

BIODIVERSITY AND HABITAT MANAGEMENT PLAN

Little Eau Solar Farm, Sutton St James, UK



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Submitted on behalf of: Little Eau Solar Limited

Prepared By: BE Renewables Limited

Hesketh Mount. 92-96 Lord Street. Southport PR8 1JR

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1. INTRODUCTION:

The following Biodiversity and Habitat Management Plan (BHMP) aims to set out how the proposed development at Little Eau Solar Farm will enhance the quality and extent of the network of hedges, woody vegetation, grassland and wildlife on site. Once enhanced good ecological management practices are to be adopted with the aim of developing and maintaining wildlife habitats to provide a net gain for local biodiversity.

2. PRE-DEVELOPMENT, ECOLOGICAL BASELINE:

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

The site consists of three arable fields with perimeters and a central network of ditches. 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 western and southern boundaries.

Wet ditches bounded each of the arable fields on three 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 robertianum*), Creeping Buttercup (*Rununculus repens*), with rare Ribwort Plantain (*Plantago lanceolata*), Common Ragwort (*Senecio jacobaea*), and Yarrow (*Achillea millefolium*). Please refer to Photo 2 in Appendix 19b.

In the southern most corner of the site was a small area of bare ground, mature trees and a derelict brick building. In the extreme southern corner of the site was an area of bare ground including soil heaps and patches of Bramble with occasional Mugwort (*Artemisia vulgaris*) and Oilseed Rape (*Brassica napus*). A derelict brick building and a mature Ash tree with an Owl box attached were also present in this area. Please refer to Photo 7 in Appendix 19b.

The land pre-development is arable and considered to be of low ecological value.

The land is not subject to any existing management agreements.

3. BIODIVERSITY AND HABITAT ENHANCEMENT:

The management practices that are proposed will enhance and safeguard key habitats (e.g., hedgerows and boundary woodland) for the benefit of wildlife. The design and long-term management of the land seeks to maintain and improve functionality through protecting and

enhancing potentially important wildlife corridors. For example, through additional planting of native species hedgerows and inter-planting of existing hedgerows to the boundary of the site.

Biodiversity and Habitat to be managed can be separated out into the following;

- Hedgerow Planting, Enhancement and Management
- Trees Enhancement and Management
- Grassland Enhancement and Management
- Wildlife Enhancement

3.1 HEDGEROW PLANTING, ENHANCEMENT AND MANAGEMENT

Mature, intact hedgerows delineate the majority of boundaries within the Survey Area. They are species-poor hedgerows (both intact and defunct). They will be enhanced with additional planting and the infilling of gaps using native hedgerow species.

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

At this site, we will plant a mix of the following species;

FIELD SPECIES – COMMON NAME	FIELD SPECIES – LATIN NAME	% MIX (Exact % of mix to be confirmed with LPA)
Field Maple	<i>Acer campestre</i>	7
Dogwood	<i>Cornus Sanguinea</i>	3
Hazel	<i>Corylus avellana</i>	5
Hawthorn	<i>Crataegus monogyna</i>	70
Blackthorn	<i>Prunus spinosa</i>	3
Buckthorn	<i>Rhamnus Cathartica</i>	5

The hedgerow mix is to be planted as random mix.

Planted as double staggered row 450mm centres 300mm between rows.

Trench for planting to be ~200mm deep and ~400mm wide to accommodate double row planting. Plants to be positioned at previous growth levels.

Timings of the proposed hedgerow planting will vary depending upon the ground conditions, however planting will take place within the first planting season. Ideally between October and March, post plant construction. This will grant the plants more time to establish a network of feeder roots before the onset of spring. Planting should not take place during freezing and/or water logged conditions.

In the initial maintenance period (ie., the first twelve months) the planting strip will be kept weed-free using approved herbicides. In the first three years, newly planted sections of hedgerows will be lightly trimmed to encourage a dense growth. After this period the hedgerows will be maintained on a two or three year cycle to approximate height 2m. This may require some to be cut if greater than or allowed to grow up to if currently lower than. Hedges will be cut on different sides each year. Not all hedgerows will be cut in the same year, instead a rotational programme (table one) will be set up which will allow a varied structure for the benefit of wildlife. Cutting will take place between January and February.

This management of hedgerows should be effective in maintaining a dense hedgerow. However, where gaps appear in the hedge from dieback or other damage, they will be re-planted and subject to normal establishment management until they have filled the gap they are planted in.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
30% OF HEDGEROW IN ROTATION	Cut late in month every second year		No cutting during nesting season									
REMAINING HEDGEROW	Cut late in month every year		No cutting during nesting season									

TABLE ONE: HEDGEROW MANAGEMENT

For the operational life of the solar farm the management of the hedgerows shall be carried out in accordance with this management plan by the site management company, or other funded party through arrangement.

The development will not result in significant changes to existing landscape features, such as modifications to topography. There would be no planting (or specific mitigation measures) during the construction and decommissioning phases. These proposed works would be temporary and of a relatively short duration (approximately 4 months). The existing vegetation framework, both surrounding and within the site, is to be retained.

New native hedgerow is proposed along all the boundary perimeters of the solar array. Following preparation of planting areas as above transplants shall be notch-planted upright into a T-shaped opening of sufficient size for the roots of bare-root plants to be fully spread out or to accommodate a cell grown plant without breaking the root-plug. Container grown plants to be planted into 300x300x300mm pits. All plants and planting to comply with current BS specifications including BS 3936: Part I 1992, Part II 1990 and Part IV 1984. Where applicable BS 4428: 1989. All planting stock specified in accordance with the Horticultural Trades Association (HTA) National Plant Specification. All plants to be planted a minimum of 5m from structures and 3m from drainage. All plant material shall be British grown stock and fully hardened off. Hedgerow mix to be planted at 5/m on a double staggered grid. Where appropriate

all stock to be planted in random groups of no more than 5 no. plants of the same species. If necessary we will use of rabbit proof guards, or grow tubes to protect against weed competition.

3.2 TREE ENHANCEMENT

An initial management period will involve checks by landscape contractor. This will include weed clearance, watering, checking stakes and ties as well as pruning.

After the initial management period of twelve months, any specimen that is considered to be dead or dying of disease will be replaced during the following planting season.

At present, it is not proposed that there will be any additional tree planting.

3.3 GRASSLAND ENHANCEMENT AND MANAGEMENT

GRASSLAND AREAS	ENHANCEMENT PLAN	MANAGEMENT PLAN
1. THE BUFFER ZONE	There is an ~5m-20m (Appendix 1) offset between the planning application boundary (red line) and extent of the solar farm development (blue line). Taller grassland vegetation at the base of hedgerows will provide nesting opportunities for birds; and provide nectar, pollen and shelter for invertebrates, amphibians, reptiles and small mammals.	The ground will be prepared for the sowing of the meadow seed mix. The planting bed will be rota-vated (a machine with rotating blades that will break up the soil) firmed and raked. It will be sown in March through to May (or in the Autumn). The grassland area will be cut once a year between August and September, allowing the seeds that flower later to fall prior to the cut. This helps to encourage a natural dispersal over time. This will take place after the bird nesting season has ended (September and October). An optional earlier cut can be made in March and April.
2. THE GRASSLAND IN THE CENTRE OF THE APPLICATION SITE (AROUND AND UNDER THE SOLAR PANELS)	The grassland will be allowed to develop around and under the solar panels due to their arrangement. The site will be grazed by sheep during the operational period.	It will be maintained so that vegetation does not encroach and obstruct the panels themselves. This will be cut at least twice a year to encourage natural colonisation. (It should be noted that additional cuts may be required to prevent solar panels from becoming obstructed).

3.4 WILDLIFE ENHANCEMENT

It is envisaged that the improved hedgerow and grassland will act as a wide field margin allowed to develop into a dense coarse grass habitat to provide cover for invertebrates, small mammals and potentially ground nesting birds.

If practical all identified dead wood will remain within the hedgerow. The small amounts of brash from maintenance elsewhere on site can be arranged into small piles at intervals along the hedgerow to create additional wildlife habitat.

The fence will be regularly inspected and maintained to ensure no public access is gained to the site.

Areas of log piles and hibernacula will be created to provide an environment for native reptiles and amphibians.

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

A number of steps are recommended to safeguard the site during construction;

- Removal of vegetation that could support nesting birds should be undertaken outside the typical breeding season of March to July inclusive. If this is unavoidable, vegetation will be checked for the presence of nests by an experienced ecologist immediately prior to removal.
- 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 any runoff to 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 any watercourse through run-off.

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.

4. MANAGEMENT SCHEDULE:

Table 4.1 and 4.2 below show the probable management programme showing the possible months in which activities will commence within the first planting period after construction and prospective annual management once operational;

4.1 INITIAL HABITAT ENHANCEMENT

YEAR ONE												
MANAGEMENT ACTIVITY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
Hedgerow Planting										X	X	X
Installation of Bird Nests and Bat Roost Boxes										X		

4.2 PROSPECTIVE ANNUAL HABITAT MANAGEMENT

YEAR TWO												
MANAGEMENT ACTIVITY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
Cutting Of The Strip Of Grassland Along The Hedgerows And The Woodland Edge Habitat.								X	X			
Cutting Of The Grassland In The Centre Of The Application Site (Around And Under The Solar Panels). (Additional cuts may be required depending on growth rates)		X	X	X			X	X	X			
Light Pruning of Newly Planted Hedgerows	X	X							X			

Checks by Contractor (E.g., initial maintenance period, weed clearance, watering)			X	X	X	X	X	X	X			
Replacement of any Dead, Dying or Diseased Tree or Hedgerow.										X	X	X

YEAR THREE												
MANAGEMENT ACTIVITY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
Cutting Of The Strip Of Grassland Along The Hedgerows And The Woodland Edge Habitat.								X	X			
Cutting Of The Grassland In The Centre Of The Application Site (Around And Under The Solar Panels). (Additional cuts may be required depending on growth rates)		X	X	X			X	X	X			
Light Pruning of Newly Planted Hedgerows		X							X			
Hedgerow Management – Cutting to Rotate on 2-3 Year Cycles	X	X										