from the exit of the solar farm at the corner of Bardlings Drove and Old Fen Dike to the South Holland substation located at Jiggles Gate (Appendix 9 - Rev 1). The proposed cable route has been selected and discussed with WPD. The majority of the cable route will be installed underneath the highway, but where possible it will be installed in the road verge. The cable will be laid to a depth and specification as required by WPD. The cable trench will be along the road edge.

The works aim to be of a short duration; completed close to the completion of the construction associated with the solar farm to minimise any disruption to road users. 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.

### 1.6.7 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 and so 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.

### 1.6.8 HIGHWAY 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, installation of new kerb stones to details that can be agreed.

We note from our many site visits that several of the local roads are in poor condition and hence 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 as part of our pre-commencement inspection of the proposed access routes.

## 1.7 Planning Policy Context:

The UK is currently facing three major challenges in energy policy;

1. The need to tackle climate changes by reducing greenhouse gas emissions.
2. Ensure a secure, diverse and clean energy supply, reducing the country's dependence on imported energy.
3. Ensure the UK has energy that is affordable (Ref 1.5)

Solar farm projects such as the proposed Fenndyke Solar Farm development are required to ensure diverse, secure, economic and sustainable energy supply. Global emphasis is currently being placed on the latter. This section gives an overview of the rationale for renewable energy, outlines the status of solar energy in a UK context and the government policies seeking to encourage such developments.

### 1.7.1 CLIMATE CHANGE AND GREENHOUSE GASES

In recent years, interest in the threat of climate change on the global economy, as well as environmental and social impacts, has moved the issue up the political agenda. Internationally, discussions are on-going to assist migration towards a low-carbon

global economy, including the annual United Nations Climate Change Conference, most recently hosted in Doha (Ref 1.6).

The composition of the atmosphere affects how heat, which the earth absorbs from the sun, is re-radiated back out to space. Should the gas composition in the atmosphere change and suppress the re-radiation then the global temperature will slowly rise. Given that it is atmospheric temperature that rives creation and circulation of the earth's weather systems, then a consequence of changing global temperature is the modification of weather patterns. This has serious environmental, social and economic consequences. Observational evidence from all continents and all oceans shows that many natural systems are being affected by regional climatic changes, particularly temperature increase (Ref 1.7).

For the next twenty years, a warming of about 0.2$^{o}$C per decade is projected for a range of emission scenarios. Even if concentrations of all greenhouse gases and aerosols had been kept constant at year 2000 levels, a further 0.1$^{o}$C per decade would be expected. Research shows that the average annual temperature, in a UK context, may rise between 2$^{o}$C and 3.5$^{o}$C by the 2080's, with this degree of warming dependent on future levels of global gas emissions (Ref 1.8).

High profile reports have also been published, including a report by the Intergovernmental Panel on Climate Change (IPCC) (Ref 1.9) and the Stern Review (Ref 1.10) which highlights the economic effects of global warming and the need for immediate action to reduce carbon emissions… *'the scientific evidence is now overwhelming; climate change is a serious global threat, and it demands an urgent global response… the benefits of strong and early action far outweigh the economic costs of not acting'.* International research and agreements greatly influence policy set at an international, national, regional and local level.

### 1.7.2 INTERNATIONAL POLICIES

The effect that industrial societies' emissions of greenhouse gases are having on the atmosphere and global climate were recognised in the 1992 United Nations Framework Convention on Climate Change (Ref 1.11) which has been ratified by over 190 countries. This treaty, put into force by the UK in March 1994, recognised that human-induced changes to the atmosphere were affecting the climate and set out to ensure that the so-called greenhouse gases are stabilised at a safe level.

The United Nations Framework Convention on Climate Change (UNFCCC) established a foundation upon which specific actions and targets could subsequently be constructed. The key building block that has been added so far is the Kyoto Protocol of 1997. The Kyoto Protocol sets legally binding targets and timetables for cutting emissions from developed countries.

### 1.7.3 EUROPEAN UNION POLICIES

European Union (EU) leaders have committed to transforming Europe into a highly energy-efficient, low carbon economy. The EU has set itself targets for reducing its greenhouse gas emissions progressively up to 2050 (Table 1:1) and is working successfully towards meeting them (Ref 1.12);

| YEAR | MISSION |
|---|---|
| For **2008-2012** | Under the Kyoto Protocol, the EU are committed to reducing their collective emissions to 8% below 1990 levels. In 2011, the latest year for which comprehensive data are available, EU emissions stood 14.9% below 1990 levels. This meant that the EU was on course to over-achieve its Kyoto target. |
| For **2020** | The EU has committed to cutting its emissions to 20% below 1990 levels. This commitment is one of the headline targets of the Europe 2020 growth strategy and is being implemented through a package of binding legislation. |
| For **2050** | EU leaders have endorsed the objective of reducing Europe's greenhouse gas emissions by 80-95% compared to 1990 levels as part of efforts by developed countries as a group to reduce their emissions by a similar degree. The European Commission has published a roadmap for building the low-carbon European economy that this will require. |

(Table 1.1: EU Targets up to year 2050)

### 1.7.4 NATIONAL POLICIES

In May 2012 David Cameron demonstrated his support of renewable energy**,** saying it's vital for the future of the country and needs to become financially sustainable. He addressed ministers at the Clean Energy Ministerial and said the UK was already playing '*a leading role at the forefront of the green energy revolution… I passionately believe the rapid growth of renewables is vital to our future. Renewable energy is not just good for our environment but we believe it's very good business too'* (Ref 1.13).

The UK has set itself a target of cutting $CO_2$ emissions by 80% by 2050. The UK Energy White Paper 'Our energy future – creating a low carbon economy' was published in February 2003. The Energy White Paper sets a goal of cutting the UK's $CO_2$ emissions by 60% by around 2050, with real progress to be made by 2020. In addition it sets the target of achieving 10% of electricity production from renewables by 2010 and proposes that renewables share of electricity generation in 2020 should be double the 2010 target and set at 20% (Ref 1.14).

Since 2003, a number of annual reviews of the Energy White Paper have taken place, in addition to a government Energy Review (2006) which reaffirmed the government's commitment to reducing emissions and support of renewable energy technologies through the production of 'Annex D: Renewable Statement of Need' (Appendix 19).

'*New renewable projects may not always appear to convey any particular local benefit, but they provide crucial national benefits. Individual renewable projects are part of a growing proportion of low-carbon generation that provides benefits shared*

*by all communities both through reduced emissions and more diverse supplies of energy, which helps the reliability of our supplies. This factor is a material consideration to which all participants in the planning system should give significant weight when considering renewable proposals. These wider benefits are not always immediately visible to the specific locality in which the project is sited. However, the benefits to society and the wider economy as a whole are significant and this must be reflected in the weight given to these considerations by decision makers in reaching their decisions.*

*If we are to maintain a rigorous planning system that does not disincentivise investment in renewable generation, it must also enable decisions to be taken in reasonable time. Decision makers should ensure that planning applications for renewable energy developments are dealt with expeditiously while addressing the relevant issues'.*

The Climate Act 2008 was passed at the end of 2008 which seeks to commit to the actions outlined in 2003 Energy White Paper. This was supported by the Energy Act 2008 which underpins the long term delivery of energy and climate change strategy.

### 1.7.5 NATIONAL PLANNING POLICY FRAMEWORK

The Government's National Planning Policy Framework (NPPF) provides the overarching planning framework for decision-making that is required to meet the challenges that have been identified as a result of climate change. The Department of Climate Change (DECC) is tasked with working on the Governments three long term challenges of ensuring the UK has energy that is affordable, secure and sustainable.

The National Planning Policy Framework (NPPF), published in March 2012 (Ref 1.15) sets out the Governments policy guidance for securing sustainable development. MP Greg Clarke, in the foreword of the document states, '*development that is sustainable should go ahead, without delay, a presumption in favour of sustainable development that is the basis for every plan, and every decision'.* Planning decisions *'must reflect and where appropriate promote relevant EU obligations and statutory requirements'.* This is most relevant with regards to the Governments binding commitments to:

- Generating renewable energy (15% of the UKs energy consumption from renewable sources by 2020) (Ref 1.16)
- Reducing carbon emissions (the UKs legally binding target under the Kyoto protocol to cut greenhouse gas emissions by 12.5% below 1990 levels by 2008-2012) (Ref 1.11)
- Climate Change Act 2008 (to cut emissions of greenhouse gas emissions by 80% below 1990 levels by 2050) (Ref 1.16)

NPPF paragraph 6 highlights that '*the purpose of the planning system is to contribute to the achievement of sustainable development. The policies in paragraphs 18 to 219, of the NPPF, taken as a whole, constitute the Government's view of what sustainable development in England means in practice for the planning system*'.

According to NPPF paragraph 7, 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*.' This presumption is seen as the 'golden thread' running through the process of plan-making and the decision-taking, '*the NPPF does not change the statutory status of the development plan as the starting point for decision making. Proposed development that accords with the up-to-date Local plan should be approved*'.

The implications of the NPPF decision taking are set out in paragraph 14.

**PLAN-MAKING:**

- *Local planning authorities should positively seek opportunities to meet the development needs of their area;*
- *Local Plans should meet objectively assessed needs, with sufficient flexibility to adapt to rapid change, unless:*
    - *Any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole; or*
    - *Specific policies in this Framework indicate development should be restricted.*

**DECISION-TAKING:**

- *Approving 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, granting permission unless:*
    - *Outweigh the benefits, when assessed against the policies in this Framework taken as a whole; or*

- *Specific policies in this Framework indicate development should be restricted.*

Paragraph 17 sets out the core planning principles that should guide plan and decision making,

- The fifth principle promotes recognition of '*the intrinsic character and beauty of the countryside and supporting thriving rural communities within it*.'
- The sixth principle states that planning should 'su*pport the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change… encourage the use of renewable resources… by the development of renewable energy'.*
- The seventh principle states that planning should '*contribute to conserving and enhancing the natural environment and reducing pollution. Allocations of land for development should prefer land of lesser environmental value, where consistent with other policies within the Framework'*

Paragraph 28 shows how the NPPF encourages the development and diversification of agricultural and other land-based rural businesses in order to support a prosperous economy. '*Planning policies should support economic growth in rural areas in order to create jobs and prosperity by taking a positive approach to sustainable new development'*.

Paragraph 93 reaffirms that '*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'.*

Planning authorities, as outlined in paragraph 24, are requested to seek and adopt '*proactive strategies'* to mitigate and adapt to climate change. In doing so the local council has an important role to the delivery of renewable energy projects and its projects and policies to support such proposals.

Paragraph 97 states, '*to help increase the use and supply of renewable and low carbon energy, local planning authorities should recognise the responsibility on all communities to contribute to energy generation from renewable or low carbon sources. They should:*

- *Have a positive strategy to promote energy from renewable and low carbon sources.*
- *Design their policies to maximise renewable and low carbon energy development while ensuring that adverse impacts are addressed satisfactorily, including cumulative landscape and visual impacts.*

- *Consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure the development of such sources.*
- *Support community led initiatives for renewable and low carbon energy, including developments outside such areas being taken forward through neighbourhood planning; and*
- *Identify opportunities where development can draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers*.'

Paragraph 98 further advises that local planning authorities should when determining applications, '*not require applicants for energy development to demonstrate the overall need for renewable energy or low carbon energy and also recognize that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions*'. It continues that they are to '*approve the application if its impact are (or can be made) acceptable……*'

The NPPF further clarifies that if the applicant has demonstrated the need to deliver renewable energy by addressing the potential impacts of the proposed development (including landscape and environment) then if there are matters by which the effects of the proposed development could be further mitigated, the local authority should look to identify solutions, working to approve the application.

Paragraphs 109 to 125 discuss how the planning system should contribute and enhance the natural and local environment. Paragraph 110 emphasizes the requirement that development should minimize pollution and paragraph 113 concerns the protection to sensitive wildlife, biodiversity and landscape areas from inappropriate development, highlighting the relevance of the hierarchy of international, national and local designations. Paragraph 115 refers to the necessity of giving great weight to the need to conserve the landscape and scenic beauty of the National Parks, the Broads and Areas of Outstanding Natural Beauty (AONB). Included in this report is a 'Landscape and Visual Assessment' (Chapter Two) and 'Phase 1 Extended Habitat Survey' (Chapter Three). These identify the potential impacts of the proposed development on the landscape and the natural environment.

Paragraph 129 discusses the conservation and enhance of historic environment and the effects of any new development of heritage assets, '*Local Planning Authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking into account of the available evidence and any necessary expertise. They should take this into account when considering the impact of a proposal on a heritage asset, to avoid or minimize conflict between the heritage asset's conservation and any aspect of the proposal*'. This reports also includes an assessment of potential cultural effects which concludes that there would be no detrimental or material harm to the identified heritage assets in the vicinity of the development.

The Department for Communities and Local Government (DCLG) published the 'Planning practice guidance for renewable and low carbon energy' in July 2013. It provides advice on the planning issues associated with the development of renewable energy and should be read alongside the NPPF.

According to this guidance, *'the deployment of large-scale solar farms can have a negative impact on the rural environment, particularly in very undulating landscapes. However, the visual impact of a well-planned and well-screened solar farm can be properly addressed within the landscape if planned sensitively'.* The proposed development is well planned and well screened, please refer to Chapter Two: Landscape and Visual Assessment for more detailed information regarding this.

Other factors that need to be considered according to DCLG include;

- *encouraging the effective use of previously developed land, and if a proposal does involve greenfield land, that it allows for continued agricultural use and/or encourages biodiversity improvements around arrays*

The proposed development at Fenndyke allows for continued agricultural use between and under the mounted solar panels. Sheep-grazing will be encouraged here. Proposed screening of hedgerows will also encourage biodiversity improvements around the arrays.

- *that 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*

The solar farm is temporary. After 25 years the installation will be removed and the land returned to its former agricultural use.

- *the effect on landscape of glint and glare and on neighbouring uses and aircraft safety*
- *the extent to which there may be additional impacts if solar arrays follow the daily movement of the sun*

There is negligible impacts associated with glint and glare from solar farms. Please refer to Chapter Five for more details.

- *the need for, and impact of, security measures such as lights and fencing*

There are a few security measures such as lights and fencing associated with the solar farm. However it is not expected that these would impact upon the surrounding area. Please refer to Chapter One, section 1.6.4 and 1.6.5 for more details.

- *Great care should be taken to ensure heritage assets are conserved 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*

- *the potential to mitigate landscape and visual impacts through, for example, screening with native hedges*
- *the energy generating potential, which can vary for a number of reasons including, latitude and aspect*

Chapter Two discusses the landscape and visual impact impacts and Chapter Six includes an assessment of potential cultural effects. They conclude that there would be no major landscape and visual impact nor detrimental or material harm to the identified heritage assets in the vicinity of the development.

### 1.7.6 REGIONAL POLICIES

In England and Wales, a 'plan-led' system outlines what can be built and where. The plan-led system was amended by the Planning and Compulsory Purchase Act 2004 which introduced a two-tiered systems consisting of Regional Spatial Strategies (RSS) and Local Development Frameworks (LDF).

Section 38 of the Planning and Compulsory Purchase Act 2004 places a duty on the decision-maker dealing with planning applications to determine appeals in accordance with the relevant policies in the adopted development plan, unless other material considerations indicate otherwise. For the purposes of section 38(6) of the Planning and Compulsory Purchase Act 2004, the adopted development plan relevant to the consideration of Fenndyke Solar Farm consists of the SHDC Local Plan (July 2006)

### 1.7.7 LOCAL POLICIES

Planning applications have to be determined in accordance with the provisions of the Local Planning Authority (LPA) development plan (unless other material considerations suggest otherwise). This application is consistent with the development plan with this section identifying the policies relevant to the proposed solar farm at Fenndyke.

The SHDC Local Plan 2006 (Ref 1.17) 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 Fenndyke, many of the environmental policies, including those relating to renewable energy, 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

**POLICY SG1 – GENERAL SUSTAINABLE DEVELOPMENT**

*'Planning permission for development will be granted where the Council is satisfied that the proposal is consistent with the principles of sustainable development, and where the quality of life for residents is unimpaired or enhanced; reasonable measures have been taken to conserve energy and natural resources; and South Holland's essential character and main environmental assets are not damaged'.*

Our proposal complies with Policy SG1 as evidence throughout the accompanying documents. Solar PV is key to creating a sustainable and mixed generation capacity for the UK, which is vital in tackling the need to reduce carbon emissions. Solar schemes are a model for sustainability that uses a blend of energy efficient measures. The completion of the impact assessments has shown that there is no evidence that the quality of life for residents will be impaired as a result of the development. Further there is no appropriate conclusion that can be drawn that indicates the essential character and the main environmental assets of SHDC will be damaged. Indeed the local ecology and bio-diversity will be a valuable enhancement to the area.

**POLICY SG4 – DEVELOPMENT IN THE COUNTRYSIDE**

*'Planning permission will only be granted for development in the open countryside which is essential in the proposed location and cannot reasonably be accommodated within defined settlement limits. Development proposals that would result in an unacceptable impact upon the landscape character of an area, either individually or cumulatively, will only be permitted where; 1. The need for the development in that location outweighs its impact; 2. No other site or solution exists to accommodate the proposed development'.*

Agricultural classification of the site indicates that the land ranges from Grade 2 to Sub Grade 3b which makes it suitable candidate site for the development of a solar farm, this is further reviewed within the Fenndyke Solar Farm Agricultural Landscape Classification Impact Assessment and Sequential Test and Development Zone Constraints Map - Appendix F and Appendix F (i) respectively. The proposal will also support diversification of agricultural land by helping to sustain an agricultural enterprise since it is possible to retain agricultural usage of the land on which solar farms are sited due to the spacing of solar arrays. Arable application would generally prove difficult, grazing does remain possible within array fields and indeed is particularly synergistic as it prevents plant growth which may in due course shadow the solar arrays.

Solar farms have the potential to increase the biodiversity value of a site if the land was previously intensively managed, an autumn cut with removal of grass cuttings could increase the botanical diversity of the site.

The selected site is outside any designated area and the Environment Agency confirm that there is no risk for the site to flood (Please refer to the Chapter Nine for more details).

**POLICY SG13 – POLLUTION AND CONTAMINATION**

*'Planning permission will only be permitted for development proposals which; 1. Do not cause unacceptable levels of pollution of the surrounding area by noise, light, toxic or offensive odour, and airborne pollutants or by the release of waste products; 2. Provide, as necessary, appropriate treatment of land to clean up pollution and contamination'.*

The solar farm will not cause unacceptable levels of pollution. Solar panels are designed to absorb, not reflect, irradiation. They are therefore responsible for only limited levels of either 'glint' or 'glare'. Glint may be produced as a direct reflection of the sun onto the surface of the PV solar panel, but will be substantially reduced by the anti-reflective coating that the modules incorporate to maximise the light capture of the solar cells. Glare is a continuous source of brightness, relative to diffused lighting. This is not a direct reflection of the sun, but rather a reflection of the bright sky around the sun. Glare is significantly less intense than glint.

Solar arrays will be installed using screw or pushed piled supported systems. They therefore cause no adverse impact on the ground and no contamination. Only where necessary will concrete plinths or other more intrusive foundations be used.

Solar cells are inert solid state devices which convert light into electricity. The systems therefore produce virtually no noise and no emissions. In addition, string inverters do not require some cooling, so there is no fan noise associated (Appendix 3 – Rev 1).

The panels do not give rise to any emissions which will impact on air quality.

**POLICY SG17 – PROTECTION OF RESIDENTIAL AMENITY**

*'Planning permission will be granted for development which would not cause material harm to residential amenity. In considering proposals the following criteria will be taken into account; 1. The extent of any overlooking or loss of privacy. 2. The extent of any overbearing or overshadowing effect. 3. Potential noise nuisance including that associated with vehicular activity. 4. The levels of smell, emissions and pollutants'.*

There is a moderate degree of visual containment to the site and although the immediate context of the site consists of large open fields, the relatively flat topography, hedgerows and the low elevation of the proposals restrict views from the wider landscape. As a result, the site is only visible from locations in the immediate local area. The site is not visually perceptible beyond approximately 1km distance. Those residential dwellings nearest to the site of the proposed development are typically well screened by surrounding boundary trees and vegetation; combined with the buffer zone and perimeter screening proposed by the applicant the visual impact upon these receptors is considered extremely low. We refer you to the discussions

regarding noise in Chapter Four and consider that the impact of noise on the closest receptors will be negligible.

Please note: the modified development boundary has significantly withdrawn the solar farm from the boundaries with the nearest and closest properties that were a concern with the previous planning application: H20-0017-14 (Appendix 1 – Site Location Plan).

**POLICY SG18 – LANDSCAPING OF NEW DEVELOPMENT**

*'Proposals for new development should, where appropriate, incorporate landscaping proposals as an integral part of their design and layout and a landscaping strategy will be required to support all major development proposals. Particular attention will be paid to; the protection of any existing trees and hedgerows, and any other attractive landscape features. The provision of strategic tree planting of indigenous species to improve the setting of development within the wider landscape. The maintenance and establishment of wildlife habitats and corridors'.*

Solar farms do not create adverse environmental impacts, only the physical and visual impacts of solar systems, mostly the solar array, will affect the landscape of the site. However our proposed designs minimise such impacts by;

- **LIMITING THE HEIGHT OF THE SOLAR ARRAYS**: The highest part of the solar panel will be less than 2 metres above ground level, often no higher than surrounding hedgerows.
- **ROWS OF ARRAYS CAN BE ARRANGED TO FOLLOW LOCAL TOPOGRAPHY**: The arrangement of discrete array blocks at staggered intervals and with spacing in between breaks up any potential visual monotony and avoids undue wind concentration or turbulence.
- **VALUABLE ADDITIONAL HABITAT:** The development provides valuable additional habitat through the proposed soft landscaping.
- **PROVISION OF HIBERNACULA:** This will provides habitat for invertebrate.
- **PROVISION OF BAT BOXES AND BIRD NESTING HABITAT**: This will result in a significant increase in the bio-diversity value of the area.

**POLICY EC4 – FARM DIVERSIFICATION PROJECTS**

*'Proposals for farm diversification projects will be permitted provided that all of the following criteria are met: The proposed activity is compatible with agricultural operations on the farm and would not prejudice the efficient functioning of surrounding land uses. Existing or redundant rural buildings are utilised wherever it is practicable to do so. Where a proposal involves utilising existing buildings which are of architectural or historic merit, the design, materials and detailing of any alterations or additions must be sympathetic to the character and appearance of the building. It does not result in excessive expansion and encroachment of building development into the open countryside. It does not result in an unacceptable traffic impact on roads*

*servicing the site The development would not result in an adverse impact on neighbouring residential properties or the local landscape and environment'.*

Policy EC4 outlines 6 key points that new developments will be judged against which the proposed development meets comfortably. The development will allow agricultural activities to continue on the land as live stock will be encouraged to graze the land. Traffic increases will only be a concern during the construction period as there is minimal traffic associated with the maintenance of the site. During construction there will be a traffic plan and marshalling system in operation to mitigate any issues that may arise.

**SUMMARY**

There are vast amounts of evidence that carbon emissions are having a detrimental effect on the environment. If such emissions continue to increase there shall be very serious consequences for biological and social systems worldwide.

It is recognised that the use of renewable energy sources will reduce greenhouse gas emissions arising from fossil fuel energy generation. The development of the proposed site at Fenndyke will provide a significant contribution towards renewable energy targets, maximising environmental and economic benefits, minimising local impacts.

Policies have been put in place at international and UK level to support the use of renewable energies and encourage greater dissemination.

The project will provide valuable inward investment into the local community, as agricultural activity will be able to continue on the land, with the overall economic viability of the agricultural business enhanced by the investment. The inter-row areas and the grass buffer zones will be established to encourage the establishment of important populations of many of the British native species of wildlife that are in decline within the countryside.

Within this Environmental Report, and throughout the planning application, BERL has provided sufficient assessment to show that the proposed Fenndyke Solar Farm is compliant with the aims and objectives established in National, Regional and Local Planning Policy.

## 1.8 Purpose and Structure of the Environmental Report:

A request of screening was submitted in January 2013 to the LPA SHDC, in accordance with the Town and Country Planning (Environmental Impact Assessment) (EIA) Regulations 1999, as amended (Ref 1.20). The Screening Opinion (Appendix 12) received indicated that the proposal is not considered to be an EIA development within the meaning of the EIA regulations. The decision was based on the information known at the time and selection criteria for screening Schedule 2 development (Schedule 3) and paragraph A2 of circular 02/99 (Ref 1.20). As a result, the project does not require an Environmental Statement. SHDC stated

that '*the proposed development would not be likely to have significant effects on the environment by virtue of factors such as its nature, size or location'.*

SHDC recommended that further assessment work was undertaken on specific specialist topics to evaluate whether the project is likely to have any potential significant effects of these features, and where possible mitigate them prior to the project taking place. These topics, and subsequent chapters, are as follows;

- Landscape and Visual Assessment
- Ecological Assessment (as an Extended Phase 1 Habitat and Protected Species Survey)
- Noise
- Glint and Glare
- Cultural Heritage
- Transport
- Flood Risk

Also included is information regarding;

- Sustainability

This non-statutory Environmental Report presents these assessments, thereby providing the information required by the LPA to assess the planning application.

# CHAPTER TWO: LANDSCAPE AND VISUAL ASSESSMENT

This **revised** report can be reviewed in;

- **APPENDIX C – LANDSCAPE AND VISUAL IMPACT ASSESSMENT – REV 1**

Alongside;

- Appendix C (i) – Zone of Visual Influence and Visual Impact Assessment – REV B
- Appendix C (ii) – *** – REV B
- Appendix C (iii) – Proposed Soft Landscaping – REV B
- Appendix C (iv) – Wattle Fencing
- Appendix C (v) – Proposed Soft Landscaping – Details - REV B

# CHAPTER THREE: EXTENDED PHASE 1 HABITAT AND PROTECTED SPECIES SURVEY

## 3.1 Introduction:

This chapter assesses the potential impacts of the proposed PV Solar Farm on the ecological and nature conservation value of the site. In order to do this, an Extended Phase 1 Habitat Survey and Protected Species Assessment has taken place, combined with a detailed desk study.

The site has an area of approximately 19.2 Ha and is located 1.6km to the west of the village of Sutton St James, surrounded by open arable dominated farmland in all directions with areas of set-aside. The site consists of four arable fields with perimeters – currently used for arable farming.

### 3.1.1 PROPOSED WORKS

Fenndyke Solar Limited plan to construct a PV Solar Farm on the site, to consist of approximately ~56,000 solar panels, string inverters and 1 substation.

Each PV panel sits on a frame which is held in place by piles screwed into the ground. Trenches (Appendix 8 – Rev 1) will also be dug to allow cables to be laid to feed the electricity from the PV panels to the string inverters and then into the existing electricity distribution network. Sustainable Urban Drains (SUDs) will also be constructed to prevent surface run off into existing water courses.

A security fence (Appendix 6a) will be installed around the site to keep it secure, along with four CCTV cameras (Appendix 5 – Rev 1).

The site will be accessed via the existing field access point directly off Bardlings Drove. Please refer to the Design and Access Statement for more details.

A temporary site compound will be required on site during the construction phase (including storage and welfare containers).

The proposed works are limited to arable land only since the boundary hedges, shrubs and isolated trees will remain unaffected by the proposed development. The retained trees, shrubs and hedgerows will be appropriately protected during construction. The standard prevention measures will be in place to protect the inter-field, boundary ditches and the adjacent habitats from the potential effects associated with potential increase in sedimentation run-off. The applicant proposes that this will be achieved by retaining the existing perimeter field ditches which will act as shallow swales along the site boundary. These ditches (swales) will intercept overland surface water flows and reduce run-off potentially associated with site operations.

### 3.1.2 LIMITATIONS AND CONSTRAINTS

The survey followed standard methodologies and survey protocols. The results provide an accurate account of broad habitat types and potential presence (or absence) of protected species due to survey method and effort. At the time of year when the surveys were undertaken, evidence for confirming Water Vole (Arvicola Amphibius) presence were unreliable, however we have identified that they may be present.

## 3.2 Methodology:

Two types of methodology have been carried out for this environmental report;

- Desk Study Methodology
- Field Survey Methodology (including):
  - Habitat Survey
  - Protected Species Assessment

### 3.2.1 DESK STUDY METHODOLOGY

A desk study was carried out to identify statutory and non-statutory designated sites within 5km and records of any protected or otherwise notable species that exist within 1km of the site boundary.

The following sources were consulted:

- Great Lincolnshire Nature Partnership - GLNP (Ref 3.1 and Appendix 24 – GLNP Environmental Records Centre – 3 Maps – Habitats, Statutory and Non-Statutory)
- Local Biodiversity Action Plan - LBAP (Ref 3.2)
- Multi-Agency Geographical Information for the Countryside - MAGIC (Ref 3.3)
- National Biodiversity Network (Ref 3.4)
- UK Biodiversity Action Plan - UKBAP (Ref 3.5)

### 3.2.2 FIELD SURVEY METHODOLOGY

**Habitat Survey Methodology:** A Phase 1 Habitat survey was conducted based on techniques and methodologies in the Handbook for Phase 1 Habitat Survey (Ref 3.6) and using the nomenclature of Stace (Ref 3.7). Habitats on site were recorded on a field map (Appendix 25 – Rev 1).

### 3.2.3 PROTECTED SPECIES ASSESSMENT METHODOLOGY

The presence of, or potential for, protected species was noted on a field map during the survey conducted in the summer.

## 3.3 Results:

### 3.3.1 DESK STUDY RESULTS

- Table 3:1 - Locations with statutory nature conservation designations within 5km of the site.

| Table 3:1 | | | |
|---|---|---|---|
| **Site Name** | **Designations** | **Distance From Nearest Site Boundary** | **Direction From Site** |
| South Holland Main Drain | Site or Nature Conservation Interest (SNCI) | ~1km | NW |

- Table 3:2 - Closest records of selected protected or notable species recorded within 1km of the site.

| Table 3:2 | | | |
|---|---|---|---|
| **Species** | **Designations** | **Distance from Site** | **Direction from Site** |
| Barn Owl | WCA, UKBAP | <2km | South |
| Brown Long-eared Bat | WCA, UKBAP, EPS | <1km | North |
| Pipistrelle Bat | WCA, UKBAP, EPS | <1km | North |

**Key –**

- EPS = European Protected Species (EU Habitats Directive)
- UKBAP = UK Biodiversity Action Plan Priority Species
- WCA = Wildlife and Countryside Act 1981 Schedule 5 Species

### 3.3.2 FIELD SURVEY RESULTS

**Habitat Survey:**

- **Arable cultivated/ disturbed land (A) -** The site is composed of four arable fields. All fields were planted with a winter cereal crop and did not have notable field margins. Each of the fields had a perimeter of wet ditches. Scattered trees were present around the field boundaries.
- **Standing Water (SW) -** Wet ditches bounded each of the arable fields on all sides and intersected the site. The fields were ploughed directly up to the ditch ridge.

All but one of the ditches had standing water at the time of the survey; the plant species present indicated that all ditches are wet on an annual basis.
The ridges of the ditches were dominated by Cocksfoot (Dactylis glomerata) and Common Nettle (Urtica dioica), locally abundant Bramble (Rubus fruticosus agg), Common Reed (Phragmites australis) abundant Cleavers (Galium aparine), and occasional Ground Ivy (Glechoma hederacea), Hogweed (Heracleum sphondylium), Cow Parsley (Anthriscus sylvestris), Spear Thistle (Cirsium vulgare), Herb Robert (Geranium robertanium), Creeping Buttercup (Rununculus repens), with rare Ribwort Plantain (Plantago lanceolata), Common Ragwort (Senecio jacobaea), and Yarrow (Achillea millefolium).

- **Bare ground (BG) and Other habitat –** There are some areas of bare ground in the east – north east of the site including soil heaps and patches of Bramble with occasional Mugwort (Artemisia vulgaris) and Oilseed Rape (Brassica napus).

**Target Notes (Table 3:3);**

| TARGET NOTE as noted in: Appendix 25 – Rev 1 | HABITAT / FEATURE | DETAILS |
|---|---|---|
| 1 | WET DITCHES | Dominated by Nettle, Cocksfoot with locally abundant Common Reed. Tussocky vegetation on ditch ridge – good for ground nesting birds. Ditch has the potential for Water Voles. Wider wet ditches had grassy banks and sedentary flow (at the time of the survey). |
| 2 | CONCRETE CULVERT | Culvert over a wet ditch at the proposed access road off Bardlings Drove. Any cracks within or around the culvert have the potential to be utilised by roosting bats. |
| 3 | ISOLATED VEGETATION | Occasional isolated vegetation around the site. Some potentially suitable for nesting birds. |
| 4 | SCATTERED TREES | Occasional trees and scrub along the ditch and road verge. Species present include Ash, Hawthorn and Rose. Potentially suitable for nesting birds. |

(Table 3:3 Target Notes to Accompany the Drawing in Appendix 25 – Rev 1)

### 3.3.3 PROTECTED SPECIES ASSESSMENT METHODOLOGY

- **White-Clawed Crayfish -** The ditches could potentially support White-clawed Crayfish (Austropotamobius pallipes).
- **Great Crested Newts -** Due to the nature of the surrounding land use (farming), the apparent lack of suitable hibernation sites and their chocked nature, the ditches are unlikely to support Great Crested Newt (Triturus cristatus).
- **Reptiles -** Due to the nature of the surrounding land use (arable farming), the apparent lack of suitable hibernation sites and the limited extent of tussock grass along the ridges of the wet ditches, the site as a whole is unlikely to support reptiles and they will not occur in the cropped field area.

- **Birds -** Grey Partridge (Perdix perdix) were observed on the site. It is very likely that these and other species could be present during the breeding season.
  The trees, Brambles and Reeds offer potential nesting sites. There are few known sightings of Barn Owls within the site.
- **Bats –** There is a concrete culvert by the proposed access route off Bardlings Drove. Any cracks within or around this have the potential to support roosting bats.
- **Brown Hare -** Brown Hare (Lepus eauropeaus) were observed within the site during the assessment.
- **Hazel Dormouse -** There was no suitable habitat for Hazel Dormouse (Muscardinus avellanarius) on the site.
- **Water Vole -** The wet ditches, due to their steep banks and heavily vegetated nature, could potentially support Water Voles. Small mammal burrows were seen at the time of the survey within the banks of the larger eastern ditch, however the grass vegetation had been mowed and no further field signs were visible.
- **Badger -** There were no Badger (Meles meles) setts or other field signs on the site.
- **Otter -** There were no Otter (Lutra lutra) holes or field signs on the site. (However Otters can use all types of watercourse).

### 3.3.4 DISCUSSION

The main habitat on site was cultivated arable land. This had little ecological value but for the potential to be utilised by ground nesting birds and Brown Hares (depending on the cropping regime in any particular year). This is the area that will be affected by the proposed development.

The arable fields, depending on the crop being grown, could be utilised by ground nesting birds, and Skylarks (Alauda arvensis) (UKBAP and LBAP species). Any works taking place on the site during March to August inclusive have the potential to impact on other nesting birds.

There are records for Barn Owls within 2km. It is an offence to disturb nesting Barn Owls, however the development is unlikely to have any impacts on nesting Barn Owls.

There are records of bats within 2km of the site.

Brown Hare are a LBAP species, and were observed nearby to the site during the assessment. Brown Hares, a UKBAP and LBAP species may occur depending on the annual cropping regime. Their peak breeding season is March-July inclusive; it is possible that breeding Hares may be disturbed if site works take place during this period.

The ditches could potentially support White-clawed Crayfish, Common Frogs (Rana temporaria) (an LBAP species) and Water Voles, and be utilised by Otters. The banks and ridges of the ditches could be used by a variety of nesting birds, including Grey Partridge a UKBAP and LBAP species that were observed during the survey. It is

understood that no development will take place within 5m of the ditch tops and that the ditches will *not* be affected by the works.

### 3.3.5 OVERVIEW

It is understood that the site is to be converted to sheep-grazed pasture, harvesting haylage or potentially growing low density and low intensive root crops during the operational period. The change from arable farming to grassland is an ideal opportunity to enhance and enrich the biodiversity of the site. The site should ideally be sown to a good quality seed mix, including wildflowers, to increase the biodiversity of the site.

Areas of log piles and hibernacula will be created to provide an environment for native reptiles and amphibians along with bird and bat boxes.

Maintaining low stocking density of sheep will enable the site to enhance (or still remain) value to ground nesting birds and small mammals.

### 3.3.6 RECOMMENDATIONS

Site work, including vegetation clearance, should commence outside the main bird nesting period (considered to be March to August inclusive), or immediately preceded by detailed inspection for nests. Any nests found would need to be left undisturbed until they cease to be used.

To avoid potentially disturbing any young Brown Hares it is recommended that construction occurs outside of the Brown Hare peak breeding season (March - July inclusive). If this is not possible, if young Brown Hares are encountered they should be left undisturbed where they are found.

Due to the potential presence of White-clawed Crayfish, Water Voles and Otters, as well as their intrinsic ecological value, the ditches should be protected from pollution events. A number of steps are recommended to safeguard the wet ditches during construction;

- Temporary facilities for storage and other structures should not be located near the ditches
- Safeguards should be put in place to ensure that there is no risk from accidental spills or leakages. This should include measures to collect contaminated run-off from construction activities and prevent it from entering the watercourse.
- Spoil, aggregates and fill materials should not be allowed to contaminate the watercourse.
- Contractors should operate to the Code of Environmental Good Practice.
- Drainage design should ensure that any potential pollutants arising from the operational phase of the development are prevented from getting into the watercourse through run-off.
- It also recommended that a 5m buffer should be left between the construction site and the ditches.

Inappropriate management e.g. close grazing by sheep, of the ditch-banks could affect Water Voles (if present).

Measures are to be put in place to ensure that the ecological value of the site is managed and its quality maintained. This should include the periodic visits of an ecologist to monitor the works and ensure that the contractor(s) comply with the Code of Environmental Good Practice. It is recommended that a further survey for protected species is undertaken prior to the works commencing and measures re-visited within the Site Construction Management Plan.

## 3.4 Relevant Legislation:

### 3.4.1 EUROPEAN PROTECTED SITES

Habitats of European-wide importance (other than for birds) are listed under Annex I of the Council Directive 92/43/EEC (1992) on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive) (Ref 3.8). Habitats designated under this Directive are Special Areas of Conservation (SAC's). Habitats of European-wide importance for birds are listed under the EC Wild Birds Directive (1982) (Ref 3.9). Habitats designated under this Directive are Special Protection Areas (SPA).

### 3.4.2 INJURIOUS WEEDS

Five weeds are classified under the Weeds Act 1959: Common Ragwort (Senecio jacobaea), Spear Thistle (Cirsium vulgare), Creeping Thistle (Cirsium arvense), Broad-leaved Dock (Rumex obtusifolius) and Curled Dock (R. crispus). It is not illegal to allow these weeds to grow on land however they must not be allowed to spread to agricultural land, particularly grazing areas or land which is used to produce conserved forage.

### 3.4.3 UK BIODIVERSITY ACTION PLAN

Certain species and habitats are listed under Section 74 of the Countryside and Rights of Way (CROW) Act 2000 (Ref 3.10). Section 74 provides statutory underpinning to the UKBAP (Ref 3.11) and thus, all habitats and species listed under the UKBAP are also Section 74 habitats and species.

Section 40 of the Natural Environment & Rural Communities (NERC) Act 2006 (Ref 3.12) places a duty upon all local authorities in England to promote and enhance biodiversity in all of their functions. Section 41 lists habitats and species of principal importance to the conservation of biodiversity. Fifty-six habitats and 943 species of principal importance are included on the Section 41 list. These are all the habitats and species in England that have been identified as requiring action in the UK BAP. These species and habitats are a material consideration in the planning process.

NPPF (Ref 3.13) details the Government's policies for the conservation of England's natural heritage. It embodies the Government's commitment to sustainable

development and to the conservation of wildlife. The guidance advocates the protection of statutorily designated sites and sites of particular nature conservation importance (e.g., Sites of Special Scientific Interest (SSSI)). It lays down a number of provisions that proposed developments need to consider with regard to designated sites, non-designated sites and species protection. This includes LBAP species and habitats. These should be regarded as material considerations during the planning process.

### 3.4.4 PROTECTED SPECIES

- **White-clawed Crayfish -** White-clawed Crayfish are protected under the Wildlife and Countryside Act 1981 (as amended). It is an offence to intentionally take White-clawed Crayfish from the wild or to sell them.
- **Common Reptiles -** Slow-worm, Adder, Grass Snake and Common Lizard are protected under the Wildlife and Countryside Act 1981 (as amended). It is illegal to kill or injure them. It is not illegal to capture, disturb or to damage their habitats. However, the reptiles themselves are protected so any works to damage their habitat could risk causing harm to reptiles and hence could be illegal.
- **Birds -** Wild birds are protected under the Wildlife and Countryside Act 1981 (as amended). It is illegal to take or harm them, their nests (whilst in use or being built) or their eggs. Additionally for some species it is an offence to intentionally or recklessly disturb the adults while they are in and around their nest or intentionally or recklessly disturb their dependent young. The arable land within the application site, together with the isolated shrubs, trees and the field boundaries are likely to support a suite of breeding birds typical of farmland and woodland habitats for the region. The trees and shrubs have the potential to be used for nesting birds in the breeding season. It is also possible that the application site and the surrounding fields may provide the habitat for ground-nesting birds such as Skylark Alauda Arvensis; however the improved nature for the arable land reduces the potential of the habitats to be used for most ground nesting species and it is therefore unlikely that significant populations are present. No significant bird assemblages were recorded within the application site during the field surveys.
- **Bats -** Bats are protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010. It is illegal to kill or injure bats, cause disturbance at their resting places or to block access to, damage or destroy their roost sites. The isolated shrubs and field margins around the ditches and the roads are likely to provide foraging habitat and provide connectivity across the wider landscape. There is a concrete culvert by the proposed access route off Bardlings Drove. Any cracks within or around this have the potential to support roosting bats.
- **Water Voles -** Water Voles are protected under the Wildlife and Countryside Act 1981 (as amended). It is illegal to deliberately kill, injure, capture or disturb them or to destroy, damage or obstruct access to any places used for shelter or protection.

- **Badgers -** Badgers are protected under the Protection of Badgers Act 1992. It is illegal to kill, injure or take Badgers or to interfere with a Badger sett. Interference with a set includes blocking tunnels or damaging the set in any way. No evidence of badger activity (e.g. setts, latrines or prints) was identified on or surrounding the application site.
- **Otters -** Otters are protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010. It illegal to take, injure, kill or sell an otter. It is also an offence to damage, destroy or obstruct access to a resting place or disturbs or harms an otter at any time. No impacts on these species are anticipated and with the provision of protection measures and buffer zones that are discussed elsewhere within this report the need for any further assessment within this report is not considered necessary.

### 3.4.5 ASSESSMENT OF DESIGNATED SITES

No sites of international, national, regional or local nature conservation designations would be affected. No offsite affects are predicted, as field drainage will be unaffected and during the operational stages there will be none to negligible disturbance with regard to noise, dust or activity. There will be no change in air quality.

### 3.4.6 ASSESSMENT OF IMPACT UPON ONSITE HABITATS

During the site walk-over the areas of the ditch banks and the perimeter margins to the edge of the roads were considered to be areas that could be of interest for provision of species rich habitats. However the intensive agricultural activity is likely to reduce the importance of these habitats. The proposed screening and provision of buffer and inter solar panel row grassland will significantly benefit the importance of the area and increase the species rich nature of the onsite habitat. The existing arable habitat is considered of negligible importance, in terms of its vegetation and there is no evidence that the vegetation supports nesting Skylark, which is something that could be encouraged through the enhanced biodiversity plans within the solar farm.

No offsite affects are predicted, as field drainage will be unaffected and in the operational stages there will be none to negligible disturbance with regard to noise, dust or activity. There will be no change in air quality.

The impact of change from arable land use to grassland with livestock grazing of sheep would have a positive and beneficial impact with nature conservation – grassland is generally a rarer habitat in the area compared to arable land. Grassland also supports a greater number of species compared to arable land. The provision of log piles and herbancula will increase biodiversity also.

The impact of the development will be neutral, with the provision of the grassland and proposed hedgerow screening proving to be beneficial. There will be minor beneficial impact for reptiles and invertebrate through the managed habitat of log piles and herbancula.

**3.5 Summary:**

The assessment of potential solar farms on the ecology and bio-diversity of a particular site is primarily guided by Technical Note 101 published by NE (3.14). It states that '*like any type of development, solar parks have the potential to affect the landscape, natural habitats, soils and geological and archaeological features*'. TIN101 discusses this potential risk of damage as a result of the construction, operation and decommissioning of the solar farm, highlighting the potential for cumulative impacts to occur when parks are cited in close proximity to each other. However it highlights that '*well located and designed solar farms*' can not only avoid negative environmental impacts but deliver an overall net gain and benefit for biodiversity, in addition to making a positive contribution to the reduction in greenhouse gases and the production of low carbon energy. As a result of the selected location of the application site there are no direct, nor indirect impacts on any statutory or non-statutory designed sites anticipated. The proposed site is not located close to a site of high wildlife value and is therefore unlikely to have an impact on or compromise any of the objectives for these sites designations.

The proposed habitat enhancement measures of converting arable fields to species rich grassland will be maintained around the panels. The planting of native species hedgerows will provide an ecological gain over its current arable use and ensure maximum wildlife benefits. The planting of hedgerows will increase significantly the nesting, roosting, foraging and commuting opportunities for birds, bats and other wildlife.

There is a potential impact for loss of suitable habitat for ground nesting birds. However the site is not considered to provide optimal nesting habitat for much ground nesting bird species due to its lack of longer vegetative cover anyway. It is unlikely that the site supports a significant population of ground nesting birds. Overall the impact is considered low. To avoid impacts on nesting birds and to ensure compliance with the provisions of the Birds Directive and the Wildlife and Countryside Act 1981 (as amended), it is considered that any initial ground works and associated vegetation removal will take place outside of the bird breeding season (March to August inclusive). If any vegetation works are required during the bird breeding season the, suitable nesting habitat will be hand searched by appropriately experienced ecologists prior to any of the works commencing.

Therefore in conclusion, the majority of the site is composed of arable land. All of the remaining native flora species and habitats were generally common in the local, county and national context. Using the criteria in Table 3:4, the habitats on the site as a whole are considered to be of Parish/Neighbourhood Value due to the presence of the ditches.

| GEOGRAPHIC LEVEL OF VALUE | EXAMPLES |
|---|---|
| **International value** | Ramsar Sites, Special Protection Areas, Biosphere Reserves, Special Areas of Conservation. Sites supporting populations of internationally important species. |
| **National value** | SSSIs or non-designated Sites meeting SSSI selection criteria, NNRs, |

| | |
|---|---|
| | Marine Nature Reserves, NCR Grade 1 Sites. Sites containing viable areas of key habitats identified in the UK Biodiversity Action Plan. |
| **Regional value** | Sites containing viable areas of threatened habitats listed in a Regional BAP (or some Natural Areas), comfortably exceeding SINC criteria, but not exceeding SSSI criteria. |
| **County / Metropolitan** | Sites meeting the criteria for county or metropolitan designation (SINC, CWS, etc.). Ancient semi-natural woodland, LNRs or viable areas of key habitat types listed in county BAPs/Natural Areas. |
| **District / Borough** | Undesignated Sites or features considered to appreciably enrich the habitat resource in the District or Borough. |
| **Parish / Neighbourhood** | Undesignated Sites or features which appreciably enrich the habitat resource within the Parish or Neighbourhood. |
| **Negligible value** | Low grade and widespread habitats. |

(Table 3:4 - Definitions of the Level of Habitat Value)

The site is typical of the local area and graded as having a habitat value at a negligible (low grade and widespread habitats) level. If nesting Barn Owls or Grey Partridge, or roosting bats, or Brown Hares, use the site the species value could appreciably enrich the habitat resource within the Parish or Neighbourhood (Table 3:5).

| GEOGRAPHIC LEVEL OF VALUE | EXAMPLES |
|---|---|
| **International value** | Any regularly occurring population of an internationally important species, which is threatened or rare in the UK. i.e. it is a UK Red Data Book species or listed as occurring in 15 or fewer 10km squares in the UK (categories 1 and 2 in the UK BAP) or of uncertain conservation status or of global conservation concern in the UK BAP. A regularly occurring, nationally significant population/number of any internationally important species. |
| **National value** | Any regularly occurring population of a nationally important species which is threatened or rare in the region or county (see local BAP). A regularly occurring, regionally or county significant population/number of any nationally important species. |
| **Regional value** | Any regularly occurring, locally significant population of a species listed as being nationally scarce which occurs in 16-100 10km squares in the UK or in a Regional BAP or relevant Natural Area on account of its regional rarity or localisation; A regularly occurring, locally significant number of a regionally important species. |
| **County / Metropolitan** | Any regularly occurring, locally significant population of a species which is listed in a County/Metropolitan “red data book” or BAP on account of its regional rarity or localisation; A regularly occurring, locally significant number of a County/Metropolitan important species. |
| **District / Borough** | A population of a species that is listed in a District/Borough BAP because of its rarity in the locality or in the relevant Natural Area profile because of its regional rarity or localisation; A regularly occurring, locally significant number of a District / Borough important species during a critical phase of its life cycle. |
| **Parish / Neighbourhood** | Species that are not threatened but are valued at a local level on intrinsic appeal. |
| **Negligible value** | Common or widespread species. |

(Table 3:5 - Definitions of the Level of Species Value)

Due to its location, extent and the surrounding environment the proposed development is unlikely to adversely impact on nearby nature conservation sites. Providing the wet ditches and area of bare ground including the brick outbuilding are to be left unaffected, no further protected species surveys are recommended.

The following recommendations are suggested to mitigate against the development:

- Protect the water courses from construction impact and pollution.
- Preserve any surrounding trees to prevent potential disturbance to nesting Barn Owls or roosting bats.
- Conduct any vegetation clearance outside of the bird nesting season (March-August inclusive) or conduct pre-construction bird nest checks.

# CHAPTER FOUR: NOISE REPORT

## 4.1 Introduction:

Noise is often defined as sound that is undesired by the recipient. Whilst it is not possible to directly measure nuisance caused by noise, it is possible to measure the loudness of that noise. 'Loudness' is related to both frequency and sound pressure, both of which can be measured. The human ear is susceptible to a wide range of sound levels. In order to reduce the relative magnitudes of the numbers involved, a logarithmic scale of decibels (dB) is normally used, based on a reference level of the lowest audible sound.

The response of the human ear is not constant over all frequencies. It is therefore usual to weight the measured frequencies to approximate the human response. The resulting 'A' weighted decibel, dB (A), has been shown to correlate closely to the subjective human response.

When related to changes in noise, a change of ten decibels from for example 50 dB (A) to 60 dB (A) would represent a doubling in 'loudness'. Likewise, a decrease in noise from 60 dB (A) to 50 dB (A) would represent a halving in 'loudness'. A change of 3 dB (A) is generally considered to be just distinguishable[1].

## 4.2 Planning:

Paragraph 123 of the NPPF states the following;

'*Planning polices and decisions should aim to:*

- *avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;*
- *mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions;*
- *recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established;*
- *Identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason'*[2].

BERL aims to ensure that any new developments comply with this policy. This section demonstrates that the development will adhere to current standards for both internal and external noise levels and identify any appropriate mitigation measures if necessary.

[1] **Communities & Local Government** - (1994) Planning Policy Guidance 24: Planning & Noise.
[2] **National Planning Policy Framework -** www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf

**4.3 Background:**

Ground mounted solar PV modules, string inverters and transformers are inert solid state devices which work together to convert light into electricity. BERL have included in the planning and designing of the project, the evaluation of where to place the equipment and equipment selection by exploring options to minimise noise impacts to the surrounding area even more.

**4.4 Construction:**

The construction and installation of the solar farm will be undertaken using a relatively small team, not expected to exceed 50 persons at any one time. There will be limited noise disturbance during this time. Heavy Goods Vehicle (HGV) movements will be staggered throughout the 4 month construction period, further reducing possible noise impact. It is not expected that local community would notice a change in the noise as a result of the project. Noise levels during the construction process will be controlled and we would not expect any noise at the boundary of the adjoining residential properties to exceed those that are commonly experienced with the current level of agricultural activity in the area. Design considerations throughout the development of this project have been made to avoid and mitigate noise generation activities, for example, the selection of the support installation system.

**4.5 Operation:**

The operational lifespan of Fenndyke Solar Farm will be to a limited period of 25 years and the noise generated is minimal. Most commonly, the source of noise associated with ground-mounted solar PV comes from central inverters. By switching our design from the previous application to using string inverters, which are solid state, the source of noise has been eliminated from the project (Appendix 3 – Rev 1).

There are a small number of residential properties surrounding the site, one immediately east of the site and others to the south and south east have direct front or rear elevation views towards the site. The current figures by the World Health Authority Community Noise Guideline Values / BS8233[3] describe 'good' conditions as;

| EXAMPLE | L (dB(A)) |
|---|---|
| Dwellings Indoors In Daytime | 35 |
| Outdoor Living Area In Day Time | 55 |
| Inside Bedrooms At Night Time | 45 (max) |
| Outside Bedrooms At Night Time | 60 (max) |

As the figures show the small number of residential properties surrounding the site may experience noise similar to a 'rural area' during the daytime as a result of the proposed development. Therefore the proposal will not result in any noticeable changes in noise levels.

[3] **Communities & Local Government** - (1994) Planning Policy Guidance 24: Planning & Noise.

### 4.6 Decommissioning:

After 25 years, the project will have reached the end of its operational life and will enter a phase of decommissioning. This will involve dismantling and removal of all materials and equipment that have been on site during the operational phase. Decommissioning will take approximately 2-3 months and will involve a lower number of HGV movements than was required during the construction phase.

### 4.7 Mitigation of Potential Noise:

We aim to mitigate any potential noise by;

| | |
|---|---|
| **RESTRICTION ON THE HOURS OF OPERATION** | It is proposed that subject to the planning approval the site will operate as a construction site between the hours of 08.00 and 17.30 each Monday to Friday and between 08.00 and 13.00 on Saturday. |
| **RESTRICTION ON THE HOURS OF DELIVERY** | Working on Sundays and Bank Holidays will not be expected.<br>Outside of these hours works shall be only undertaken if deemed an 'emergency'. SHDC will be notified of any requirement for emergency working, in writing, within 3 days of the occurrence.<br>No construction traffic movement will take place outside of the above hours. Deliveries to the site will be co-ordinated to avoid the normal rush hour and school run traffic. This will ensure that the development is not detrimental to the amenity of the area and/or nearby residents by reason of undue noise including from people entering of leaving the site. |
| **RESTRICTION ON THE HOURS FOR MACHINERY** | As above.<br>This will safeguard the amenities of nearby residential properties. |
| **SITE BOUNDARY NOISE LEVELS** | We will ensure that the rating level of noise emitted from the solar farm development shall not exceed (that as decided by SHDC) dBA above the background levels determined at all boundaries near to noise-sensitive premises. This assessment will have been made in accordance with the current version of British Standard 4142 and confirmation of the findings of the assessment shall have been submitted to, and agreed by SHDC and shall be adhered to thereafter.<br>This will ensure that the development is not detrimental to the amenity of the area and/or nearby residents by reason of undue noise including from people entering of leaving the site. |

# CHAPTER FIVE: GLARE AND GLINT ASSESSMENT

## 5.1 Introduction:

A common concern of a commercial large scale solar farm is the potential for the solar panels to cause glare and glint which could be perceived as a nuisance or hazard to receptors in the vicinity. However the whole concept of efficient solar power is to absorb as much light as possible while reflecting as little light as possible. This actually results in standard solar panels producing less glare and reflectance than standard window glass (Ref 5.1). More specifically, in technical terms, solar panels use 'high-transmission, low-iron' glass, which absorbs more light, producing smaller amounts of glare and reflectance than normal glass.

## 5.2 Additional Works:

As part of the previous planning application BERL commissioned a detailed project specific 'Glint and Glare' Study by one of the UK's leading consultancy companies. This report is still relevant to this amended application. Please see **Appendix B – Glint and Glare Study**.

# CHAPTER SIX: CULTURAL HERITAGE

## 6.1 Introduction:

Cultural heritage is the legacy of physical artifacts, intangible attributes of a group (or society) and natural heritage that are inherited from past generations, maintained in the present and bestowed for the benefit of future generations. Physical artifacts include; buildings, monuments, landscapes, books, works of art, and artifacts whilst intangible attributes of a group include; folklore, traditions, language, and knowledge. Natural heritage includes; culturally significant landscapes and biodiversity.

## 6.2 Site Character and Cultural Heritage:

The site at Fenndyke has no statutory national or local designations. The nearest listed building is at Sandy Gate House which is approximately 1km south-east of the site. It is surrounded by existing shelter belt. The site has one SAM referred to as a 'boundary cross' which is located at the junction of Old Fen Dike and Broad Gate (north east of the site). A further SAM 'St Ives Cross' approximately 1.6km north east of the site, is located at the junction of Broad Gate and Fishers Gate in the village of Sutton St James (Please refer to Chapter Two for more details and Appendix 26 – Rev 1).

The site has for a significant time been largely agricultural in character. The local lands productivity and yield from the area of the proposed site is not of 'top quality'. Originally the area would have been marshland though little of this character remains. Arable farming now dominates leaving little semi-natural vegetation present.

## 6.3 Natural Heritage:

The proposed site at Fenndyke has some slight natural heritage as it is part of the 'Peaty Fens Landscape' (Ref 6.1).The landscape assessment assessed that the solar farm would introduce a negative moderate change to this part of the Peaty Fens landscape character type in connection with the loss of arable land to an uncharacteristic land-use and the erection of perimeter fencing, which will add an uncharacteristic feature to a predominately boundary free landscape. However within the local environs, there are currently existing examples of similar developments and boundary treatments associated with semi-industrial activities of large scale commercial growing (and the use of glass houses), with screening adopted by many of the local residential properties such as the planting of large coniferous trees breaking up the landscape character of the Peaty Fens. And so negative minor changes have been assessed in connection to the erection of the transformer and a large scale industrial style development into an open, uniform landscape.

## 6.4 Proposed Development:

The solar farm is a low profile, temporary development. The assessment demonstrates that the local topography and existing landscape framework limits the visibility of the proposed solar farm within the landscape. There are few local receptors and the implementation of the

proposed landscape management plan, proposing to infill hedgerows and shrubbery (and plant new) limits local visual impacts, successfully mitigating once the semi-mature mix of planting has established.

The new planting proposals will use British native species and the establishment of a grass and flower meadow across the site will help integrate this proposed solar farm development with the landscape character and provide an important local habitat for wildlife. Overall it is expected that these proposals will limit the effects upon the local landscape due to the restricted areas of visual significance and where these have been identified these have been addressed through the planting proposals. The planting proposal incorporates appropriate buffer zones between the solar farm and the already existing and new vegetation. The applicant proposes that the landscape plan ensures that there are no significant effects on the views of the site or on the local landscape character. The applicant is confident that the solar farm will provide an important source of renewable energy resource through a negligible impact on the landscape character. Any impact is both short-term and reversible on the local landscape but provides for a positive contribution through the new planting of British native species of hedgerows and shrubs, which in turn are designed to encourage the re-establishment the endangered wildlife species.

**6.5 Additional Works:**

As part of the previous planning application BERL commissioned Mouchel's to complete a desk-based review of the heritage assets that may be within the boundary of the development.

The findings of this report and their conclusions are still valid.

This report can be reviewed in **Appendix E – Archaeological Impact Assessment**.

# CHAPTER SEVEN: SUSTAINABILITY

Sustainable development is development that '*meets the needs of the present without compromising the ability of future generations to meet their own needs'* (Ref 7.1).

SHDC has adopted a sustainability agenda in line with the government's strategy outlined in the document '*A Better Quality of Life - A Strategy for Sustainable Development in the UK*' (Ref 7.2).

Policy SG1, '*General Sustainable Development*', in the Local Plan (2006) (Ref 7.3) states that; '*Planning permission for development will be granted where the Council is satisfied that the proposal is consistent with the principles of sustainable development, and where:*

1) *The quality of life for residents is unimpaired or enhanced;*
2) *Reasonable measures have been taken to conserve energy and natural resources; and*
3) *South Holland's essential character and main environmental assets are not damaged'.*

This chapter is written as a non-technical introduction that summarises how the proposal will provide an exemplary model for sustainable design and development in SHDC.

## 7.1 Environmental Sustainability:

### 7.1.1 SUSTAINABLE MATERIALS IN CONSTRUCTION

Solar farms are made up of several sustainable materials;

- Frames – Waste from aluminium frames can be transformed into raw material for new frames.
- Cells – Silicon can be reclaimed and reintroduced into cell production.
- Glass – Solar panels are made up of 90% glass and may be easily recycled and repurposed in a number of different ways.

The majority of materials required for the construction of the solar farm will already be available on site, or will be pre-fabricated and therefore will require limited assembly on-site.

The small number of additional construction materials comprise the following;

- High pro-mesh panel system security fencing,
- Some frame struts,
- Electrical cables and communication cables.

Trenches are required for the cables. We do not import fine gravel or course sand to fill these trenches, but rather put back the earth that we have dug. This is a more environmentally friendly development approach.

## 7.2 Sustainable Waste Management:

### 7.2.1 CONSTRUCTION PERIOD

Waste that is produced during the small approximate 4 month construction period will all be completely removed upon completion. During the process it will be collected in large containers and disposed of through the correct waste management procedures.

The majority of materials will be assembled off-site thereby minimising the construction period on site, reducing machinery required and reducing the generation of waste.

Measures will be incorporated to prevent polluted surface water runoff entering the surrounding ditches and having any negative impact upon the local water ecology.

### 7.2.2 OPERATIONAL PERIOD

The nature of a solar PV farm is that there are no waste by-products from their operation in comparison to those from other fossil and low carbon forms of generation. The schemes are temporary and are removed following a period of operation, typically twenty-five years. The structures cause no permanent damage to the land and the area of the development can upon removal of the solar farm be restored for new or previous agricultural use.

Solar farms do not produce waste during the operational process.

## 7.3 Energy Efficient Design and Renewable Energy:

Due to the nature of the proposed development, it will be energy efficient. Fenndyke is to be a solar PV farm of up to 17.55 MWp.

The site is a suitable site enabling significant benefits in terms of generating (renewable) electricity and cutting climate change emissions.

## 7.4 Water Resources:

The project has been designed to retain all field boundaries. There are no plans to remove any existing vegetation, which will minimise any likely changes in the water course during the operational phase of the solar farm.

The scheme does not interfere with any existing water course. However an appropriate flood risk assessment has been included within the planning application and corresponding documents.

**7.5 Nature Conservation and Biodiversity:**

To focus attention on key environmental issues we consulted with key statutory and non-statutory bodies during the preparation of the planning application;

- Great Lincolnshire Nature Partnership (GLNP) (Ref 7.4)
- Local Biodiversity Action Plan (LBAP) (Ref 7.5)
- Multi-Agency Geographical Information for the Countryside - MAGIC (Ref 7.6)
- National Biodiversity Network (NBN) (Ref 7.7)
- UK Biodiversity Action Plan - UKBAP (Ref 7.8)
- Nature Conservancy Council Handbook for Phase 1 habitat survey, JNCC (1993) (Ref 7.9)
- Stace, C. (1997) New Flora of the British Isles Second Edition. Cambridge University Press (Ref 7.10)
- Environment Agency (EA) 2010 - Pollution Prevention Guidance For Working At Construction And Demolition Sites: PPG 6 (Ref 7.11)
- North Level District Internal Drainage Board (IDB) (Ref 7.12)

During the term of the lease we will endeavour to encourage that the use of the land also be retained for agricultural use such as low intensive sheep grazing. We adopt a management regime for the perimeter margins with new and already existing hedgerows to provide and increase the local bio-diversity.

BERL believe that solar farms can make a positive impact on the flora and fauna of the local environment. We are dedicated to enhancing (and increasing) the bio-diversity of the site by encouraging some of the native species, especially where the populations are currently in decline or distressed. The preparation and planting of native species for hedgerows which will be found along the perimeter of the solar farm creates margins of nectar and pollen rich grasses and flowers, encouraging and enhancing the presence of insects, nesting birds and small mammals. Extreme care will be taken to ensure that we do not interfere with surrounding agricultural activities.

The areas between each row of panels as well as under and around the panels can also be used to increase biodiversity. It will be seeded to encourage 'species rich' grassland providing further nectar rich resources for invertebrates. This will require sowing appropriate seed mixtures to encourage these specific species and adopting a site management regime to retain flowering species. Areas of the inter-row grasslands will also be used for low intensity sheep grazing. Areas of log piles and hibernacula will be created to provide an environment for native reptiles and amphibians.

Managing these opportunities and constraints are best considered using local knowledge and in conjunction with local biodiversity plans. We will also use the technical expertise within Natural England to gain specific technical advice where this may be of benefit (Ref 7.13).

**7.6 Summary:**

SHDC is active in promoting sustainable development within its area, working to embed the principles of sustainable development - integrating social, economic and environmental objectives. As this chapter has shown, the proposal responds comprehensively to meet these requirements as set out within the guidance.

# CHAPTER EIGHT: TRANSPORT ASSESSMENT

This chapter looks at the transport issues associated with the development and includes information on the access arrangements.

**8.1 Transport Policy:**

Current transport policies at national and local level are built around the central themes of long-term sustainable development, sustained investment in transport and improved accessibility at all levels. It promotes continued economic growth through;

- The provision of an efficient and reliable transport system,
- A reduction in traffic congestion,
- Improvements in highway safety, and;
- Enhancements in accessibility of sustainable modes of travel.

Key objectives of transport in the NPPF are for the development proposals to deliver sustainable and safe transport regimes.

The SHDC Local Plan (Ref 8.1) was adopted by the Council on the 18th July 2006. It is a comprehensive statement of the areas planning policies for the development and use of land in the SHDC until the year 2021. Transport policies are based on the Local Transport Plan (LTP) for Lincolnshire 2006/07 - 2010/11 (Ref 8.2) and aligns with the Government's policies for transport.

The main themes from the LTP relevant to this application (as highlighted within the SHDC Local Plan) are as follows:

- *To assist the sustainable economic growth of Lincolnshire, and the East Midlands region, through improvements to the transport network;*
- *To make travel for all modes safer and, in particular, reduce the number and severity of road casualties;*
- *Encouraging the use of alternative modes of transport; and,*
- *To remove unnecessary HGVs from affected communities through:*
    - *Appropriate traffic management measures;*
    - *Highway improvements;*
- *To encourage the use of alternative modes of transport; and,*
- *To maintain the transport system to standards which allow the safe and efficient movement of people and goods.*

The proposals for this development will be shown to be consistent with strategies and objectives of the LTP.

**8.2 Existing Conditions:**

The site is located approximately 1.6 km by road from 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 western boundary 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 into Bardlings Drove where it will access the proposed site.

The existing field access track will be utilized for access to the site from Bardlings Drove.

Jiggles Gate, 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 a 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 the traffic routes towards Sutton St Edmunds. Bardlings Drove 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.

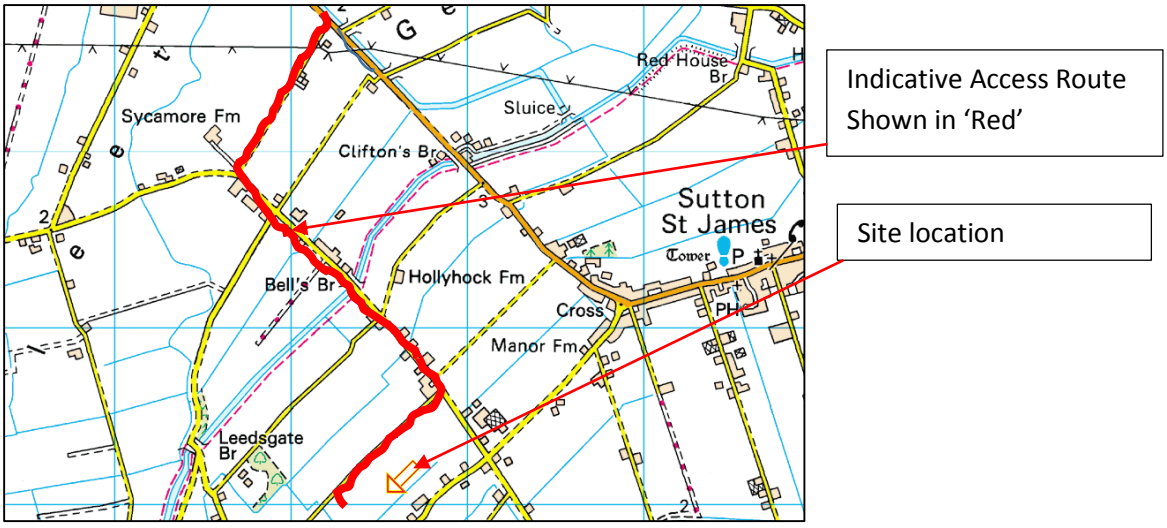
The visibility of the proposed entry and exit points of the site is good.

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.

The main existing use of Bardlings Drove will be for access to the existing farm entrance points and also to the properties at the south-west perimeter of the site leading towards New Fen Dike, however alternative access to these properties is also available. From our site inspections we have noted that the use by vehicle traffic of Bardlings Drove 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 in Figure 8:1. 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.




(Figure 8:1 Proposed Access Route to the Site
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Once within the proposed site access traffic movement will be via the proposed perimeter access 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.

Proposed site access via Bardlings Drove from Old Fen Dyke (Figure 8:2);



(Figure 8:2 - Property of BERL)

**8.3 Prior to Works Commencing:**

Prior to the delivery of construction materials to the site a review of the maximum axle loading on structures along the access route with the various road agencies would be undertaken. This would establish the suitable loads to be transported. Swept Path Assessments (SPA[2]) would be carried out. This is the calculation and analysis of the movement and path of different parts of a vehicle when that vehicle is undertaking a turning maneuver. At a basic level this includes calculating the path taken by each wheel during the turn and also calculating the space needed by the vehicle body during the turn. Any vegetation that may foul the loads would be trimmed back to allow passage. Any road works or closures that could affect the passage of the loads would be looked in to. However considering that we will be using standard road vehicles throughout the delivery phase of this project which are already commonly using the principal

access roads to the site, we would consider any impacts identified by the SPA[2] and axle loads to be minimal.

## 8.4 Assessment of Effects:

The construction period is when the most potential environmental impacts will occur upon the access route to and from the proposed solar farm site and traffic movements through local highway transport routes. However the effects during the operational and decommissioning period are also assessed within this section.

### 8.4.1 CONSTRUCTION

The construction period for the proposal would involve HGVs delivering the equipment and materials used for the project. It is anticipated that the construction of the site is estimated to take approximately 4 months. There would also be a series of light vehicles which would be used to transport the working staff to site. The estimated vehicle movements for each stage of the construction process are shown in Table 1, of the Design and Access Statement. The HGVs which will be used will measure up to 40ft in length, similar to both the length and weight that are commonly in use for normal farming activities. All the solar farm components are able to be transported to site without using abnormal load vehicles. There is an anticipated breakdown of the types of vehicles which will be used to transport the components for the solar farm in Table 8:2.

| Component | Vehicle |
|---|---|
| Panel Modules | HGV |
| Mounting System | HGV |
| String Inverters | Trucks |
| Cabling | Trucks |
| Sundries | Trucks |
| Fencing | Trucks |

Table 8:2 - Anticipate Vehicle Sizes for Component Delivery

There is no factual information regarding existing traffic flows along the proposed access roads. Other than traffic usage during the peak periods of farming activities there will be a slight increase in vehicular movements associated with the construction of the solar farm. However, this increase in traffic flow will only be for a short period of time and it will be managed to ensure that arrivals of vehicles to site will be carried out in a safe manner to ensure the highway used can cope with the flow of traffic and minimise inconvenience for other road users.

In summary the proposed carriageways off the B1165 are currently used by large vehicles including large farm vehicles and maximum legal articulated vehicles similar

to the ones that will be used to deliver the solar farm components. Temporary signage will be erected to ensure that the use of the appropriate access route is clearly indicated and provided for vehicles accessing the proposed solar farm site (Appendix 18 – Rev 1). Typically we would propose to use discreet access route markings and where appropriate signs from the regulatory Signs Section of the Traffic Signs Manual. Any road traffic management signs would be agreed with local authority.

The proposed access route roads will be inspected and a schedule of repairs identified which will be completed prior to the commencement of any construction activity. The condition and repair of the roads will be inspected and maintained throughout the course of the construction period and any necessary repairs implemented to maintain the surface of the road. At the completion of the construction works the roads will be re-inspected and any identified repairs necessary as a result of deterioration through the use of the road by construction traffic will be undertaken. The existing roads proposed as access to the site are not currently in 'good condition', hence there is an overall benefit proposed as part of the repairs that will be undertaken during the construction of the solar farm. In practice it may be necessary for a Section 59 Agreement to be entered into in order to access and implement the completion of any necessary remedial works.

In summary, *no significant impact* is anticipated either on traffic levels or on highway safety as there should be no issues regarding the use of the highway and visibility when entering or exiting the site.

Prior to the construction works the Principal Contractor will prepare a Traffic Management Plan which will be a document that covers the usage of the principal access roads, the necessary erection of roads signs and the timing and number of traffic movements permitted throughout any period.

It is proposed that subject to the planning approval the site will operate as a construction site between the hours of 08.00 and 17.30 each Monday to Friday and between 08.00 and 13.00 on Saturday. Working on Sundays and Bank Holidays will not be expected. Outside of these hours works shall be only undertaken if deemed an 'emergency'. SHDC will be notified of any requirement for emergency working, in writing, within 3 days of the occurrence. No construction traffic movement will take place outside of the above hours. All deliveries and drivers will be instructed to complete a 'toolbox talk and driver awareness session' where the above requirements will be explained. Each delivery driver will be assessed and their understanding of the requirements confirmed by a signed authorisation document.

Information on proposed construction traffic movements will be provided to the local residents to aid them in the awareness of the planned vehicle movements. These information briefings will be provided with 48 hours' notice. The information would relate to vehicle movements on the roads surrounding the site, i.e. Old Fen Dike, Bardlings Drove, Broadgate and New Fen Dike, whilst we were making significant deliveries of plant and equipment. Although as a result of the rural nature of the location many of the residents will be familiar with large vehicle transport this

communication process will assist in mitigation of any inconvenience that may otherwise result.

During the construction works we would expect to have formed a local liaison with residents and would use this as one of the formats for providing this information. However we will also use direct communication through hand delivery to all dwellings that are located along the proposed route and surrounding roads.

Any road vehicle that is required to enter the highway following a visit to the site that has attracted mud or debris within its wheels will be cleaned prior to leaving the area of the site. Most vehicle movements within the site for road vehicles will use the access track located around the perimeter of the site. In case of an exceptional event that creates debris or mud on the road we will retain the services of a road sweeper to ensure that the roads are maintained in an acceptable standard.

Site activities may result in some slight dust arising. In the unlikely event this occurs then we will take the following action so that both the human and ecological impacts are minimised;

1. Most suitable will be to enclose any activity that maybe dusty,
2. If this is not practicable then we will use damping down.

It is noted that are certain times of the year normal farming activities can create dust arising's.

### 8.4.2 OPERATION

The solar farm is anticipated to have a life span 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 string inverters or transformer.

The site will also be co-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, hedges and small trees etc. These will require trimming and cutting in accordance with the site biodiversity and habitat management plan (Appendix 11 – Rev 1).

Due to the fact that once the site is operational the traffic flow along the surrounding roads will return to the existing conditions, the impact is deemed to be negligible.

**8.5 Summary:**

This Transport Chapter has been prepared in order to assess the potential impact as a result of the use of the local highway system of roads for the delivery of components for the proposed development of a solar farm at Fenndyke, near the village of Sutton St James. The assessment also considers the impact as a result of the operations, for a period of 25 years and the decommissioning. The assessment addresses the requirements for appropriate traffic management and signage and the need to coordinate and integrate the road use with other requirements within the rural community. Hence the assessment plans for use of the road network through planned routes, appropriate levels of communication to those concerned and for management of number of deliveries type of deliveries and time of deliveries so that the impact of this road use can be minimised. The applicant considers that the proposals are in accordance with the relevant highway guidance and in particular in accord with the NPPF (Ref 8.3) and the overarching National Policy Statement for Energy (EN-1) (Ref 8.4) and the National Policy Statement for Renewable Energy (EN-3) (Ref 8.5).

# CHAPTER NINE: FLOOD RISK ASSESSMENT

As part of the previous planning application BERL commissioned Mouchel's to complete a desk-based review of the heritage assets that may be within the boundary of the development.

The findings of this report and their conclusions are still valid.

This report can be reviewed in **Appendix D – Flood Risk Assessment**

Alongside;

- Appendix D – Appendix (i): Environmental Agency Consultation Response to Planning Application
- Appendix D - Appendix (ii) - Environmental Agency Flood Risk Assessment Enquiry
- Appendix D - Appendix (iii) - 25 Years Development Lifetime Issue

# CHAPTER TEN: AGRICULTURAL LAND CLASSIFICATION

As part of the previous planning application BERL commissioned Mr. Rodney Burton BA MSc to prepare an Agricultural Land Classification (ALC) Report. It is a detailed study of the soil resources and ALC for the land at Bardlings Drove, Sutton St James. The report was prepared in March 2014 following field surveys.

The conclusions of this report indicate that the boundary of the proposed solar farm is within an area of land that contains some Grade 2, 3a and 3b agricultural land.

The findings of this report and their conclusions are still valid.

This report can be reviewed in **Appendix A – ALC and Soil Survey.**

# CHAPTER ELEVEN: REFERENCES


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3.13 **National Planning Policy Framework -** www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf
3.14 **Natural England: TIN101 -** http://publications.naturalengland.org.uk/publication/32027

## CHAPTER FOUR


4.1 **SMA:UK -** http://www.sma-uk.com/en_UK.html


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