Acrefair Solar Farm

on Lightsource Renewable Energy Ltd

Biodiversity Management Plan

avianecology

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1 INTRODUCTION

1.1.1 This Biodiversity Management Plan sets out habitat enhancement measures in relation to the proposed Acrefair Solar PV Farm, Wrexham (the Site). This document also summarises ecological management practices to be adopted with the aim of developing and maintaining wildlife habitats to provide a net gain for local biodiversity. The Planting Specification within the Site Layout and Planting Proposals provide further detail.

1.1.2 Habitat enhancement measures and ongoing management practices are proposed in line with guidance produced by BRE (2014) *Biodiversity Guidance for Solar Developments* that will enhance and safeguard key habitats (e.g. hedgerows and trees) for the benefit of wildlife, and enhance the ecological value of land currently under predominantly intensive grazing/pasture use. The design and long-term management of the land seeks to conserve and improve landscape habitat connectivity with the wider landscape for wildlife through protecting and enhancing potentially important wildlife corridors. This will contribute to the establishment of coherent ecological networks, supporting the targets of the National Planning Policy Framework (2012).

1.1.3 Habitat enhancement measures and planting specifications are illustrated in Site Layout and Planting Proposals, Ref:L.0321_09-A (Pegasus Environmental, Dec 2014).

2 ECOLOGICAL BASELINE – PRE-DEVELOPMENT

2.1.1 Detailed descriptions of habitats and species can be found in the Ecological Appraisal (Avian Ecology Report December 2014).

2.1.2 Pre-development, the Site comprised three improved grassland fields with boundaries formed largely by species-poor hedgerows, mostly intact. The surrounding land also comprises improved grassland, with woodland tracts. Four water containing ditches were present on site; all were associated with hedge lines.

2.1.3 A large pool/lake was present in a field depression approximately 200m south of the application site boundary. This pool was shallow and had no apparent inflow so was considered likely to be seasonally filled by rainfall.

2.1.1 The Site did not form part of any statutory or non-statutory designated site. No protected or notable species were recorded during the survey carried out for the Ecological Appraisal.

3 ECOLOGICAL ENHANCEMENT MEASURES

3.1.1 The boundary hedgerows and trees within and adjacent to the Site will be protected with fencing as necessary during the construction phase of the development to prevent works encroaching within the root protection zone in-line with BS 5837:2012 *Trees in relation to design, demolition and construction*.

3.1.2 Pollution prevention and runoff control measures will be adopted in accordance with Environment Agency guidelines to safeguard the onsite pond and ditches, as well as nearby watercourses and terrestrial and habitats.

3.1.3 Vegetation clearance will avoid the breeding bird season (March-September inclusive). If any works (i.e. ground works / vegetation removal) are proposed during the breeding season then a nesting bird hand search of vegetation will be completed by an experienced ecologist / ornithologist prior to those works commencing following a Breeding Bird Protection Plan (BBPP). Appropriate work

exclusion zones would then be established around nest sites in line with best practice guidance for the species involved.

Hedgerows

3.1.4 Sections of existing gappy/defunct species poor hedgerow will be strengthened and in-filled with native species. New sections of hedgerow are also proposed at various points across the Site. A detailed planting specification is provided on the Site Layout and Planting Proposals.

3.1.5 The following species will form hedgerow planting at the Site:

Table 1: Proposed hedgerow species mix.

Hedgerow Planting		
Crataegus monogyna	Hawthorn	25%
Corylus avellana	Hazel	30%
Prunus spinosa	Blackthorn	20%
Sambucus nigra	Elder	10%
Ilex aquifolium	Holly	5%
Acer campestre	Field maple	5%
Rosa canina	Dog rose	5%

3.1.6 The planting will diversify the mix of species around the application site and provide additional shelter and foraging resources for a range of species, as well as strengthening habitat connectivity with the wider landscape.

3.1.7 Species providing valuable food resources to wildlife, such as such as hazel and blackthorn, will be managed to allow them to flower, set fruit and seed in order to provide an increased food resource for a range of species, including birds and small mammals as well as invertebrates.

3.1.8 The exact timing of the proposed hedgerow planting will be dependent on the ground conditions but planting should take place between the months of November and March inclusive. Where ground conditions and climate allow for earlier planting; this will allow the plants more time to establish a network of feeder roots before the onset of spring. Planting should avoid freezing and water logged conditions, but the ground should be moist.

Tree Planting

3.1.9 A new tree belt with understorey is proposed on the eastern boundary. This will comprise oak *Quercus robur* and silver birch *Betula pendula*. The understorey will comprise hazel, hawthorn, blackthorn and gorse *Ulex europaeus*.

3.1.10 As above, species providing valuable food resources to wildlife, such as such as hazel and blackthorn, will be managed in order to provide an increased food resource.

Grassland Enhancement

3.1.11 The BRE (2014) Guidance notes that, as panels are raised above the ground on posts, over 95% of a field utilised for solar farm development is still accessible for plant growth and complementary agricultural activities such as conservation grazing.

3.1.12 The grassland under and around the solar panels will be managed to encourage the development of both species and structural diversity over time. Taller grassland vegetation will be encouraged to develop at the peripheries of the site and along the base of hedgerows to provide nesting opportunities for birds and provides nectar, pollen and shelter for invertebrates, amphibians, reptiles and small mammals.

3.1.13 Any areas temporarily damaged during the construction phase will be restored using an appropriate meadow seed mix, or (preferably) through natural re-colonisation from the existing local seed bank. All seeding shall be carried out as per the planting specification.

3.1.14 A buffer around the perimeter of the site will be created and sown with Emorsgate Hedgerow Mixture or similar in order to create an enhanced wildlife corridor around the site.

Wildlife Enhancement

3.1.15 Bird nest and bat roost boxes will be installed on suitable features along the boundary of the site to encourage breeding birds and roosting bats. Six bird nest boxes (suitable for a variety of common garden / woodland species) and nine bat boxes (three boxes on three trees facing in different directions) be positioned on site. Suitable bird boxes would include the CedarPlus Modern Nest Box.

3.1.16 Sections of the perimeter fencing, at appropriate intervals, will be raised by approximately 20cm, or include access 'gates' in places to maintain and allow the dispersal of wildlife (such as badgers or small mammals) through the Site.

3.1.17 Some of the brash generated from hedgerow management will be placed in piles in sunny locations, to create refuge cover for wildlife.

4 HABITAT MANAGEMENT

Hedgerow Management

4.1.1 In the initial maintenance period (years 1-5) the planted hedgerows will be kept weed-free.

4.1.2 In years one to three, newly planted sections of hedgerow will be lightly trimmed to encourage a dense growth. Replanting will be implemented following the first year if necessary to infill any gaps.

4.1.3 Following the first three years it is recommended that the hedgerows be maintained on a two or three year cycle, with cutting undertaken in late January or February, allowing hedgerows to gradually increase in height. Hedgerows should eventually be maintained at a minimum 2.4m height.

4.1.4 Hedges will be cut on different sides each year and not all hedgerows will be cut in the same year, instead a rotational programme will be set up which will allow a varied structure for the benefit of wildlife.

Tree Planting

4.1.5 Management of newly planted trees will follow the measures proposed in the planting specification.

Grassland Management

4.1.6 The arrangement of the solar panels within the application site will allow grass to grow beneath the panels. A grazing regime will be implemented to allow grassland to develop with a varied structure, thus maximising its value as biodiversity resource.

4.1.7 The planting specification provides a planting regime.

5 ECOLOGICAL MONITORING

5.1.1 The development of the biodiversity interest of the Site will be monitored over time by a suitably experienced ecologist. A walkover survey will be undertaken on years 3 and 5 and 10. This will involve an inspection of the planted hedgerows, trees, grassland and any other ecological enhancement features to ensure that they are being managed in a manner suitable for the enhancement of wildlife interest. Bird and bat boxes will also be checked.

5.1.1 The results of these monitoring surveys will be used to inform future changes in management and the need or otherwise to replace missing bat/bird boxes and to replace dead or dying tree and hedge plants. The management plan will be amended if necessary based on the monitoring recommendations (including amending the grazing regime if necessary).

6 INDICATIVE MANAGEMENT SCHEDULE

6.1.1 The following management programme shows possible months in which activities will commence within the first planting period after construction.

Initial Habitat Enhancement Year 1

Management Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Year 1												
Hedgerow planting.	✓	✓								✓	✓	✓
Installation of bird nest and bat roost boxes within the area of mature trees to the site boundary.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Annual Habitat Management Year 2

Management Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Year 2												
Grassland (under solar panels) Cutting until sward established to allow grazing								✓	✓			
Grassland (around margins) Cutting half site every other year								✓	✓			
Light pruning of newly planted hedgerow sections.	✓	✓							✓			
Checks by contractor through the initial maintenance period to comprise weed clearance, watering, checking stakes and ties and pruning.				✓	✓	✓	✓	✓	✓			
Replacement of any dead, dying or diseased tree or hedgerow specimens.										✓	✓	✓
Existing hedgerows cut on a 2 or 3 year cycle (no more than 1/3 cut in any one year).	✓	✓										

Ongoing Annual Management

Management Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Year 3 onwards												
Grassland (under solar panels) Grazing								✓	✓			
Grassland (around margins) Cutting half site every other year								✓	✓			
Light pruning of newly planted hedgerow sections for years 3 and 4	✓	✓							✓			
Existing hedgerows cut on a 2 or 3 year cycle. All hedgerows from year 5 (no more than 1/3 cut in any one year)	✓	✓										

APPENDIX 1 : REASONABLE AVOIDANCE MEASURES AMPHIBIANS AND REPTILES

Method Statement Objectives

The objective of this method statement is to protect amphibian and reptile species during construction works. No great crested newts have been recorded at the Site, although other common amphibian species may be present. This Method Statement is designed to inform site staff of their legal obligations and to set in place precautionary measures for the protection of any amphibians and reptiles potentially present.

Legislation

Great crested newts (GCN) are European Protected Species (EPS) and they and their habitat are fully protected under national (Wildlife & Countryside Act 1981 (as amended)) and European law (The Habitats and Species Regulations 2010 (as amended)). The combined legislation makes it illegal to:

- intentionally or deliberately capture, kill or injure a great crested newt;
- intentionally or recklessly damage, destroy or obstruct access to any place used for shelter and protection including resting and breeding places, whether occupied or not;
- deliberately, intentionally or recklessly disturb a great crested newt when in a place of shelter;
- possess a great crested newt, or any part of it, unless acquired lawfully;
- sell, barter, exchange or transport or offer for sale great crested newts or parts of them.

Anyone carrying out activities which may affect EPS must consider the presence of EPS, their breeding sites and resting places. Good practice guidance is available from Natural England, which advises on assessing for the presence of EPS, and the possible impact of operations (including strategies for avoiding committing offences). If an offence cannot be avoided, then a derogation licence should be sought from NRW.

Common reptile species namely the common lizard, slow-worm, grass snake and adder are protected against killing, injuring and sale.

Method Statement

This Method Statement should be followed for the installation of the solar panels and associated minor works within the application site, which may affect the surrounding terrestrial habitat. Minor or short term destructive or disturbance works (e.g. cable laying or ground mountings) will also follow this Method Statement to ensure legal compliance and to ensure the favourable conservation status of the species is not compromised.

The following measures will be adopted throughout the construction period of the proposed development:

- Site operatives will be informed by 'tool box' talk at the start of the construction period on ecological responsibilities and what to look out for during development works.
- There will be no impacts on boundary hedgerows and no potential places of shelter (e.g. rubble / log piles) will be disturbed during the construction phase.
- Any vegetation works including the removal of taller grassland (above 15cm) and scrub will be undertaken using hand tools (e.g. hand held strimmer) in the presence of an ecologist. This will encourage animals to vacate the area. Cut material should be removed immediately from the working area.
- Site operatives will keep a watching brief throughout the construction phase; especially during initial ground clearance operations.

- The proposed timing of the works should coincide with the majority of amphibians still being within ponds (March to July/August) or when amphibians and reptiles are in hibernation (November to February inclusive). This will reduce the likely presence of individual animals within this unfavourable terrestrial habitat.

- Between March and October inclusive (when amphibians and reptiles are active) - Should any trenches and excavations be required, an escape route for animals that enter the trench must be provided, especially if left open overnight. Ramps should be no greater than of 45 degrees in angle. Ideally, any holes should be securely covered.

- Between March and October inclusive (when amphibians and reptiles are active) - All excavations left open overnight or longer should be checked for animals prior to the continuation of works or infilling.

- Between March and October inclusive (when amphibians are active) - Any excavated material should be placed on boards or sheeting to reduced damage to the grass sward (if present). If left overnight this material should be searched prior to being used as infill.

If a GCN is found, work must stop immediately and contact should be made with a licensed, qualified ecologist, who will liaise with NRW.